

GLASS BEADS FROM THE MOST RECENT EXCAVATIONS OF THE VIKING PERIOD SETTLEMENT IN ŚWIELUBIE NEAR KOŁOBRZEG

During the 7th and 8th centuries settlements were established along the southern coast of the Baltic Sea whose multi-ethnic population was specialized in crafts and trade. These settlements formed a supra-regional economic and cultural network which facilitated the exchange of commodities and products as well as of ideas and experiences. These centres produced a variety of goods that were appreciated by the elites and played an important role in this long-distance trade. Among those products, perhaps as a means of payment, are a variety of glass beads. The subject of this article are glass beads from small excavations which have recently been carried out in one of the emporia along the southern coast of the Baltic Sea. Chemical analyses of these beads are still in progress; therefore, we will only present a formal-archaeological analysis as a first step of further advanced work.

One of these centres, which functioned as a trading station between the north and southern Baltic rim, was established along the river Parsęta, on the land of today's village Świelubie, commune Dygowo in Kołobrzeg County (fig. 1). Without discussing the origins of these centres along the southern coast of the Baltic Sea, it is necessary to note the presence of craft products indicating the participation of the inhabitants in long-distance exchange and elements demonstrating the multi-ethnic character of this centre.

The settlement complex along the Parsęta River, referred to as Bardy/Świelubie, consists of a large stronghold (Bardy), a barrow cemetery as well as a small stronghold (Świelubie) with a recently discovered fortified emporium as a predecessor directly by the river (fig. 2). Excavations in Bardy/Świelubie started over half a century ago and proved that Bardy stronghold located on the edge of the valley was founded on the remains of an open settlement with objects of the semi-earth type, dated to the 8th century by pottery. The stronghold in Bardy, surrounded by open settlements and located on the edge of the Parsęta valley, was used until the end of the 9th century. At the turn of the 9th and 10th centuries the Bardy stronghold and its surrounding settlements were abandoned while the Świelubie stronghold was founded in the river valley¹. The Bardy/Świelubie settlement complex is connected to an extensive barrow cemetery of about 100 burial mounds, consisting of mostly cremation and few inhumation graves. The grave goods are dating the cemetery between the second quarter and the end of the 9th century. These finds consisted, among others, of gold, silver and bronze costume decorations, including fibulas with analogies to finds in central Sweden and Gotland, dating back from the 8th to 9th century. As in the case of Menzlin and Groß Strömkendorf, it can be assumed that also in Świelubie whole families of Scandinavian settlers were buried².

Only in recent years, the remains of an emporium established directly on the river bank were discovered through initial investigations which were part of the Priority programme »Harbours from the Roman Period to the Middle Ages« funded by the German Research foundation³. The final results of the archaeological research carried out in the years 2014-2016 have yet to be finalised⁴. However, it is already known that the emporium was established during the oldest phase of the fortification in Bardy at the end of the 8th century or the beginning of the 9th century. After the abandonment of Bardy in the 10th century, a smaller circular fortification known in literature as Świelubie stronghold was built on the site of the emporium.



Fig. 1 Bardy/Świelubie complex on the Baltic coast. – (Map A. B. Kowalska).

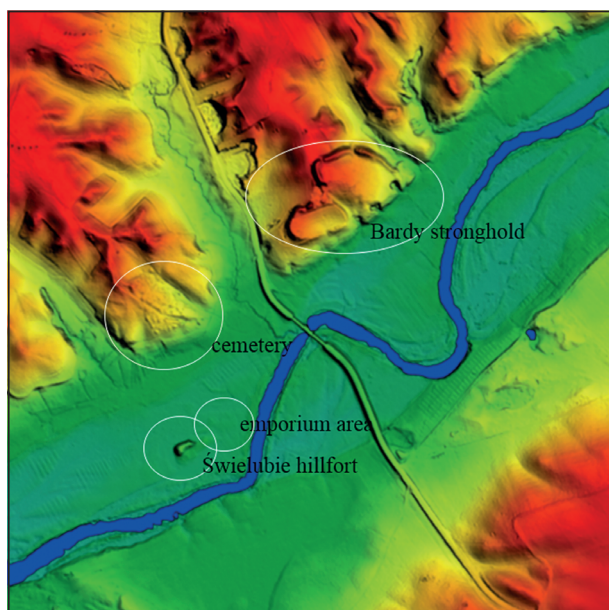


Fig. 2 Bardy/Świelubie settlement complex. – (Map A. B. Kowalska).

The *terminus post quem* dating the establishment of the site is determined by dendrodates of wood samples taken from the fortification (after AD 701, without the possibility of more accurate dating due to incomplete growth) and several fragments of Arabic dirhams discovered in the oldest layers of the settlement⁵; the oldest are dated to AD 775-785 and the youngest to AD 813-833⁶.

The discovery of a Viking age emporium in Świelubie which has long been assumed is the beginning of further research⁷. Archaeological and geophysical investigations (2015-2016) have revealed the existence of a settlement dated to the 8th/9th century with a probably semi-circular rampart and settlement layers with buildings. An important achievement was the acquisition of wood samples for dendrochronology, the first ones for the area of West Pomerania. The collection of Arabic coins has also expanded, facilitating the dating *post quem* of un-

covered structures and objects related to long-distance exchange, including glass beads.

The archaeological excavations in Bardy/Świelubie complex have resulted in numerous discoveries that allow a new perspective on the history of settlement in this region. For the first time it was possible to prove the existence of a fortified settlement, as a result of research at least two stages of fortification were recorded⁸.

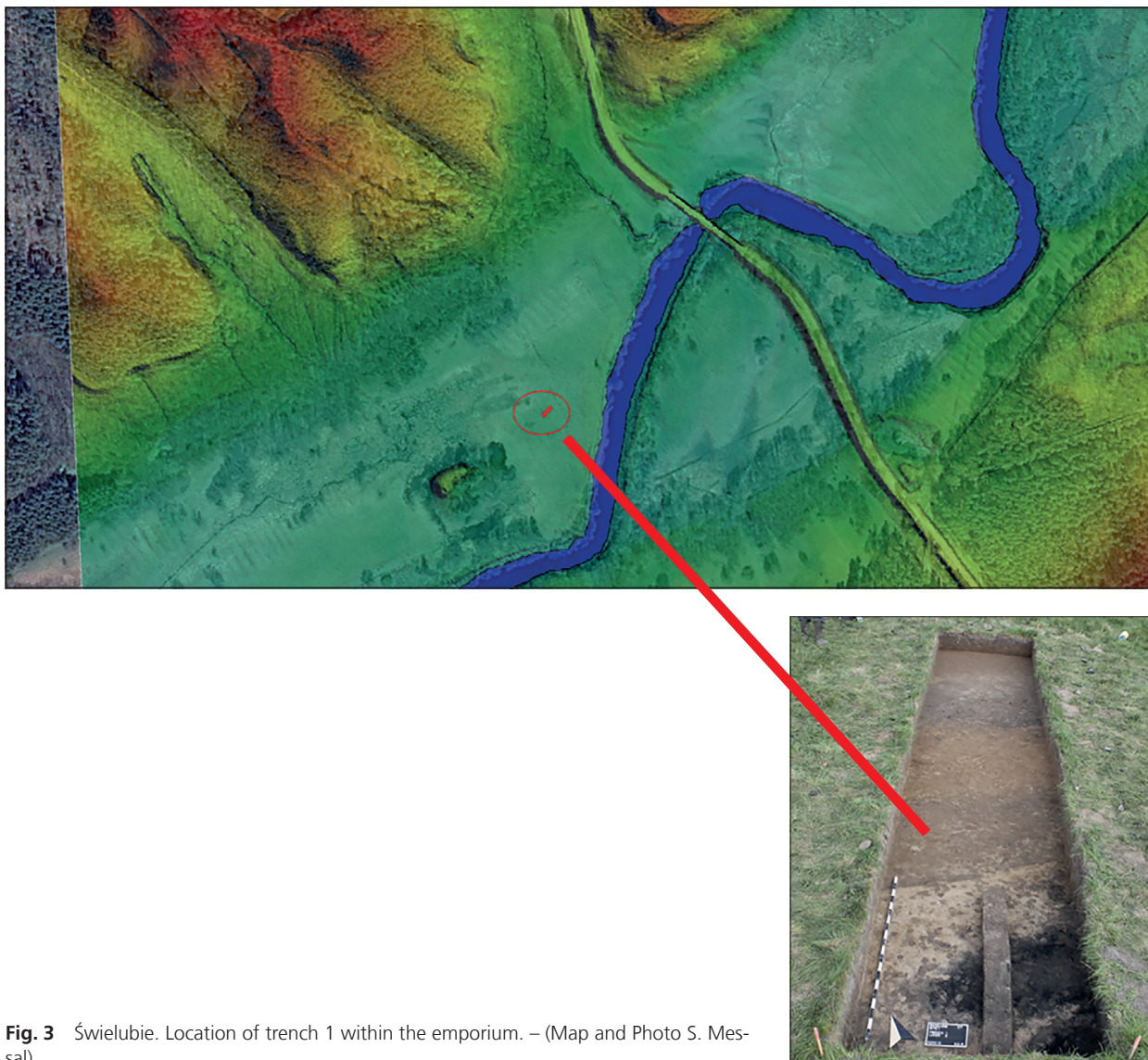


Fig. 3 Świelubie. Location of trench 1 within the emporium. – (Map and Photo S. Messal).

Of particular importance is the dating of the fortifications, which according to dendrochronological analyses were erected already in the 8th/9th century. Similarly, the oldest cultural strata and the remains of buildings that were located in the immediate vicinity of the fortifications should be dated to the same period. Based on the results of recent excavations, older opinions on the relation between both fortifications in Bardy and Świelubie can already be verified. The emporium was established more or less at the same time of the oldest phase of the fortification in Bardy but earlier than the small Świelubie stronghold which was built at the same location in the 10th century; the Scandinavian settlers were buried at the Świelubie cemetery. The current research is now focussing on particular categories of archaeological sources. The beads presented here were discovered in the cultural strata and objects of the emporium, directly from the inside of the fortifications (trench 1; **fig. 3**). The basis for the beads classification was the technique of making, followed by the form, size and presence of the ornament. The entire collection consists of eight preserved in whole specimens and 49 different size fragments (**tab. 1**; **fig. 4**). Their form was determined by similarity to geometric solids⁹. Depending on the manufacturing technique, the glass beads were divided into three groups: made by the blowing method, the drawing method and the winding method.

Inv. no.	Quantity	Technique of making		Shape		Dimensions (cm)	Colour and transparency of glass	Comments
		Body	Ornament	Body	Ornament			
21/2015	1	blowing		cylindrical, ellipsoidal		H: 1.29-1.42; D: 1.14-1.19; canal: D: 0.49-0.55	colourless, transparent	both edges at the canal opening are broken off
1/2016	2 fragm.	blowing		not determined			colourless, transparent	middle part of the bead body
2/2016	1 fragm.	blowing	fragm. of metal foil on the inner wall of the body	not determined	not determined		colourless, transparent	middle part of the bead body
62/2016	1 fragm.	blowing		spherical		H: 0.67-0.75; D: 0.75-0.77; canal: D: 0.19-0.22	colourless, transparent	half of a bead, the bead's wall thickness is 0,24 cm; the canal opening expands in the widest body volume
61/2016	1	blowing		cylindrical, ellipsoidal		H: 1.31-1.26; D: 1.02-1.09; canal: D: 0.21-0.22	colourless, transparent	only one canal opening is open
61/2016	3 fragm.	blowing		cannot be determined			blue, translucent	middle part of the bead body
61/2016	4 fragm.	blowing	fragm. of metal foil on the inner wall of the body	cylindrical, ellipsoidal	not determined		colourless, transparent	two fragm. stick together and form the central and upper part of the body with a partially preserved canal opening, the third fragm. is the central part of the body; all of them have traces of fragm. of metal foil on the inner wall of the body
61/2016	2 fragm.	blowing		cylindrical, ellipsoidal			dark yellow, translucent	half of the bead and upper part of the bead with a preserved fragm. of the edge of the canal
61/2016	1 fragm.	blowing	fragm. of metal foil on the inner wall of the body	not determined	not determined		dark yellow, translucent	the middle part of the body bead

Tab. 1 Świelubie. Catalogue of glass beads. – (Tab. S. Wajda).

Inv. no.	Quantity	Technique of making		Shape		Dimensions (cm)	Colour and transparency of glass	Comments
		Body	Ornament	Body	Ornament			
52/2016	1	drawing	fragm. of metal foil on the inner wall of the body	two-segmented, segments are spherical	a bead decorated with a metal foil whose edges do not join together, leaving about 2 mm gaps	H: 1.16-1.18; D: 0.60-0.61; canal: D: 0.16-0.17	colourless, transparent	on one of the bead segments piece of glass outer layer is broken
69/2016	1	winding	imprinted	spherical	ribs are arranged around to the axis of the canal	H: 0.73-0.87; D: 0.62-0.72; canal: D: 0.14-0.18	green, translucent	
	1	winding		spherical		H: 0.49-0.52; D: 0.71-0.74; canal: D: 0.13-0.15	probably green	glass is corroded
36/2016	1 fragm.	blowing		cylindrical-ellipsoidal			colourless, transparent	middle part of the bead body
36/2016	1 fragm.	blowing	fragm. of metal foil on the inner wall of the body	cylindrical-ellipsoidal	not determined		dark yellow, translucent	middle part of the bead body
43/2016	3 fragm.	blowing		cylindrical-ellipsoidal			colourless, transparent	fragm. of one bead, two of them stick together, the middle and upper parts of the bead body with a canal are preserved
43/2016	2 fragm.	blowing					blue, translucent	middle part of the bead body
43/2016	1 fragm.	blowing	fragm. of metal foil on the inner wall of the body	cylindrical-ellipsoidal	not determined		dark yellow, transparent	middle part of the bead body
43/2016	1 fragm.	blowing		cannot be determined			dark yellow, translucent	middle part of the bead body
46/2016	1 fragm.	blowing		cannot be determined			blue, transparent	middle part of the bead body

Tab. 1 (continued).

Inv. no.	Quantity	Technique of making		Shape		Dimensions (cm)	Colour and transparency of glass	Comments
		Body	Ornament	Body	Ornament			
46/2016	1 fragm.	blowing	fragm. of metal foil on the inner wall of the body	not determined	not determined		colourless, transparent	middle part of the bead body
46/2016	4 fragm.	blowing		cylindrical, ellipsoidal			dark yellow, translucent	middle and upper part of the body with a partially preserved canal, three other fragm. – the middle part of the body
51/2016	1 fragm.	blowing	fragm. of metal foil on the inner wall of the body	cylindrical, ellipsoidal	not determined		colourless, transparent	middle part of the bead body
53/2016	1 fragm.	blowing		cylindrical, ellipsoidal			colourless, transparent	central and upper part of the body with a partially preserved canal
71/2016	1 fragm.	blowing		cylindrical, ellipsoidal			colourless, transparent	central and upper part of the body with a partially preserved canal
72/2016	1 fragm.	blowing		cylindrical, ellipsoidal			dark yellow, translucent	central and upper part of the body with a partially preserved canal
75/2016	3 fragm.	blowing		cannot be determined			colourless, transparent	middle part of the bead body
brak	2 fragm.	blowing	fragm. of metal foil on the inner wall of the body	cylindrical, ellipsoidal	not determined		dark yellow, translucent	middle part of the bead body
brak	2 fragm.	blowing		cylindrical, ellipsoidal			blue, translucent	central and upper part of the body with a partially preserved canal
brak	1 fragm.	blowing		not determined			dark yellow, translucent	middle part of the bead body
brak	2 fragm.	blowing		not determined			colourless, transparent	middle part of the bead body
brak	1	blowing		cylindrical-ellipsoidal		H: 1.4-1.52; D: 1.12-1.15; canal: D: 0.21	blue, translucent	the canal opening edge – one – rounded; the other – clamped and broken/cut – may have been unobstructed

Tab. 1 (continued).

Inv. no.	Quantity	Technique of making		Shape		Dimensions (cm)	Colour and transparency of glass	Comments
		Body	Ornament	Body	Ornament			
brak	1 fragm.	blowing		not determined			blue, translucent	middle part of the bead body
brak	2 fragm.	blowing		not determined			dark yellow, translucent	middle part of the bead body
35/2016	1 fragm.	winding	imprinted	not determined	not determined		blue, translucent	middle part of the bead body
35/2016	1 fragm.	blowing		not determined			blue, translucent	middle part of the bead body
35/2016	1 fragm.	blowing		not determined			colourless, transparent	middle part of the bead body
35/2016	2 fragm.	blowing		cylindrical-ellipsoidal			dark yellow, translucent	on both fragm. the edges of the canal are partially preserved
59/2016	1	blowing	fragm. of metal foil on the inner wall of the body	cylindrical, ellipsoidal	the metal foil is preserved on 1/3 of the bead	H: 1.41-1.56; D: 0.90-0.94; canal: D: 0.46-0.55	colourless, transparent	both edges of canal opening are broken off
59/2016	1 fragm.	blowing	fragm. of metal foil on the inner wall of the body	cylindrical, ellipsoidal	not determined		dark yellow, translucent	middle and upper part of the body with a partially preserved canal
	1 fragm.	blowing		cylindrical, ellipsoidal			dark yellow, translucent	middle and upper part of the body with a partially preserved canal
59/2016	1 fragm.	blowing		cylindrical, ellipsoidal			blue, translucent	middle part of the bead body
59/2016	2 fragm.	blowing		cylindrical, ellipsoidal			colourless, transparent	middle part of the bead body
brak	1	blowing	imprinted	cylindrical	ribs are arranged around the axis of the canal	H: 1.45-1.47; D: 1.35-1.37; canal: D: 0.21-0.24	colourless, transparent	

Tab. 1 (continued).



Fig. 4 Świelubie. Glass artefacts. Beads made by techniques of blowing: **a** Bead fragments made of yellow, translucent glass. – **b** Bead fragments made of yellow, translucent glass with metallic foil. – **c** Bead fragments made of blue, translucent glass. – **d** Bead fragments made of colourless, transparent glass. – **e** Bead fragments made of colourless, transparent glass with metallic foil. – **g, j** Beads made of colourless, transparent glass. – **h** Bead made of colourless/lightly yellowish, transparent glass with metallic foil. – **i** Bead made of blue, translucent glass. – **k** Melon bead made of colourless/lightly yellowish glass, translucent glass. – Bead made of technique of drawing: **f** Two-segmental bead made of colourless, transparent glass with metallic foil. – Beads made by techniques of winding: **l** Melon bead made of green, translucent glass. – **m** bead made of probably green glass. – (Photo S. Wajda).

GROUP 1. BEADS MADE BY BLOWING TECHNIQUE

The most numerous group of beads (4 whole and 49 fragments) was made by blowing technique. They are characterized by very thin body walls (0,08-0,19cm), they have an ellipsoidal shape and instead of a canal an empty space that was created as a result of glass blowing. In the structure of the material, numerous gas bubbles are very well visible, sometimes arranged in strings, parallel to the longer axis of the beads, as well as densely arranged longitudinal streaks (fig. 5d, e). In most cases, where the surfaces around the canal opening are damaged, they are unevenly cut or broken off (fig. 5d, e, i, j). On a completely preserved specimen, it can be seen that one of the ends of the bead is drowned and the other is improperly cut off (clamped), so that the canal is obstructed/closed (fig. 5f), while on another hole probably was accidentally blocked during the blowing out (fig. 5g). The layer of glass is thicker here than on the other walls of the bead.

The beads of this type were made from a drawn glass tube, which was then blown out¹⁰. A glass tube could be made in several ways: by forming a glass plate, the edges of which were melted to form a tube, which was then drawn out, or by melting the edges of previously drawn glass bands, two or possibly three. On the bodies of beads made in such a way, the so-called seams are visible, i. e. places where two edges of a glass plate or glass bands join together¹¹. This detail can be seen on two whole items (fig. 5g, h). In this group of artefacts, there are specimens made of glass in yellow (18 fragments; fig. 4a), blue (12 fragments and 1 whole; fig. 4c, i) and colourless/lightly yellowish (19 fragments and 3 whole; fig. 4d, g, j), all strongly



Fig. 5 Świelubie. Glass beads, traces of technical procedures: **a** flaws. – **b** sides of glass thread not melted in. – **c** streaks and gas bubbles which are arranged parallel to the axis of the bead. – **d, e** longitudinal streaks. – **h, i** metallic foil. – **g** canal blocked during the blowing out. – **f** improperly cut off (clamped) canal. – **i, j** cut off or broken off canal. – (Photo S. Wajda).

transparent. Some yellow (4 fragments; **fig. 4b**) and colourless beads (6 fragments and 1 whole; **fig. 4e, h**) are decorated with a metallic foil which, however, is heavily corroded and preserved only in small fragments on the inside of the bodies (**fig. 5h, j**). Unfortunately, it is not certain how the foil was applied.

According to P. Steppuhn¹², the foil could have been blown into the bead. One blown bead is decorated with rounded ribs (**fig. 5k**).

On the territory of Poland, beads made by blowing technique are mainly found in Pomerania. The largest number of these specimens has been discovered so far in Janów Pomorski, Warmińsko-Mazurskie Voivodeship, identified with the early medieval Truso. Seven fragments of such beads from the northern part of the settlement were analysed and described by M. Dekówna and T. Purowski¹³. Researchers determine the chronology of these beads for the 9th century¹⁴. In addition, single specimens were found in the stronghold in Szczecin, Zachodniopomorskie Voivodeship (11th-12th century)¹⁵, in Santok, Lubuskie Voivodeship (8th century)¹⁶, as well as in Kołobrzeg-Budzistowo (8th/9th century) and two each in the stronghold in Bardy (8th-9th/10th century) and on the cemetery in Świelubie, all Zachodniopomorskie Voivodeship, from the 9th century¹⁷. Three specimens are also known from Wolin (Old Town, site no. 1), Zachodniopomorskie Voivodeship, found in layers dating from the second half of the 9th century to the beginning of the 10th century¹⁸.

The dissemination and chronology of this type of beads in Europe has recently been widely discussed by M. Dekówna and T. Purowski¹⁹. However, their analysis did not give a clear answer to the question about the place of their manufacture in the early Middle Ages, mainly due to the insufficient state of publication of source materials. Beads produced using the blowing technique, dating from the 9th to the 10th century,

were also discovered in the Czech Republic²⁰. V. Hrubý describes beads in light greenish, blue, and yellowish golden brown colours²¹. Several beads are finally known from the cemetery in Micheldorf/Kremsdorf from the regions of Upper Austria²².

Occasionally these finds appear in Rus. In the study on artefacts from archaeological research in Old Ladoga²³, only five specimens are described, which can be dated to the 10th century²⁴. According to J. Callmer, they are also very rare in Scandinavia, mainly from the second half of the 8th to the 9th century (Da group)²⁵. Most beads of this type were discovered in present-day Germany²⁶. As P. Steppuhn reports, these beads are quite numerous in Haithabu (825 items)²⁷. There are specimens in blue and white with silver foil and yellow ones with gold foil. It should be noted that not only finished beads were found there but also a lot of production waste (unfinished beads, semi-products). Most of these finds were recovered from layers from the 9th century²⁸. Moreover, beads dating back to the first half of the 9th century were also found in Groß Strömkendorf; however, just few are known – only seven fragments were discovered, including six in blue and one in yellow decorated with metal (silver) foil²⁹.

GROUP 2. BEAD MADE BY DRAWING TECHNIQUE

It is a two-segment specimen made of transparent, colourless glass decorated with a metallic foil, which does not, however, encircle the entire body, leaving a small 2 mm gap. The segments have a spherical shape and are cut off at an angle where the necks of the bead are formed (**fig. 5c**).

Segmented beads with metal foil could be manufactured in various ways. These are specimens made of a drawn out glass tube, which was covered with a metal foil and then another layer of glass. According to M. Siegmann³⁰, one method consisted in applying a foil to the inner tube, on which a slightly larger outer tube was applied. Afterwards, both layers were heated, pulled out, formed into beads and cut. Another method was to immerse the tube with previously applied foil in liquid glass³¹. Often the core (inner layer of glass) was made of lower quality material³². The beads were shaped either with special tongs(?) or with stone moulds³³. On the bead created by the described technique, numerous streaks and gas bubbles are visible, which are arranged parallel to the axis of the bead (**fig. 5c**).

Glass beads made using the drawing technique are found on Polish territory on many sites in the early Middle Ages. Their distribution and the centres that produced this kind of jewellery have been discussed many times³⁴. They were probably produced in Byzantine and/or Islamic workshops and from there they spread in different directions, including Europe³⁵. Undoubtedly, such items were produced in Haithabu³⁶ and Old Ladoga³⁷ from the end of the 8th to the 11th century. The most recent findings concerning the existence of a glass workshop in Wolin confirmed that beads were also produced there in the drawing technique from the second half of the 10th to the 11th century. According to K. Kokora there were mainly three types of beads: seed beads, segmented beads with metallic foil and single-layer segmented beads in yellow colour³⁸. It should be noted that in all mentioned workshops jewellery was made from melted glass or semi-finished products, which were imported from the Middle East³⁹.

GROUP 3. BEADS MADE BY WINDING TECHNIQUE

The last group of glass artefacts found recently in Świłubie are beads made applying the winding technique. These are two specimens of green colour, slightly transparent and poorly transparent (**fig. 4l-m; 5a-b**). These beads have an irregular, quite spherical shape; one of them is decorated with longitudinal ribs

(fig. 4l; 5b). Both are made with little care, the edges of unmelted glass threads are clearly visible on their bodies. The longitudinal ribs on the melon bead are unevenly thick and one of them is distorted (slightly pressed in). In the early Middle Ages these beads can be found on many Polish sites in the Mazovia and Podlasie region⁴⁰, in Silesia⁴¹, Lesser Poland⁴² or Pomerania⁴³.

SUMMARY

Glass beads are very common findings on various archaeological sites from the early Middle Ages. Their typological and technological diversity makes it possible to trace the economic relations in a particular territory, as well as to identify the directions of their influx.

During the early medieval period there were many glassmaking workshops in the Baltic region, which produced various glass items according to Middle Eastern recipes. Glass beads were made in the workshop on the Wolin Island⁴⁴. Also in Ralswiek on Rügen (e. g. melon beads, which were also discovered in Świelubie), Groß Strömkendorf and Rostock-Dierkow there might have been a production of glass beads, as indicated by numerous remains of molten glass and glass slags⁵.

According to M. Jagodziński, there was also a glass workshop in the harbour area of the settlement in Truso⁴⁶. However, in the absence of publication of these materials, it is difficult to determine whether beads were made there by using the blowing method, which required high skills and were used only by highly skilled craftsmen⁴⁷. J. Callmer claims that such products have a Byzantine origin and are very rare findings in Scandinavia (except in Haithabu)⁴⁸. Beads of this type are more common in Central Europe and P. Stepuhn considered that they may have been produced in Danube workshops⁴⁹. On the territory of the Great Moravian state, glass workshops were located in Mikulčice (9th to 10th century), in Staré Město and in Nitra from the 9th century and in Bratislava (9th/10th century)⁵⁰. However, there is no evidence of bead production by blowing.

In the case of the glass artefacts from Świelubie, it seems that the analysis of their chemical composition would be helpful in determining the direction of their import. Such studies are currently being carried out and preliminary results have confirmed that they were made of sodium glasses, melted on ash soda. In the light of the current state of research on this type of beads, the items from Świelubie may come from a glass workshop in Haithabu. This would be evidenced above all by a very large number of beads blown out there, unheard of on any other site⁵¹. Laboratory tests conducted by M. Dekówna showed that some specimens found in Haithabu were made of a similar type of chemical glass as the discussed specimens from Świelubie⁵².

The analysis of the set of glass products from Świelubie constitutes an important contribution to the improvement of our knowledge on various aspects of glass production and distribution in Europe during the early Middle Ages. The two blown beads with closed canals discovered at the site may prove that these were items of high value and the local society was not disturbed by the fact that such an ornament could not fulfil its basic function. Perhaps, as in the case of segmented beads with metal foil, also blown out specimens might be assumed as a kind of non-monetary medium of exchange⁵³. It should also be taken into account that glass beads were traded en masse and thus also unsuccessful items could enter into use. According to A. Pöche⁵⁴, it was only at the place of trade that the unsuccessful beads were disposed of, and their presence in the area of the site was possible.

It is also worth noting that blown beads often occur together with specimens made using the drawing technique. As technological analyses show, such items were made from soda glasses, which in the early Middle Ages were smelted in Byzantine and Muslim workshops. Perhaps an analysis of the chemical com-

position of the glasses will reveal more details about where they were manufactured. On the basis of this research, two directions of their inflow to the Polish lands can be indicated – northern Europe and Middle Eastern workshops. Perhaps beads were made in Haithabu from glass imported from the Middle East. As some researchers point out, there is a lack of such beads on the so-called Arabic trade routes⁵⁵. Moreover, such ornaments were fragile and it would not be easy to import them from workshops located in distant territories.

Notes

- 1) Łosiński 1994.
- 2) Summing up Łosiński 2008.
- 3) The investigations in Świłubie were conducted within the project »Early medieval harbours between the Wismar Bay and the Bay of Gdańsk«. The various investigations were conducted by the German Archaeological Institute (archaeology), Lower Saxony Institute of Coastal Research (geology), Institute of Geosciences, Christian-Albrechts-University of Kiel (geophysics), University of Applied Sciences Berlin (archaeology) and National Museum in Szczecin (archaeology).
- 4) Karle/Kowalska/Messal 2016; 2019. – Kowalska/Messal 2017. – Jöns et al. 2017. – Jöns/Kowalska 2018.
- 5) See Kowalska/Messal 2017. – Jöns/Kowalska 2018.
- 6) Malarczyk 2017.
- 7) Summing up Łosiński 2008, 72-76.
- 8) Kowalska/Messal 2017, 243-246.
- 9) Dekówna/Olczak 2002. – Wajda 2019, 216. In Polish literature, various terminologies are used to define the shape, which makes it very difficult to carry out comparative analyses. See e.g. Jaskanis 2008. – Kowalska 2011. – Banach 2015. – Dzik 2015.
- 10) Dekówna/Purowski 2012, 125.
- 11) Dekówna 1999, 54-55 fig. 28.
- 12) Steppuhn 1998, 39.
- 13) Dekówna/Purowski 2012, 124-129.
- 14) Dekówna/Purowski 2012, 127.
- 15) Leciejewicz et al. 1972, tab. 8 no. 817.59.
- 16) Dymaczewska/Dymaczewski 1967, 200.
- 17) Łosiński 1972, 66-67. 82. 314. 320. 344.
- 18) Kokora 2019a, 320; 2019b, 215.
- 19) Dekówna/Purowski 2012, 126-128.
- 20) Poulik 1948, 63. – Hrubý 1955, 247-248. – Krumphanzlová 1965, 167 fig. 1.15-17.
- 21) Hrubý 1955, 248.
- 22) Hausmair 2008, 78-79, tab. 18.4. 20.2. 21.1. 36.1. 38.1. 39.3.
- 23) Lvova 1968, 98.
- 24) Rjabinin/Černyh 1988, 98.
- 25) Callmer 1977, 88.
- 26) Steppuhn 1998, 40. – Pöche 2005, 56-57. – See also S. Messal and A. Kronz in this volume.
- 27) Steppuhn 1998, 39-40.
- 28) Steppuhn 1998, 40.
- 29) Pöche 2005, 56-57, tab. 7.7. 8.15. 9.10.
- 30) Siegmann 2006, 952 fig. 373.
- 31) Lvova 1983, 101. – Astrup/Andersen 1988, 224-225. – Siegmann 2006, 953 fig. 375. – Greiff/Nallbani 2008, 371-372.
- 32) Dekówna/Purowski 2012, 118. – Štaššisková-Štukovská 2009, 204 fig. F47. 3-5.
- 33) Spaer 1993, 12-13 fig. 2-4.
- 34) Žak 1957, 161-174. – Olczak/Jasiewiczowa 1963, 50. – Greiff/Nallbani 2008. – Dekówna/Purowski 2012, 110-124.
- 35) Dekówna 1999, 61.
- 36) Dekówna 1980, 181-186.
- 37) Lvova 1968, 84. – Rjabinin/Černyh 1988, 87-98.
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- 40) Wajda 2014, 64-67. 72.
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- 44) Kokora 2019a, 322.
- 45) Herrmann 2005, 132-133 fig. 150. – Pöche 2005.
- 46) Jagodziński 2010, 157. 161.
- 47) Dekówna/Purowski 2012, 127.
- 48) Callmer 1977, 98.
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- 52) Dekówna 1980, 185, tab. 46:7.
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Zusammenfassung

Im Rahmen des Beitrages werden Glasperlen des 8.-10. Jahrhunderts aus dem frühmittelalterlichen Burg-Siedlungskomplex in Świłubie bei Kolobrzeg (Polen) vorgestellt. Archäologische Ausgrabungen, die von 2014 bis 2016 im Vorburgbereich des Burgwalles durchgeführt wurden, erbrachten eine Reihe von Glasperlen, die unter technologischen, typologischen und chronologischen Gesichtspunkten analysiert und diskutiert werden.

Summary

The article is devoted to the findings of glass beads from the 8th-10th century in the fortified settlement in Świłubie near Kolobrzeg (Poland). In the course of recent archaeological research in the years 2014-2016, among others, a series of glass beads were discovered, which were discussed in technological, formal and chronological terms.