NOVENSIA 26

NOVENSIA 26

Studia i materiały
pod redakcją naukową

Piotra Dyczka

NOVENSIA 26

Ośrodek Badań nad Antykiem
Europy Południowo-Wschodniej

Warszawa 2015

Projekt okładki
Anna Adamczyk & Janusz Recław
Opracowanie graficzne
Anna Adamczyk

Opracowanie redakcyjne
Piotr Dyczek

Recenzenci
Leszek Mrozewicz
Evgenia Genčeva
Gerda von Bülow
Svetlana Naumienko
Wojciech Nowakowski
Luan Përzhita

Sekretarz redakcji
Tomasz Płóciennik

Przekład artykułów na język angielski
Jakub Ozimek (Bartłomiej Kaczyński)
Aleksander Nowacki (pozostałe)

Niniejszy numer zawiera artykuły w wersji pierwotnej.

Ośrodek Badań nad Antykiem Europy
Południowo-Wschodniej
00–927 Warszawa
ul. Krakowskie Przedmieście 32
novae@uw.edu.pl

Warszawa 2015

ISBN: 978–83–934239–3–4
ISSN: 0860–5777

Wydanie I
Druk: Hussar Books

SPIS TREŚCI

FROM THE EDITOR

The present issue of *Novensia* differs in character and contents from previous ones. It presents selected articles by the doctoral students at the Center for Research on the Antiquity of Southeastern Europe at the Institute of History of the University of Warsaw. The articles present a wide range of scholarly challenges. The idea was to demonstrate the breadth of research endeavour undertaken by the young scholars.

The impulse that led directly to the publication of the present volume was, however, a conference held in Warsaw on 16–18 April, 2015 as part of the European Union Tempus IV programme (see: www.novae.uw.edu.pl, Chtmbal, and http://www.chtmbal.eu).

The conference bore the title *In the Footsteps of Spiritual Culture: Different People, Different Traditions, One Europe*. Its key objective was an exchange of experience between young scholars from various European countries, as well as presentation of their research achievements.

Some of the conference materials and papers linked to the programme will be published in a dedicated Tempus IV publication. Since, however, its character and size rule out publication of all the papers, the Research Council of Tempus IV, in appreciation of the high standard of the papers, unanimously decided to appropriate relevant funds and publish the best Polish papers delivered at the conference as a special edition of *Novensia*.

The conference was also accompanied by an exhibition at the Pałac Kazimierzowski, the seat of Warsaw University's chancellor, which was opened by the Vice-Chancellor for Student Affairs and Teaching Quality, Prof. Dr. Marta Kicińska-Habior.

Piotr Dyczek

Karolina Bugajska

IN THE GROUND OR IN THE BASKET? BURIAL WRAPPINGS FROM THE STONE AGE HUNTERS' CEMETERY AT DUDKA, MASURIA, NE-POLAND*

Abstract: Dudka site is located on the island of former lake Staświn in the Masurian Lakeland, NE-Poland. At least 18 graves with 79 individuals were uncovered at the Dudka cemetery. Some of burials were probably interred in different kinds of containers. One primary burial was possibly wrapped. Most of sitting burials indicate that the decomposition of soft tissue took place in empty space of a grave pit. So, graves were not filled with a sediment just after burial, but they were probably variously covered from the top. Secondary burials from three graves were put into a pit in a container, most probably a basket. In each case the basket was different in shape — rectangular, oval and rounded with a partition in the middle — and contained different numbers of bones from varying numbers of individuals.

Key words: burial rites, taphonomy, Mesolithic, Para-Neolithic, NE-Poland

Introduction

In the Mesolithic and Para-Neolithic, the dead are known to have been buried in different "wrappings" or grave constructions of organic materials. It is, however, only sporadically that any remains of timber or bark survive to this day. The few finds of this nature are known from the Mszano site in Poland and from Scandinavian sites: Korsør Nor, Møllegabet and Vedbæk Gøngehusvej in Denmark and Skateholm in Sweden.[1]

That the body was wrapped or interred in some other inflexible container can be inferred from the position of the skeleton. If the body is placed in the grave without any permanent wrapping and the grave pit is immediately filled in, the skeleton remains basically unaltered. The reason is that the empty space created in the process of decomposition of soft tissue is gradually filled with sediment, which stabilises the layout of the bones. If, however, the body is tightly wrapped, the wrapping puts pressure on the body that makes the bones turn or collapse inwards into the empty spaces created through the decomposition of the soft tissue. In cases where a coffin is used, on the other hand, bones may fall outwards, outside the limits of the body, as far as the walls of the coffin allow. The decomposition of the body inside the permanent wrapping, which creates an empty

* Published with financial support of the Foundation for Polish Science.

[1] Bugajska 2014, pp. 6–11.

space around the body, causes anatomical joints to disintegrate — with small bones of the hands and feet or ribs move downwards within the wrapping. The "wall effect" is also visible, as bones rest on the edges of the coffin. It is also possible that the grave pit was not filled in after the burial, but merely covered on top with some sort of construction. In that case, the decomposition takes place similarly like in the coffin, but the movements of bones and distortion of the anatomical layout may be much larger, especially in case of bodies buried in a sitting position. If the pit is filled in, the sitting position is basically maintained, while in an empty pit the body collapses completely and its anatomical layout is severely disturbed. The presence of wrappings may also apply to secondary burials. In this case it is important whether the bones fill the entire grave pit or just a part thereof, how tightly they are packed together and whether the "wall effect" is discernible.[2]

Dudka cemetery — general information

The Dudka site is located on the island of the former lake Staświn in the Great Masurian Lakes region of north-east Poland [Fig. 1]. The cemetery was located in the southern section of the island, between two encampment zones: the "eastern bay" and the "southern promontory". Habitation on the island lasted from the Late Paleolithic to the end of the Neolithic, but the cemetery was used only in the Mesolithic and Para-Neolithic.[3] At least 18 graves have been found there, containing

Fig. 1. Location of the Dudka site (W. Gumiński)

[2] Nilsson 1998; 2005–2006; Nilsson-Stutz 2006.
[3] Gumiński 1999; 2014, p. 122.

the remains of at least 79 individuals [Fig. 2]. The cemetery contained the remains of just 12 primary burials, mostly in a squatting-sitting position, though two individuals were laid on their backs with legs raised up and one on right side in contracted position. Secondary burials (both cremations and inhumations) are found in most graves.[4] In six graves they were added to sitting burials and a further nine contained only secondary deposits of human remains [Fig. 2].

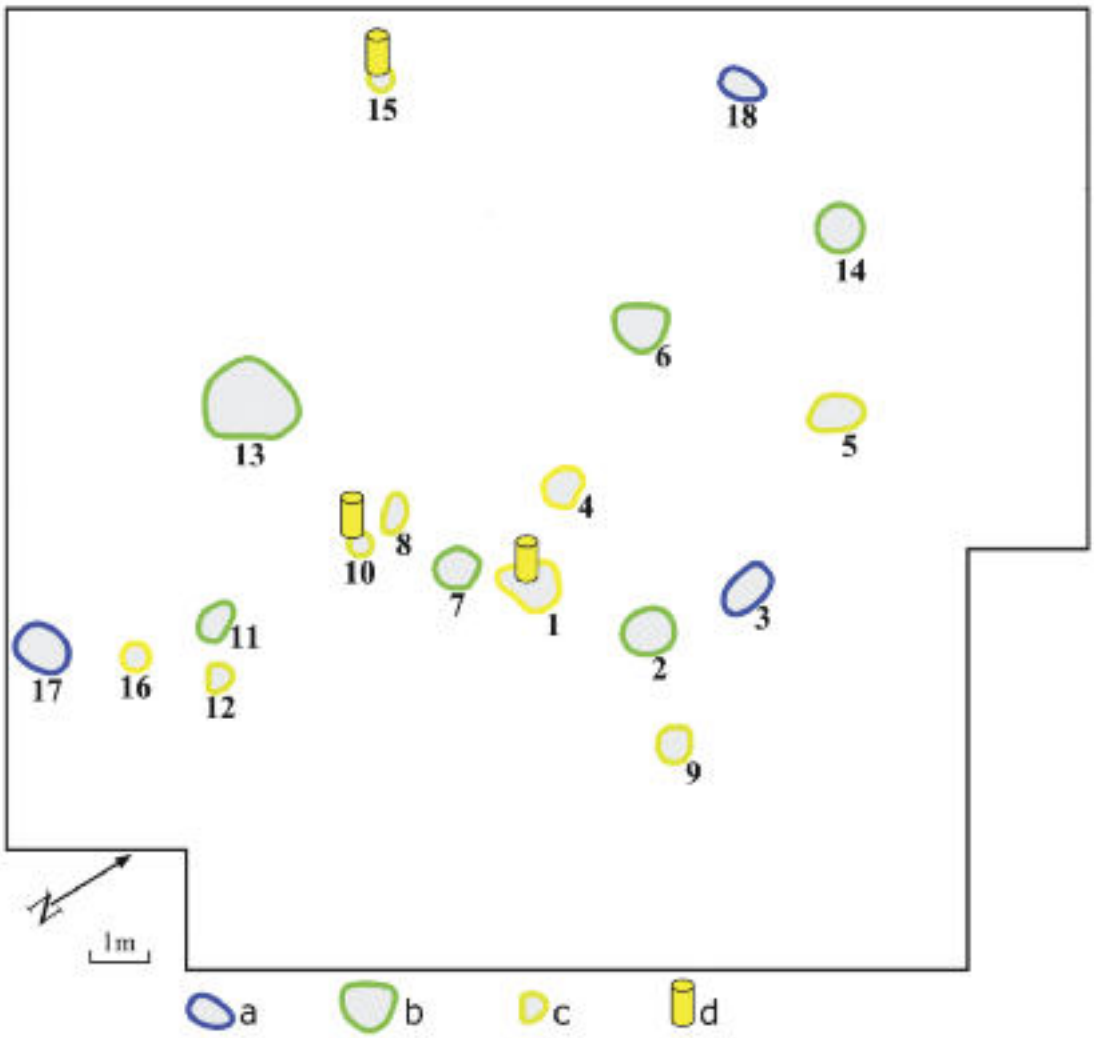

Fig. 2. Plan of Dudka cemetery: a – graves with primary burials lying on side or back
b – graves with burials in sitting position
c – graves containing only secondary burials, inhumations or cremations
d – secondary burials in baskets
(K. Bugajska)

[4] Gumiński 2014, p. 123, table 1.

Wrappings of primary burials

Of all the primary burials, it is probably only the child from the VI-18 grave that was wrapped. It was lying on its back with legs pulled up and its knees pressed against the chest [Fig. 3]. Hand and feet bones as well as those of the chest fell to the bottom of the pit. Some of them find themselves between the child's legs, which testifies to the presence of an empty space in this place at the time of soft tissue decomposition. Ribs partially protrude from the chest, especially on the left. None of them is, however, outside the left humerus. Bones of the skull have come apart at the seams. The frontal bone has moved inside in relation to the occiput [Fig. 3]. On that basis it may be inferred that the child was buried in some sort of wrapping, which on the one hand created a barrier, causing the skeleton to collapse inwards (eg. the skull), while on the other hand leaving a gap that allowed small bones to move about. The wrapping of the body may have been necessary to maintain its unusual position, especially for the legs.

Nearly all the Dudka sitting burials point to a smaller or greater degree to decomposition in the empty space of a grave pit. In this case one should speak not so much of a wrapping, as of some kind of construction inside the grave, which secured the grave pit and prevented accumulation of sediment inside it.

Fig. 3. Dudka, grave VI-18, child burial lying on back
with legs pressed against chest
(photo W. Gumiński)

One example of body decomposition in an empty pit is the VI-6 grave, where a young female was interred in a squatting-sitting position with her feet crossed. The burial was disturbed already in the Stone Age, when some of the long bones and the mandible were removed. The bone layout in the lower part of the grave pit testifies to the primary position of the body and decomposition in an empty space. At the bottom of a small round pit, the bones of the pelvis were found in an undisturbed anatomical position with the last lumbar vertebrae spiking upwards from the pelvis and resting against the wall of the pit. It must, however, be added that the metatarsal bones and phalanges of the right foot were missing and must have been removed when the burial was disturbed. The chest, i.e. ribs and spine, collapsed forwards, partly maintaining anatomical connections [Fig. 4]. The shoulders also collapsed forwards, as can be seen from the placing of collarbones and probably also of the left humerus visible in the photograph [Fig. 4]. The placing of the skull and the other long bones results from a secondary placement in the upper part of the grave. The grave was not filled in after the burial of the woman. At the time it was disturbed, the pit must have been nearly empty, as can be seen from the absence of traces of digging. Thanks to that the skull and long bones, which were probably placed vertically, could be easily removed without disturbing the layout of the rest of the skeleton in the lower part of the pit. The small bones of both hands and the aforementioned bones of the right foot were also presumably removed. It cannot, however, be ruled out that the bottom of the pit was partially filled with sediment, at least on the northern side, facing the left foot, which additionally preserved the layout of the bones.

Fig. 4. Dudka, grave VI-6, sitting burial of young female, lower part of grave pit. Thorax bones — ribs, vertebrae, collar bone and left humerus — collapsed forwards. Pelvis together with lower part of spine placed vertically (photo W. Gumiński)

Another example is that of the sitting male burial at grave VI-14. The man was sitting with crossed legs, knees outwards. The tibiae were lying parallel, one on top the other, so that one foot was touching the knee of the other leg [Fig. 5a]. The skull fell face down to the right foot [Fig. 5a]. The upper vertebrae were dragged down by the skull and separated from the rest of the spine. The right shoulder also collapsed forwards [Fig. 5a]. The rest of the thorax, on the other hand, i.e. the ribs and lower vertebrae, collapsed leftwards along with the left shoulder, probably at a somewhat later date than the skull [Fig. 5b]. It is interesting that another individual's skull was found by the deceased's left side. It cannot be ruled out that it was placed there in some sort of an organic container, against which the sitting body leaned. After the container's decomposition, the bones of the thorax may have collapsed into the resulting empty space.

Fig. 5. Dudka, grave VI-14, burial of man sitting with crossed legs:
a – sight of skeleton en face; skull and right shoulder bones collapsed forward
b – sight of skeleton from back, chest collapsed sideways
(photo W. Gumiński)

The grave VI-2 contained three sitting burials, each in a slightly different position [Fig. 6]. The first to be deposited to the pit was an adult male — individual C — and it was probably some time before the other ones, because his skeleton layout was disturbed to the highest degree [Fig. 6]. The bones of both upper limbs and the left tibia of individual C fell to the bottom of the pit. The right arm fell off or was torn out of the shoulder joint and lay, bent at the elbow, at the bottom of the grave pit directly under the skeleton of a second man (individual A). The bones of the left arm and the left tibia were, on the other hand, crammed under his own pelvis (individual C), which probably resulted at the time of the deposition of the other burials [Fig. 6]. A child (individual B) was leaned against the femur of individual C, but this must have taken place after the man's left tibia fell to the bottom of the pit with the knee turned inwards [Fig. 6]. That indicates that the grave pit was not filled in immediately after one of the men was laid down there (individual C) and that the other deceased were added at a later date, when body of individual C had already undergone partial decomposition. Adding new interments caused further distortions in the anatomical layout of individual C, but did not require digging.

The skull of individual C turned base upwards and together with the chest collapsed forwards onto the legs of the second man (individual A) [Fig. 6]. This indicates an empty space in the southern part of the grave pit even after successive burials, or at least that of individual A.

Anatomical layout of the second male skeleton (individual A) has undergone no major distortions [Fig. 6], although in this case, too, the skull, upper thorax and right shoulder collapsed leftwards. In addition, the skull disconnected from the spine and rotated face downwards. This indicates that the thorax bones did not just fall down into an empty space left over by the decay of soft tissues in the abdominal cavity, but some of them fell outwards in the direction of individual C [Fig. 7]. This in turn testifies to the presence of empty space in this part of the pit. It seems very probable that upper thorax and skull of individual A collapsed later than in the case of the individual C. The distortions of individual A is smaller than in the case of individual C; it is probable that the grave pit (its lower part?) was already at least partially filled with sediment.

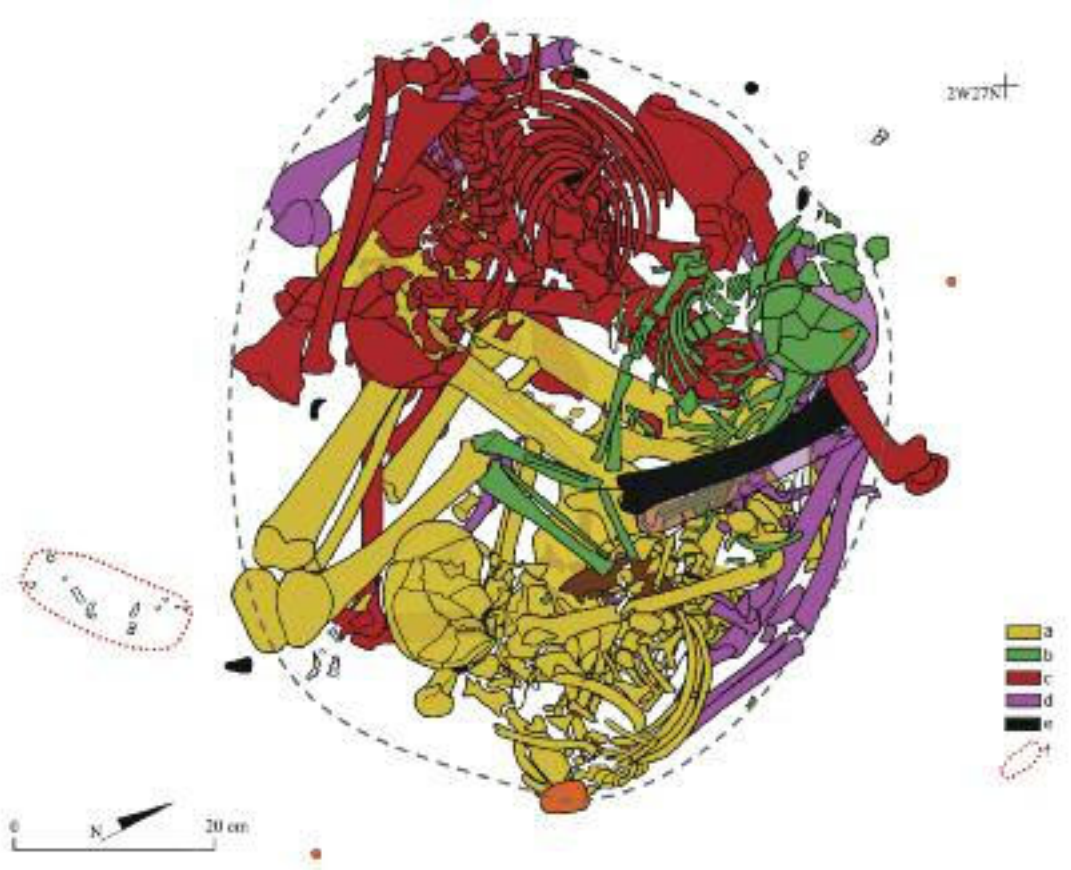

Fig. 6. Dudka, grave VI-2, collective grave with three sitting burials:
a – individual A (young male)
b – individual B (child); c – individual C (young male)
d – individual D (female), secondary burial
e – grave goods
f – cluster of burnt human bones
(W. Gumiński, K. Bugajska)

Fig. 7. Dudka, grave VI-2, view from above on collapsed chests and skulls of two adult males — individual C on left, A on right — and child between them (photo W. Gumiński)

The child was interred in the grave last. Its skull rested against individual C's femur and most of the skeleton was lying on individual A's right leg [Fig. 6]. It is possible that the child was burried at the same time as individual A. The man's skeleton fails to show any indication of later intrusion, while his right leg was placed in an unusual position — tightly bent and placed horizontally with the foot next to the abdominal cavity, not vertically with the knee facing upwards, as was the case with the left leg [Fig. 6]. Such positioning of the leg may have resulted from preparations for the child's burial. The child's skeleton is almost completely preserved in anatomical order, however, minor bones of the hands and feet and three long bones of the left leg and forearm fell down, mainly in the empty space resulting from soft tissue decomposition in the abdominal cavity of individual A [Fig. 6]. The child's thorax and skull, on the other hand, remained in their original position [Figs. 6–7]. This indicates fairly rapid sedimentation in place of the decaying soft tissue. This could be the result of several factors. The child was placed in a semi-sitting position with its head leaning on individual C's femur [Fig. 7]. Such placement prevented the skull and thorax from collapsing forwards, as happened with the both men. The child was also at the highest spot in the grave pit [Fig. 6] and the area around its body filled in at the most rapid pace. It cannot be ruled out that the child was deposited in the pit at a later date than individual A and the pit was filled in immediately after.

Another sitting burial, for which decomposition in the empty space is probable, is a child from grave VI-11. The child's thorax collapsed completely to the pit's bottom. The skull also fell down, but was displaced to the right and front in relation to the bones of thorax and probably turned face downwards as well [Fig. 8]. The long bones of upper and lower extremities were lying flat on the bottom [Fig. 8]. It is difficult to say if the legs, were previously placed with knees upwards and collapsed later or they were already laid flat with knees outwards.

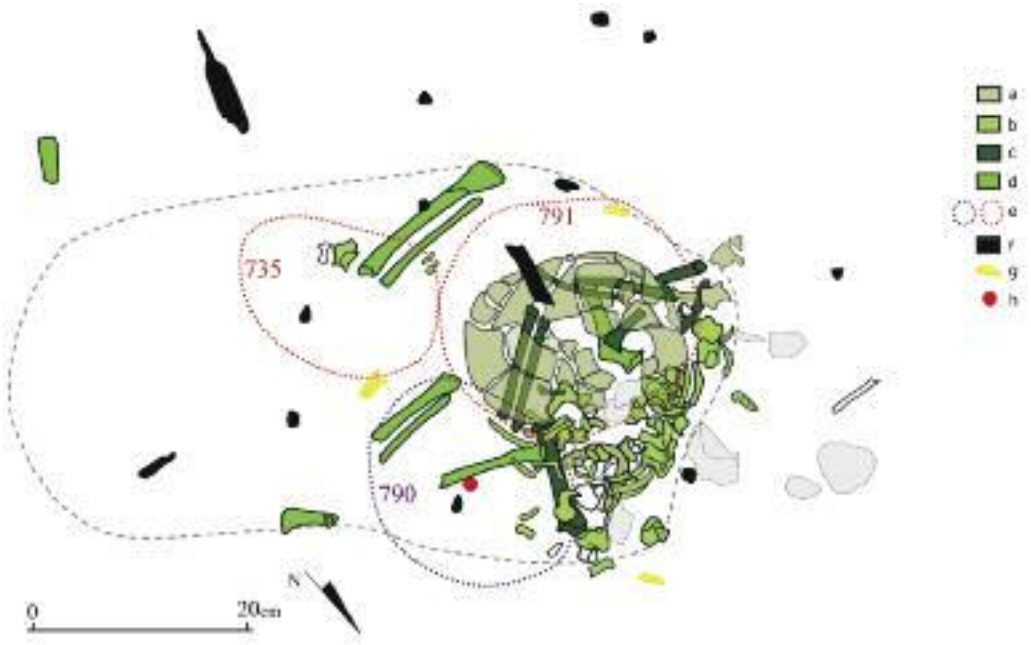

Fig. 8. Dudka, grave VI-11, burial of small child in sitting position:
a – skull; b – chest; c – arms; d – legs; e – cluster of burnt human bones; f – grave goods
g – belemnites; h – lump of ochre (W. Gumiński, K. Bugajska)

A man at grave VI-7 was deposited in a similar position. His thorax and left shoulder collapsed downwards and rightwards [Fig. 9]. The skull fell face down, dragging with it cervical vertebrae, which came off the rest of the spine [Fig. 9]. The skull rests on the left leg, which prevented further rotation. Bones of the limbs did not display much dislocation [Fig. 9]. The grave pit was probably not filled in immediately after the burial, which allowed for the skull to fall forward. Sediment, however, found its way into the pit rapidly enough to relatively quickly stabilise the position of limb and lower thorax bones.

Fig. 9. Dudka, grave VI-7, burial of elderly male in sitting-squatting position,
skull collapsed forwards, bones of left shoulder and upper thorax
collapsed downwards and leftwards (photo W. Gumiński)

Wrapping of secondary burials

Nine graves contained only secondary burials, both cremations and inhumations. Only in three of them, VI-1, VI-10 and VI-15, bones were interred in some sort of container [Fig. 2].

At grave VI-1 the bones of three individuals were found, including three skulls and two post-cranial skeletons. The grave pit, in its upper part in particular, had a large circumference and was surrounded by stones on two sides, south and north. At each level the human remains take up only a part of the pit and the "wall effect" is particularly visible on the west side [Fig. 10] — some of the long bones are in a vertical or nearly vertical position. That indicates that the bones were laid to the grave in a fairly rigid container, probably a quadrangular basket of ca. 40 × 30 × 30 cm.

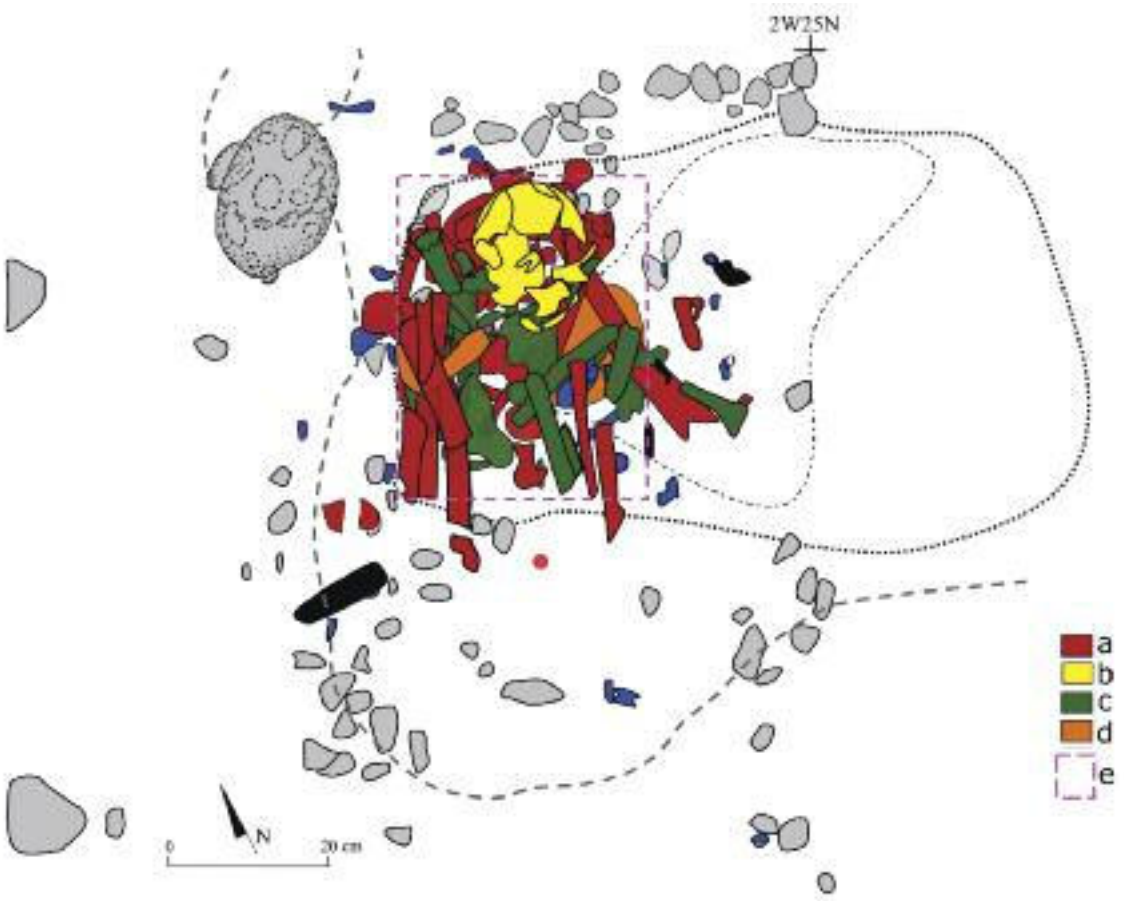

Fig. 10. Dudka, collective grave VI-1, secondary burial of three individuals in quadrangular basket:
a – individual A (male)
b – individual B (female skull)
c – female postcranial skeleton, individual C?
d – individual C (female), skull and mandible
e – outline of container
(W. Gumiński, K. Bugajska)

The grave VI-10 contained a secondary female burial. The skeleton was incomplete, missing among others, the skull and selected long bones. The remains were tightly clustered on a very limited area with fragmented long bones and one part of spine placed vertically [Fig. 11]. Such bone placement suggests they were probably inside a basket with dimensions of 20 × 30 × 30 cm. It is worth noting that some of the bones maintain their anatomical connections, including several cervical vertebrae, the ulna and radius, the calcaneus and the talus of one foot and the metatarsal bones of the other [Fig. 11]. The remains may have been taken from the temporary burial place, when the soft tissue was not completely decomposed. The bones were presumably placed directly in the container used later for deposition in the grave since repackaging would have damaged anatomical connections between bones, especially metatarsal or forearm bones.

Fig. 11. Dudka, grave VI-10, secondary female burial in basket.
Green arrows point to bones found in anatomical order:
top left – radius and ulna
bottom left – metatarsus
middle – calcaneus and talus
right – fragment of spine
(W. Gumiński, K. Bugajska)

Grave VI-15 contained the remains of two men and a dog. The dog bones and the burnt skeleton of one man (individual A) make a tight cluster [Fig. 12], thus they must have been deposited in a small round basket (?) of circumference and height ca. 20 cm. The bones of the dog and the man take up exactly half the space and do not intermix [Fig. 12], suggesting two compartments. The second man (individual B) is represented merely by several unburnt bones, which were most likely not deposited in a container. Forearm bones stuck out perpendicularly between the tightly packed dog bones and the wall of the grave pit [Fig. 12], suggesting they were inserted next to the basket. At the very bottom of the pit were found proximal fragments of the femurs and pelvis of male B, which were deposited right in the middle of the pit underneath both the burnt human bones (individual A), and dog bones. It is thus likely that the remains of individual B were deposited first, followed by the basket with the dog and individual A.

Fig. 12. Dudka, grave VI-15, cremation burial of young man (individual A)
and secondary burial of dog in one basket with compartments (?):
a – view from above
b – view from behind, green arrow points to forearm bones of individual B (young male)
(W. Gumiński, K. Bugajska)

Discussion and summary

Some of the burials at the Dudka cemetery were deposited in wrappings or containers of various kinds. One of the lying primary burials (grave VI-18) was probably wrapped, which may have been necessary to maintain its unusual position — with legs pressed to its chest.

In nearly every grave (VI-13 is the exception), where sitting burials were deposited, the body's decomposition took place in an empty grave pit. That indicates that the graves were not immediately filled in after a burial, but they were probably covered with some kind of lids or constructions. It must be noted that each of the burials indicated a different degree of decomposition in the empty space. The graves may thus have been covered in a different manner each time, using different materials, e.g. logs, tree branches, planks, wicker, bark or leather. Rigidity and durability of such a lid or container determined the speed of sediment seeping into the grave pit. The stage of skeleton disarticulation resulted also from the exact position of the bodies and its relation to the pit walls, since at least some of the bones may have kept one another in place even after soft tissue decomposition. At Dudka, leaving grave pits unfilled was justified, because there were mostly collective graves to which some new individuals were added after a time, as in grave VI-2, or sitting burials were disturbed in order to take out selected bones of particular deceased, as at grave VI-6.

Also interesting are the examples of secondary burials interred in baskets. Each of the containers had a slightly different shape and size, but each was presumably filled to the brim with bones. The example of the female burial at grave VI-10, where anatomical connections between particular bones have survived, indicates that remains were put in the basket at the place of the temporary burial and carried in the same container to the cemetery and finally deposited in it. The remaining bones were presumably left at the place of the temporary burial or they may have been carried (in another container?) to a encampment and kept there. It is, however, important that not all secondary burials were deposited in containers. In the other graves, the bones fill basically the entire space of the grave pit. They thus must have been thrown directly into the pit or deposited in a soft, perishable wrapping, such as a sack. It is possible the deciding factor for using a container (basket?) was the distance the bones were to travel. Taking into account earlier suggestions that some of the Dudka burials were brought there from surrounding islands and encampments,[5] it may be surmised that the remains deposited in baskets were brought in from outside Dudka island.

Bibliography

Bugajska 2014 — K. Bugajska, "Obrządek pogrzebowy łowców-zbieraczy epoki kamienia w południowej Skandynawii i na Niżu Środkowoeuropejskim" (English summary: "Burial practices of hunter-gatherers in the Stone Age of Southern Scandinavia and on the Middle European Plain"), *Przegląd Archeologiczny* 62, pp. 5–70.

Gumiński 1999 — W. Gumiński, "Środowisko przyrodnicze a tryb gospodarki i osadnictwa w mezolicie i paraneolicie na stanowisku Dudka w Krainie Wielkich Jezior Mazurskich" (English summary: "Natural environment — and the mode of economy and settlement in the Mesolithic and Paraneolithic at the Dudka site in the Masurian Lakeland"), *Archeologia Polski* 44.1–2, pp. 31–74.

Gumiński 2014 — W. Gumiński, "Wyposażenie symboliczne w grobach łowców-zbieraczy epoki kamienia na cmentarzysku Dudka na Mazurach" (English summary: "Symbolic equipment in the graves of stone-age hunter-gatherers from Dudka in Mazuria (northeastern Poland)"), *Archeologia Polski* 59.1–2, pp. 121–186.

Gumiński, Bugajska 2015 — W. Gumiński, K. Bugajska, "The children from Szczepanki — why they were separated from the Dudka cemetery, Masuria, NE-Poland", [in:] *Mesolithic in Europe*, ed. P. Arias, M. Ceuto, Oxford (in print).

Nilsson 1998 — L. Nilsson, "Dynamic cadavers: A field-anthropological analysis of the Skateholm II burials", *Lund Archaeological Review* 4, pp. 5–17.

Nilsson 2005–2006 — L. Nilsson, "Setting it straight. A re-analysis of the Mesolithic Barum burial, according to the principles of anthropologie 'de terrain'", *Lund Archaeological Review* 11–12, pp. 37–46.

Nilsson-Stutz 2006 — L. Nilsson-Stutz, "Unwrapping the dead. Searching for evidence of wrappings in the mortuary practices at Zvejnieki", [in:] *Back to the Origin. New Research in the Mesolithic-Neolithic Zvejnieki Cemetery and Environment, Northern Latvia*, ed. L. Larsson, I. Zagorska (= *Acta Archaeologica Lundensia*, Series in 8°, 52), Lund, pp. 217–233.

[5] Gumiński 2014; Gumiński, Bugajska 2015.

Streszczenie

Do ziemi czy do kosza?
Opakowania pochówków na cmentarzysku łowców z epoki kamienia w Dudce na Mazurach (Polska północno-wschodnia)

Stanowisko Dudka położone jest na wyspie nieistniejącego już jeziora Staświn w Krainie Wielkich Jezior Mazurskich [Fig. 1]. Na cmentarzysku odkryto przynajmniej 18 grobów, z których pochodzi minimum 79 osobników [Fig. 2]. Niektóre pochówki składano w różnego rodzaju opakowaniach.

Jeden z pochówków pierwotnych, grób VI-18, został prawdopodobnie owinięty. Dziecko leżało na plecach z nogami zadartymi na klatkę piersiową. O jego owinięciu świadczy przemieszczenie się żeber na zewnątrz, przemieszczenie się drobnych kości na dno między nogi oraz rozsunięcie się kości czołowej i potylicznej. Owinięcie dziecka mogło być niezbędne dla zachowania jego nietypowej pozycji [Fig. 3].

Prawie w każdym grobie (z wyjątkiem VI-13), w którym zostały złożone pochówki siedzące, rozkład ciała przebiegał w pustej przestrzeni jamy grobowej [Fig. 2]. Ciała zmarłych nie były więc od razu zasypywane, ale w jakiś sposób zabezpieczano jamę grobową od góry. Pochówki wskazują na różny stopień rozkładu w pustej przestrzeni. Zabezpieczanie jam grobowych mogło być więc wykonywane na różne sposoby.

Grób VI-6 zawierał pochówek młodej kobiety, który naruszono jeszcze w epoce kamienia. Na dnie jamy leżały kości stóp, miednica i ostatnie kręgi lędźwiowe w nienaruszonym układzie anatomicznym. Klatka piersiowa zapadła się do przodu, ale kości zachowały anatomiczne powiązania między sobą [Fig. 4]. W momencie naruszenia grób mógł być tylko częściowo wypełniony sedymentem, ponieważ brak śladów wkopu, a kości długie i czaszka zostały wyjęte bez naruszania reszty szkieletu.

Z grobu VI-14 pochodzi pochówek mężczyzny siedzącego „po turecku". Czaszka i kręgi szyjne opadły do przodu na prawą stopę [Fig. 5a]. Kości klatki piersiowej oraz lewe ramię zapadły się z kolei na lewo [Fig. 5b]. Przy lewym boku zmarłego leżała czaszka innego osobnika, która mogła być złożona w organicznym pojemniku. Po jego rozłożeniu się kości klatki piersiowej siedzącego mężczyzny mogły wpaść w powstałą tam pustą przestrzeń.

W grobie VI-2 znajdowały się trzy pochówki siedzące, dwóch mężczyzn i dziecka, każdy ułożony w nieco inny sposób [Fig. 6]. Jako pierwszy do jamy grobowej trafił osobnik C i to prawdopodobnie jakiś czas przed pozostałymi zmarłymi. Układ anatomiczny tego szkieletu został zaburzony w największym stopniu. Najpierw na dno jamy opadły kości kończyn, które później, kiedy dokładano kolejnych zmarłych, zostały dodatkowo przesunięte [Fig. 6]. Czaszka osobnika C obróciła się podstawą do góry i razem z klatką piersiową zapadła się do przodu na nogi osobnika A [Fig. 6]. Pusta przestrzeń w tej części jamy pozostawała jeszcze po złożeniu osobnika A, gdyż jego czaszka, górna część klatki piersiowej i prawe ramię zapadły się na lewo w stronę osobnika C [Fig. 7]. Dziecko (osobnik B) złożono do jamy jako ostatnie. Jego szkielet prawie w całości zachowuje pierwotne ułożenie, jedynie drobne kości kończyn opadły w dół, głównie w rejon jamy brzusznej osobnika A [Fig. 6]. Niewielkie przemieszczenia kości dziecka świadczą o dość szybkim wypełnianiu sedymentem tego miejsca, ale częściowo wynikają też z jego półleżącej pozycji [Fig. 6].

Kolejny pochówek siedzący to dziecko z grobu VI-11. Jego klatka piersiowa, kości ramienne i prawdopodobnie kości nóg zapadły się na dno jamy. Czaszka opadła na prawo i obróciła się twarzą do dołu [Fig. 8]. W podobny sposób został ułożony mężczyzna w grobie VI-7. Jego klatka piersiowa zapadła się na prawą stronę, a czaszka do przodu twarzą w dół, pociągając za sobą kręgi szyjne [Fig. 9]. Sedyment dostał się jednak do jamy na tyle szybko, że ułożenie kości kończyn i dolnej części klatki piersiowej pozostało prawie niezaburzone.

W dziewięciu grobach zdeponowano wyłącznie pochówki wtórne, a w trzech z nich szczątki złożono w jakimś pojemniku [Fig. 2]. W grobie VI-1 kości trzech osobników zajmowały tylko niewielką, prostokątną część jamy, a część kości długich ustawiona była pionowo. Umieszczono je zapewne w czworokątnym koszu, który miał ok. 40 × 30 cm w obrysie i ok. 30 cm wysokości [Fig. 10]. W grobie VI-10 kości kobiety tworzyły ścisłe skupisko o owalnym zarysie (20 × 30 cm) i wysokości ok. 30 cm, złożono je zatem zapewne w koszu. Część kości zachowywała anatomiczne powiązania, kosz musiał więc posłużyć do transportu szczątków z miejsca tymczasowego pochówku [Fig. 11]. Trzeci przykład to grób VI-15, gdzie kości psa i przepalony szkielet mężczyzny (osobnik A) tworzą zwarte skupisko i zajmują dokładnie po połowie jamy, musiały być więc zdeponowane w niewielkim koszu o średnicy i wysokości ok. 20 cm, z przegrodą pośrodku [Fig. 12].

Zabezpieczanie grobów z pochówkami siedzącymi jakimiś pokrywami ułatwiało późniejsze manipulacje ze szkieletami i wyciąganie części kości, natomiast umieszczanie pochówków wtórnych w pojemnikach wynikało zapewne z transportu kości z odleglejszych obozowisk na cmentarzysko główne w Dudce.

Karolina Bugajska
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
kara_bugajska@wp.pl

Bartłomiej Kaczyński

REMARKS ON DISC-HEADED PINS OF THE POMERANIAN CULTURE[1]

Abstract: The article discusses one of the most numerous and characteristic classes of artefacts of the Pomeranian culture, namely disc-headed pins. The issues discussed include: research history, formal and stylistic differentiation of the pins, their spatial distribution, and the appearance of their representations on face urns.

The second part of the article is devoted to pins with big bowl-shaped heads. In the light of new material and new chronological approaches, the author presents his views concerning the origin of this type of pins, analyses the contexts of their finds and emphasises their stylistic similarities to other categories of artefacts. As a result of this investigation, a chronology of the studied pins is proposed.

Key words: Pomeranian culture, Early Iron Age, disc-headed pins, Greater Poland

The Early Iron Age was a time of dynamic cultural and settlement changes in what is today Poland. During this period, which spanned between eighth and third centuries BCE, Baltic, Elbe-Havel and Hallstatt influences led within the milieu of the Lusatian culture to the formation of the Pomeranian culture, with its peculiar mortuary rites and a rich and varied inventory of artefacts. As the Pomeranian culture crystallised, artefacts continuing Lusatian designs began to be accompanied by new forms, which soon became the new culture's dominant "index artefacts" and came to constitute its distinguishing feature. Beyond doubt, one such category of artefacts closely associated with the Pomeranian culture are disc-headed pins, commonly found among grave goods and in the iconography of face urns.

We owe multiple presentations of Pomeranian-culture artefacts as well as the core of our knowledge about disc-headed pins (known in German as *Scheibenkopfnadeln*) to late-nineteenth- and early-twentieth-century scholars. Of particular importance is the pioneering work of Gotfryd Ossowski, one of the first people to publicise numerous series of pins from burial grounds of cist (box-grave) and belly-grave cultures.[2] The issues of dating and origins of this category of artefacts were in their turn taken up in the many works by Józef Kostrzewski,[3] whose views and opinions are quoted to this day in descriptions of finds as well as in monographs of settlements and burial grounds. The so far only monograph concerning the Pomeranian culture itself was written by the Berlin archaeologist Ernst Petersen. The conclusions he reached as to the origin and chronology

[1] The article is based on the presentation "Nowe spojrzenie na szpile tarczowate kultury pomorskiej" ("A new look at the disc-headed pins of the Pomeranian culture"), given by the author at the Doctoral Candidates' Conference of Center for Research on the Antiquity of South-eastern Europe, held on 16 April 2015 at the Institute of Archaeology, University of Warsaw.

[2] Ossowski 1879.

[3] Kostrzewski 1920; 1922; 1923.

of the artefacts in question differ from those of Józef Kostrzewski.[4] The great merit of Petersen's work is that it compiles all the Pomeranian-culture disc-headed pins known to archaeologists at the time of its writing and attempts to organise this collection by distinguishing between two categories: iron pins with separate disc-shaped heads (including so-called swan's-neck pins) and flat disc-headed pins. The first category was further split into three kinds: (a) multi-part pins with big discs; (b) multi-part pins with medium-sized discs; and (c) single-part pins, derived from types (a) and (b).[5] Flat pins were in turn split into: (a) iron pins with riveted flat disc-shaped heads, and (b) iron pins with flattened disc-shaped heads.[6]

Among the multiple publications which appeared in the interwar period, worth mentioning are works by Kurt Tackenberg,[7] presenting series of pins retrieved in Lower Silesia, and those by Wolfgang La Baume[8] and Otto Kunkel,[9] which concerned Pomerania.

After World War Two, the question of disc-headed pins was raised predominantly in studies of excavation results, with varying precision of description and quality of analysis. While many mentions were laconic in nature, some in-depth analyses have also appeared.[10] Of most significance among the post-war considerations of the Pomeranian culture are those by Leon Jan Łuka.[11] The subject matter of disc-headed pins was also touched upon in regional studies concerning the Pomeranian culture[12] as well as in general overviews of the prehistory of today's Poland.[13] A first attempt at a systematisation of the category of artefacts with which we are concerned was offered by Sylwester Czopek in his study of the south-eastern areas of the Pomeranian culture.[14] As this overview of major literature on the subject demonstrates, disc-headed pins have not been analysed synthetically since their sole monograph was published by Ernst Petersen in 1929.

Disc-headed pins are not a uniform category. Among known artefacts one can distinguish entirely bronze or iron pieces as well as bimetallic ones (with iron body and bronze head). Diversity is particularly high in the shaping of the upper part of the body and of the head as well as in details of construction. Due to this feature, disc-headed pins could — along with fibulae — prove instrumental in establishing a more precise dating of the Pomeranian culture.[15] Consequently, contrary to suggestions by some of previous researchers, disc-headed pins ought not be treated as a single category of artefacts with common origin and chronology. Instead, the pins in question should be divided into two groups comprising a total of six sub-types.

The principal criterion of division into groups is the shape of the neck. Artefacts of the first group are characterised by a "swan-like bending of the body", so-called swan's neck (Ger. *Schwanenhalsnadeln*). Such pins, with a swan's neck bending and disc-shaped head, I include in group I, which corresponds to type 2_C in Sylwester Czopek's systematisation; it is pins of this kind that are listed in pin chart no. 51 in Ernst Petersen's monograph.[16] Within this group, I delineate four sub-types based on the size, placement and ornamentation of the head.

The Mrowino[17] type contains iron pins with bowl-shaped, round, big heads (4–8 cm in radius), sometimes thickened at the rim. A characteristic feature of this kind of pins are bronze- and golden-plate inlays on the inside of the head, with embossed solar ornamentation [Fig. 1a–e]. The pins were produced by attaching the head onto the body of the pin through a hole in the centre of the

[4] Petersen 1929a, pp. 104–107.
[5] Petersen 1929a, pp. 163–165.
[6] Petersen 1929a, p. 165.
[7] Tackenberg 1922, pp. 3–37; 1926, pp. 121–148.
[8] La Baume 1934.
[9] Kunkel 1931.
[10] Węgrzynowicz 1978, pp. 57, 58; Lorkiewicz, Muzolf 2005, pp. 208–210; Fudzińska, Fudziński 2013, pp. 183, 184.
[11] Łuka 1963; 1966; 1982, pp. 209–223.
[12] Nosek 1946, pp. 21, 22; Różycka 1950, pp. 57–59; Pazda 1970, pp. 108, 109; Chomentowska 1970, p. 216; Jadczykowa 1995, pp. 152–154; Fudziński 2011, pp. 55, 56.
[13] Łuka 1979, pp. 163, 164; Malinowski 1989, p. 726.
[14] Czopek 1992, pp. 62–64, fig. 19.
[15] This fact that has also been noted by Sylwester Czopek.
[16] Cf. note 4 above.
[17] The names for particular sub-types derive from names of places where the first specimen of a type was discovered.

disc. The upper end of the body was then flattened or ended with a cone-shaped nub, securing the connection of both parts. The final stage was placing the embossed plate in the inside of the head. Around 20 pins of this kind have been found throughout the Pomeranian culture area, some of them whole, others fragmented. Most pins were compactly distributed throughout western Greater Poland, where golden-plate inlaid pins dominate. The remaining pins were dispersed unevenly in central and east Pomerania, Lower Silesia, Mazovia and central Poland [Fig. 2a], and were almost exclusively bronze-plate inlaid.

The Gogolewo type groups pins with no inlays, made of iron only and topped with big bowl--shaped discs (rad. 3–7 cm) [Fig. 1f, g]. As a metallurgical survey of one such pin demonstrated, in this sub-type of pins the head was attached to the body by means of welding.[18] The Gogolewo artefacts are a simplified and (judging by the archaeological contexts in which they were discovered) probably later version of the Mrowino type of pins. Only several specimens of Gogolewo pins have been found in burial grounds in Powiśle (Pomezania), Greater Poland and southern Mazovia [Fig. 2b].

In the third sub-type of pins, known as the Skurcz type, the disc-shaped head is small (rad. 1–3 cm) and either flat or convex [Fig. 1k, l]. Some such pins were either made entirely of iron or bronze, in others the body was iron and the head bronze (so-called bimetallic artefacts). The one-metal pins were assembled by welding, much as the Gogolewo pins; in the bimetallic ones, the inside of the bronze head was furnished with a cylindrical or cone-shaped socket which was imbedded into the iron haft. The heads on some of the artefacts of this kind are ornamented with criss-crossing furrows, dividing the disc in either four[19] or six[20] equal parts. Ca. 30 pieces of Skurcz artefacts have been found in the Pomeranian culture area, mainly in Eastern Pomerania, Krajna, the south of Greater Poland, Lower Silesia, Mazovia and central Poland [Fig. 2d].

Pins of the Brzozówiec variety differ from those of the Skurcz type only in the ornamentation of the head, which consists in characteristic notching of the disc's rim [Fig. 1h–j]. Thus ornamented pins are compactly distributed in Greater Poland and in the basin of the middle Oder, with isolated finds in Cuyavia (Kujawy), Mazovia, the Chełmno-Dobrzyń Region and the Iława Lake District [Fig. 2e]. Some pin additionally have a bowl-shaped depression at the centre of the head.[21]

The second group of disc-headed pins is comprised by artefacts with a bend towards the upper end of the body, characteristic of the late Hallstatt and Jastorf culture styles, and reminiscent of an animal's crop (thus the German name for such pins, *Kropfnadeln*). This group of artefact does not have a counterpart in Sylwester Czopek's typology of pins. Ernst Petersen includes them in charts 52a and b as "flat disc-headed pins"[22] (Ger. *flache Scheibennadeln*). Two sub-types may be distinguished in this group.

The first, named Zakrzewo, includes pins which consist of three parts: an iron body with the crop-bend, an iron rivet, and a bronze or iron round, bowl-like disc head [Fig. 1m–o]. The top of the body was flattened, and furnished with an eye through which the disc-shaped head was attached with a rivet. Only four such pins are known within the Pomeranian culture. The pieces were discovered at sites in Lower Silesia, Greater Poland and Krajna [Fig. 2c],

Pins classified within the second, Wytomyśl, sub-type of group II are one-part pieces. The upper part of the iron body is hammered flat into a round, flattened disc [Fig. 1p, r]. Some Wytomyśl pins feature a rivet at the centre of the head, which leads one to conclude that some other elements were attached to some pin heads. As analogous cases in Jastorf culture assemblages suggest,[23] these elements might have been bronze metal plates. Only several pins of this type have been found in eastern Greater Poland and Lower Silesia [Fig. 2f].

[18] Cieślak-Kopyt, Miraś 2013, p. 96; Biborski, Stępiński 2013, pp. 137–142.
[19] E.g. Łonak, Szybowicz, Tomczak 1980, fig. 4:b.
[20] Kostrzewski 1923, note 585.
[21] Jasnosz 1973, fig. 6.
[22] Petersen 1929a, p. 165.
[23] Kołodziejski 1973, p. 122, fig. 5d.

An additional, and very important, source of information about disc-headed pins is the iconography of the Pomeranian culture's face urns. Some of the depictions therein are realistic enough to allow for identification of particular pin types [Fig. 3]. Due to the wide chronological spectrum of the urns, their analysis proves of limited use for establishing the chronology of the pins. Studying depictions on the urns is, however, an invaluable source of knowledge about the way the pins were worn and the gender of the people wearing them.[24]

Disc-headed pins are among the artefacts that were most frequently recorded on the face urns of the Pomeranian culture. Their image was found on 159 vessels.[25] The pins depicted appeared separately (86 times, or 56 % of cases), in a pair (66 times, or 43 % of cases) or in two pairs (2 depictions, or 1 % of cases). Depictions of a separate pin were accompanied by images of a neck adornment (44 cases), ear adornment (17 cases), jingle rattles (13 cases), weaponry (4 cases) or a belt (1 case). A pair of pins was usually depicted with no other artefacts, the exceptions being neck adornment (4 cases), ear adornment (2 cases), weaponry (6 cases), and a belt (2 cases). No noticeable concentration of face urns with a particular number of depicted pins can be discerned. The image of single pins are probably schematic representations of the Mrowino and Gogolewo subtypes of the first group of pins (with big bowl-shaped heads). This might be attested to by the considerable sizes of the images. At times the heads of the pins are decorated with concentric circles, which can be associated with the solar ornamentation of group I pins (of the Mrowino type). The pins appearing in pairs are probably imitations of the Skurcz and Brzozówiec pins, as such engravings are smaller in size. An additional confirmation of this assertion are two representations of a pair of pins,[26] whereby each pin is decorated with a cross, akin to the artefacts found in Greater Poland, Lower Silesia and Mazovia (the Brzozówiec type).

Face urns with pin representations are met almost exclusively in the north-west of the Pomeranian culture area, distributed compactly especially in Eastern Pomerania and Krajna [Fig. 2g]. This spatial range is in clear contrast with the distribution of disc-headed pins themselves. In regions where face urns with engravings of disc-headed pins are absent we observe compact groupings of the pins. This situation is especially apparent in Greater Poland. Above all, this might be seen as an evidence of differences between Pomerania and Greater Poland populations in terms of tradition and rite. The issue was taken up in relation to East Pomeranian artefacts by Leon Jan Łuka.[27] According to him, pins and other artefacts (particularly breastplates) were represented on face urns as replacements for actual valuables, which were not in common use but were only owned by members of certain social groups, serving as markers of their status.[28] In Greater Poland, where Pomeranian culture population was allochthonous, Lusatian traditions were observed, which manifested above all in offering gifts to the deceased in the form of grave goods (grave additions).[29]

Analysing the spatial distribution of disc-headed pins, one is struck by their relatively small regional variation [Fig. 2]. The pins are distributed compactly predominantly in the north-western, western and central regions of the Pomeranian culture area. The pins found throughout the entire area belong to the least formally varied Skurcz type. The types which might be considered regional in character are the Brzozówiec, Wytomyśl and Zakrzewo pins. Brzozówiec pins are found in grave fields in Greater Poland, Cuyavia (Kujawy), Lower Silesia and Mazovia, albeit their area of origin was probably the first of these regions, where they are most widespread. Pins of the Wytomyśl and Zakrzewo types, which feature crop-like bend, are found in Lower Silesia and Greater Poland, and may have been imports or imitations of artefacts common throughout the Jastorf culture area, especially in Brandenburg, Saxony and Thuringia.[30]

[24] Cf. e.g. Kneisel 2001, pp. 292–298.
[25] Compiled from: La Baume 1963; Kwapiński 1999; Kwapiński 2007; Kneisel 2012a.
[26] Kwapiński 1999, p. 32, pl. LI.
[27] Łuka 1968, pp. 68, 69.
[28] This phenomenon was also discussed by Waluś (1979, pp. 224, 226) and Kaczmarek (2005, p. 167).
[29] Łuka 1971, p. 42; 1979, p. 158.
[30] Hachmann 1950, p. 37, map 5; Seyer 1982, p. 15, pls. 3:2, 5:1, 11:1.

Due to the nature of grave goods of the Pomeranian culture,[31] the dating of its disc-headed pins is based predominantly on the chronology of the pottery along with which they are found or the general dating of the sites at which the pins were recorded. Only rarely did the pins co-occur in one context with artefacts well established as chronological markers. These cases include some archaeological treasures from Pomerania and Greater Poland and a number of isolated grave assemblages.

Disc-headed pins are generally dated to phases II and III of Ernst Petersen's chronology,[32] which corresponds to HaD and the early and middle La Tène periods. In the light of the chronological breakup of the Pomeranian culture proposed by Sylwester Czopek, disc-headed pins appear in phases II and III, which synchronise with HaD_2–HaD_3 and HaE (or periods LTA–LTB_1 of La Tène chronology).[33]

Nevertheless, it seems possible to offer a more precise dating for some types of the pins owing to their formal and regional diversity. This applies particularly to the Mrowino, Gogolewo, Brzozówiec as well as Zakrzewo pins, which find their numerous counterparts in the Lusatian area, especially in the Białowice, Górzyca and Silesian groups, as well as in the House Urns culture, Thuringian culture and the Jastorf circle. An analysis of the distribution of each of these pin types against the backdrop of other prehistoric cultures of Eastern Europe and juxtaposing them with the well documented and dated fibulae in the light of new chronological findings promises a prospect of a more precise temporal stratification of this category of pins.[34] In the case of the Skurcz type of pins, in view of their formal simplicity and common occurrence throughout north-western and central Pomeranian culture settlement areas, it will not be possible to establish a chronology more detailed than the general timespan of the Pomeranian culture in these territories. Especially illuminating will be a closer look at the most impressive Mrowino type of pins. In the literature on Early Iron Age, one comes across a number of positions regarding Mrowino pins origin and dating. According to Józef Kostrzewski, these pins with big disc-shaped inlaid heads appeared as imitation of spiral-headed pins.[35] He also pointed to the transformation of formally similar eyeglasses fibulae into cross fibulae of the Tłukomy type.[36] Based on the Mrowino pins' stylistic proximity to the Tłukomy fibulae, Kostrzewski located the chronological position of the former in later HaD. Ernst Petersen derived Mrowino pins unearthed at sites of the Pomeranian culture from artefacts with golden disc-shaped heads, appearing in southern Scandinavia and northern Germany in V OEB (according to Oscar Montelius's chronology).[37] Having analysed all Pomeranian culture disc-headed pins known at the time, he established their chronology to span the late HaD and the entire La Tène period. A different view was voiced by Mirosław Hoffmann, who considered artefacts of this type to be of Jastorf provenience and dated them accordingly to the La Tène period, pointing out analogies in the middle Elbe area from the LTB phase.[38]

A viable genetic prototype of the discussed pins might be the pins with small bowl-shaped heads (Ger. *Schälchenkopfnadeln*, or bowl-headed pins) found in the north of the Western Hallstatt zone and in the areas which upheld cultural contact with it — the river basins of Elbe, Havel and Saale as well as Jutland [Fig. 4]. Pins with such head and a straight body occurred since V OEB. Starting with HaC, a "swan-like" bend of the neck was introduced to Hallstatt fashion. Swan's-neck bowl-headed pins are common in sites dated to Ha_1–HaD_1. A good example is offered by the Niederkaina site, where artefacts of this kind appear in the graveyard's central part, which may be synchronised with HC_2–HD_1.[39] In today's Poland, such pins are discovered in assemblages dated to HaC.[40]

[31] Czopek 1998, pp. 62, 63.
[32] Petersen 1929a, pp. 116–118.
[33] Czopek 1985, pp. 376–378; 1992, pp. 82, 83.
[34] Pins of the Pomeranian and belly-grave cultures are the subject of the author's doctoral dissertation, being prepared at the Faculty of History, University of Warsaw.
[35] Kostrzewski 1923, p. 128.
[36] Kostrzewski 1920, pp. 128, 129.
[37] Petersen 1929a, p. 105.
[38] Hoffmann 2000, pp. 150, 151.
[39] Heyd 1998, pp. 29–31, fig. 9.
[40] Gedl 1991, pp. 85, 86.

Pins with small bowl-shaped heads are particularly widespread on the middle Elbe and lower Saale [Fig. 4]. It is most likely in this area that the pins with big bowl-shape heads developed. Such pieces were unearthed in the Thuringian culture area in the context of artefacts dated to the Flurstedt phase[41] of Martin Claus's regional chronology, which corresponds to the ThC_1–ThC_2 horizons according to Klaus Simon[42] and can be synchronised with the HaD_1–HaD_2 periods. Pins with big bowl-shaped heads reached the Pomeranian culture area via the Białowice group of the Lusatian culture, which remained engaged in intensive cultural and trade contacts with the Thuringian area. These ties are confirmed especially by finds of Thuringian origin from HaD discovered on the middle Oder, namely stirrup-shaped arm bracelets (Ger. *Bronzesteigbügelarmring*)[43] and reverse-twisted torques (Ger. *Wendelring*) with sharp edges (Ger. *Scharflappige*), the latter classified as Form 2 in Ronald Heynowski's typology.[44]

As suggested by artefacts from the middle Oder basin presented over the recent years, pins with a big disc-shaped head, that was lined with a golden or bronze plate – akin to the ones this text is concerned with – were characteristic of the metallurgic production of the Białowice group [Fig. 5]. Of particular importance in this respect is the gord in Wicin (Żary County), where over a dozen pieces of such pins were unearthed. They were discovered in treasures of 1901/1902[45] and 1968,[46] in the context of HaD_3-phase artefacts, including Wicina type decorated-foot fibulae, sharp-edged reverse-twisted torques, stirrup-shaped arm bracelets and diagonally fluted necklaces made from bars of circular cross-section. Apart from that, twelve fragmented pins with big disc-shaped heads were registered in Wicina, within the horizon of the gord's downfall,[47] which according to new research is dated to ca. mid-sixth century BCE[48] [Fig. 5a–h]. Other Mrowino-type pins of the Białowice group were discovered in the HaD-dated treasure from Cielmów (Żary County), along with artefacts including a Strzebielinko-type eyeglasses fibula, three sharp-edged reverse-twisted torques, two diagonally fluted necklaces made from bars of circular cross-section, six spiral bracelets and eight greaves.[49] Three further pins of the discussed kind were recorded in the treasure from Bieszków (Żary County)[50] [Fig. 5i–k]. The treasure comprising ca. 10 kg of metal objects is dated to HaD_3, based predominantly on the presence of an unusual fibula with decorated foot akin to the Wojszyce type.[51] The content of the treasure suggests that it was deposited at the time of the Wicina gord's downfall.[52] A singular head of a Mrowino-type pin was also unearthed in the treasure from Burg-Schloßberg in south Brandenburg in a context of artefacts which also might be dated to the HaD period.[53]

Outside of the Białowice group zone, Mrowino artefacts were also encountered in a Górzyca group graveyard in Cybinka-Bieganów (Słubice County). The pins were recorded in graves 19, 61, 65, 68, 87, 89, 93, 151 and 158.[54] In the last of the assemblages mentioned, the pin co-occurred with a Western-Hallstatt-zone-imported fibula, whose decorated foot and glaze-filled depressions in the bow allow for it to be assigned to the HaD_3 phase.[55] In the remaining assemblages, the pins co-occurred solely with pottery from phase II of the Górzyca group chronology, which corresponds to the HaD_2–LTA time range.[56]

[41] Claus 1941–1942, pp. 69, 70, pl. 9:23, 25.
[42] Simon 1993, pp. 351, 378.
[43] Buck 1979, p. 19, fig. 7; Bukowski 1993, p. 86.
[44] Heynowski 2000, pp.194–196, map 5.
[45] Kossack 1987, pp. 109, 110, fig. 2.
[46] Kołodziejski 1970, p. 8, fig. 6.
[47] Michalak 2010, pp. 148–150, figs. 28–30.
[48] Krąpiec, Szychowska-Krąpiec 2013, pp. 373, 374.
[49] Kossack 1987, pp. 114–118, fig. 3a–c.
[50] Orlicka-Jasnoch 2013, pp. 494, 495, 514, fig. 7:1–3.
[51] Orlicka-Jasnoch 2013, p. 515, fig. 8:3.
[52] Cf. Orlicka-Jasnoch 2013, pp. 507–508.
[53] Götze 1912, pl. 31.
[54] Marcinkian 2010a, pl. XLVI:11, 13, LIII:5, 12, LIV:20, 26, LVI:6, LXI:5, LXV:7, LXVI:15.
[55] Woźniak 2010, p. 50.
[56] Griesa 1982, pp. 19–23.

As this overview of finds from the Białowice and Górzyca groups shows, Mrowino pins appear chiefly during phase HaD_3. Such chronology is indicated by Wicina-type decorated-foot fibulae which occur in the same assemblages. We cannot, however, rule out the possibility that Mrowino pins were also in use during HaD_2.

Isolated bowl-headed pins of Białowice group provenience were also recorded at Lusatian culture sites in Greater Poland and central Poland [Fig. 6]. In the zone of the culture's Eastern-Greater-Poland group, one such artefact was discovered in Kokorzyn (Kościan County).[57] The pin in question contained a golden plate with embossed concentric circles, analogous to ones on the artefacts found in the Wicina gord [Fig. 5 d, g]. In the case of the central-Poland group of the Lusatian culture, the two isolated pins were unearthed in the graveyards in Chojne (Sieradz County), grave 28,[58] and Łagiewniki (Łódź County), grave 10.[59] Both these artefacts were discovered along with pieces of pottery, which, however, cannot be dated more precisely than to Early Iron Age.

Within the Pomeranian culture, a Mrowino-type disc-headed pin was recorded in the context of a Wicina-type decorated-foot fibula only in multi-urn grave no. II in the stone fortification in the village of Nowodwory, nowadays a part of Warsaw (Warszawa-Nowodwory). The pin was found in urn XIII, while the fibula was in urn II.[60] Another fibula from this graveyard, also similar to the Wicina type, was recorded in grave III. The fibulae from this site are dated to HaD_3 and HaD_3/LTA.[61] Unfortunately, Warszawa-Nowodwory notwithstanding, Mrowino pins were discovered in the context of other metal artefacts almost exclusively within treasures. In Mrowino (Ger. Joachimsfeld, Poznań County) a golden metal plate with embossed solar ornamentation and was found separated from its pin, together with a breastplate consisting of 17 rings (14 of which were preserved) joined by a meshed clasp and a hollow bracelet with overlapping ends.[62] The pin found in the treasure from Wielowieś (Ger. Dittersdorf) in the Iława Lake District was uncovered within a similar set of objects. Apart from the iron pin with bowl-shaped thick-edged head, the treasure included, among other artefacts: an iron axe, two meshed clasps (one for a ten-ring, the other for a seven-ring breastplate) and three breastplate rings, a piece of an iron necklace, four bracelets, six spiral bracelets as well as two spiral-headed pins.[63] The Mrowino and Wielowieś treasures date to the HaD phase, as is indicated, above all, by the breastplates, which constitute "index forms" of the Pomeranian culture's classical phase.[64]

Outside of the graveyard in Warszawa-Nowodwory, Mrowino pins have been found in grave assemblages of 21 Pomeranian culture graveyards,[65] predominantly in Pomerania (including Sopieszyno, Wejherowo County, Sulęczyno, Kartuzy County,[66] and Rąty, Kartuzy County[67]), Greater Poland (including Stary Tomyśl, Nowy Tomyśl County, Orle Wielkie, Międzychód County,[68] and Lednogóra, Gniezno County[69]), Lower Silesia (Lasocin, Nowa Sól County,[70]

[57] Petersen 1929a, pl. 12g; Krzyżaniak 1971, p. 209.
[58] Ząbkiewicz-Koszańska 1972, pl. XVI:4.
[59] In the collection of the Museum of Archaeology and Ethnography in Łódź, inv. 2467/D.
[60] Antoniewiczowa 1929, pp. 108, 118, figs. 10, 32.
[61] Woźniak 2010, pp. 44–51.
[62] Durczewski 1950, pp. 41–43, fig. 34.
[63] The full inventory of the Wielowieś treasure is difficult to establish. This paper follows W. Blajer's version (Blajer 2001, p. 369). According to A. Bezzebberg, the treasure comprised: a fragmented bronze necklace with narrowing ends, two bronze meshed breastplate clasps with several breastplate rings, two identically decorated open-ended bracelets made from bronze bar of quadrangular cross-section, a disc-headed iron pin, a spiral-headed bronze pin and an iron socket axe (Bezzenberger 1904, pp. 51–53, figs. 50–53). O. Kleemann lists: four open-ended bracelets of quadrangular cross-section, a spiral bracelet made from a narrow spike-ended bronze band, a disc-headed iron pin, a meshed nine-ring breastplate clasp with three remaining rings and a meshed seven-ring breastplate clasp with three rings (Kleemann 1942, pp. 2–4, figs. 2–7; cf. Waluś 2014, p. 138).
[64] Kamińska 1992, pp. 30–31.
[65] This number is based on data compiled from literature on the Pomeranian culture. Data from museum and archive research have not been considered.
[66] Petersen 1926, fig. 1a, b.
[67] Fudziński, Gładykowska-Rzeczycka 2000, fig. 29c.
[68] Kostrzewski 1923, fig. 485.
[69] Petersen 1929a, pl. 9f.
[70] Petersen 1929b, pp. 197, 198, fig. 1.

Szprotawa, Żagań County[71]) and central Poland (Mierzyn, Piotrków Trybunalski County[72]). Unfortunately, the only information we have about most of these finds, especially the pre-1945 ones, is that they were discovered at a Pomeranian culture graveyard. At best, their descriptions are limited to the presentation of several random artefacts; otherwise, only a short account is given, pointing to the place of discovery. Missing is any information concerning the find's context, which debilitates the possibilities of establishing its chronology. The context of discovery is only known for ca. 30 % of the pins in question.

However, even the analysis of the grave contexts does not provide satisfactory results when it comes to dating the pins. As the fills of these features indicate, the Pomeranian culture population pinned their clothing either with pins or with fibulae (for which precise dating is available). The fact that these two classes of artefacts do not co-occur in grave assemblages renders difficult working out the pins' chronology. Mrowino-type pins were recorded in funerary features along with pottery and small, non-characteristic bronze objects only. Absolutely exceptional in this regard is the Szprotawa site, where an iron knife with a spike on the hilt[73] was recorded in the context of a Mrowino pin with golden plate inlay; this, however, proved insufficient to allow for dating the assemblage. Among the pottery co-occurring with the pins were pieces characteristic of phases II and III in Sylwester Czopek's chronology of the Pomeranian culture.

Considering their analogies within the Białowice group's artefacts, the Mrowino pins of the Pomeranian culture are best dated to the HaD_3 period. An additional argument in favour of this proposition is provided by analogies in decoration between Mrowino pins and the plates of Tłukomy-type fibulae, which are very characteristic of the Pomeranian culture and at the same time – are trustworthily dated to HaD.[74] Also worth noting is the fact that fibulae of this kind are compactly distributed mostly in Greater Poland, where the most impressive of the known Mrowino pins were discovered. This might suggest that under cultural influence from the middle Oder basin, Pomeranian culture "workshops" appeared in this region, which produced Mrowino pins and Tłukomy-type cross fibulae.[75] It is most probably via the "workshops" of Greater Poland that pins with big disc-shaped heads spread to Pomerania, Cuyavia (Kujawy), Mazovia and central Poland. Pomeranian-Białowice contacts find additional confirmation in other products from the middle Oder basin being commonly recorded in Pomeranian culture assemblages. These include: pear pendants,[76] Wicina-type fibulae and pins with cone-shaped profile-edged heads.[77]

Disc-headed pins were in use in the Pomeranian culture presumably until the LTA period. This chronology is attested to by grave 4 in the Janina graveyard (Busko County). The inventory of this assemblage includes an iron disc, which was probably the head of a Mrowino-type pin,[78] along with an animal-foot-shaped fibula from the LTA phase and a knife with a spike on the hilt.[79]

The mapping of Mrowino-type disc-headed pins, Tłukomy-type cross fibulae and Wicina-type decorated foot fibulae, which represent the chronological horizon of the late HaD until the early LTA periods, allows for a relatively precise delineation of the range of the Pomeranian culture at the beginning of the late pre-Roman period [Fig. 6].

The proposition to derive the Pomeranian culture's disc-headed pins from the Elbe-Saale area is well in agreement with our knowledge of the cultural and trade contacts which led to the development of the Pomeranian culture's most characteristic features, namely house urns[80] and box graves (cists).[81]

[71] Petersen 1929b, pp. 208, 209, fig. 9:6.
[72] In the collection of Count Antoni Ostrowski Museum in Tomaszów Mazowiecki.
[73] Petersen 1929b, pp. 208, 209, fig. 9:6, 7.
[74] Gedl 1993, p. 160; 2004, pp. 133–134.
[75] This hypothesis was previously suggested by M. Gedl (Gedl 1993, p. 160).
[76] Andrzejowska 1981, p. 195.
[77] Buck 1979, p. 135; Marcinkian 2010b, pp. 109–110, fig. 27, 29:3, 4.
[78] The artefact has gone missing. The fibula and the knife are in the collection of the State Archaeological Museum in Warsaw.
[79] Nosek 1946, pl. XXII:1, 5, 9.
[80] Kneisel 2012b, fig. 12.
[81] Adamik 2012, fig. 28.

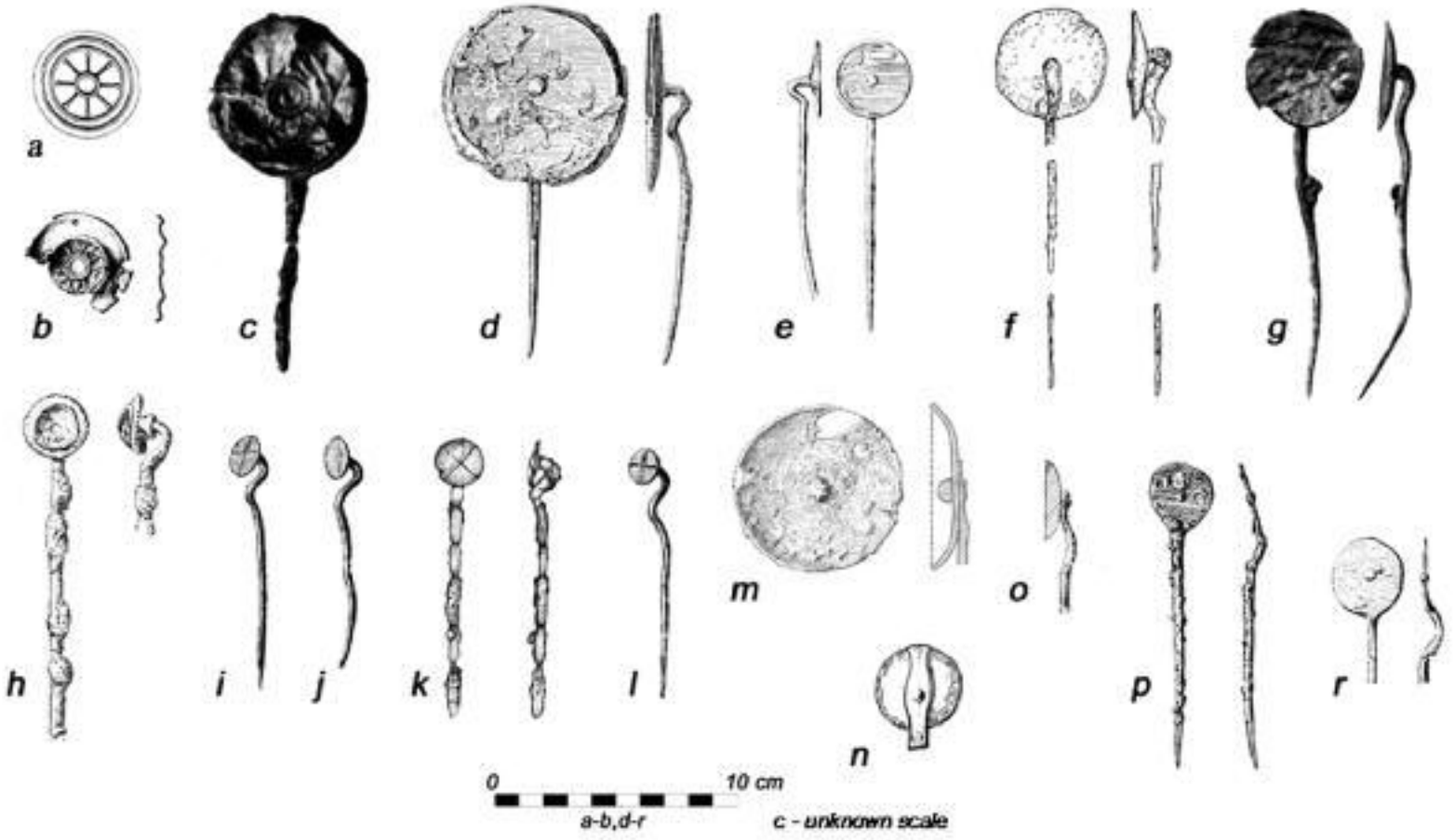

Fig. 1. Selected disc-headed pins of the Pomeranian culture: a–e – Mrowino type; f–g – Gogolewo type; h–j – Brzozówiec type; k–l – Skurcz type; m–o – Zakrzewo type; p–r – Wytomyśl type (a – Mrowino, Poznań County [Kostrzewski 1923, fig. 444]; b – Brzezie, Pleszew County [Pudełko 1995, fig. 7a]; c – Lednogóra, Gniezno County [Petersen 1929a, pl. 9f]; d – Lasocin, Nowa Sól County [Petersen 1929b, fig. 1]; e – Szprotawa, Żagań County [Petersen 1929b, fig. 9:6]; f – Gulin-Młyn, Radom County [Cieślak-Kopyt, Miraś 2013, pl. XXIII:a]; g – Gogolewo, Tczew County [Ossowski 1879, pl. XXXI:6]; h – Oborniki Wielkopolskie, Oborniki Wielkopolskie County [Jasnosz 1973, fig. 6]; i – Budzicz, Trzebnica County [Tackenberg 1926, fig. 13]; j – Ligota Górna, Opole County [Tackenberg 1926, fig. 12]; k – Grodzisk Mazowiecki, Grodzisk Mazowiecki County [Kaczyński 2011, pl. XXXIII:3]; l – Budzicz, Trzebnica County [Tackenberg 1926, fig. 14]; m – Borów Polski, Nowa Sól County [Tackenberg 1922, fig. 10]; n – Milicz, Milicz County [Petersen 1929b, fig. 16:5]; o – Wrocław – Pracze Odrzańskie district [Petersen 1929b, fig. 13:2]; p – Sułów Mały, Rawicz County [Tackenberg 1926, fig. 10]; r – Wioska, Góra County [Tackenberg 1922, fig. 4]; compilation B. Kaczyński)

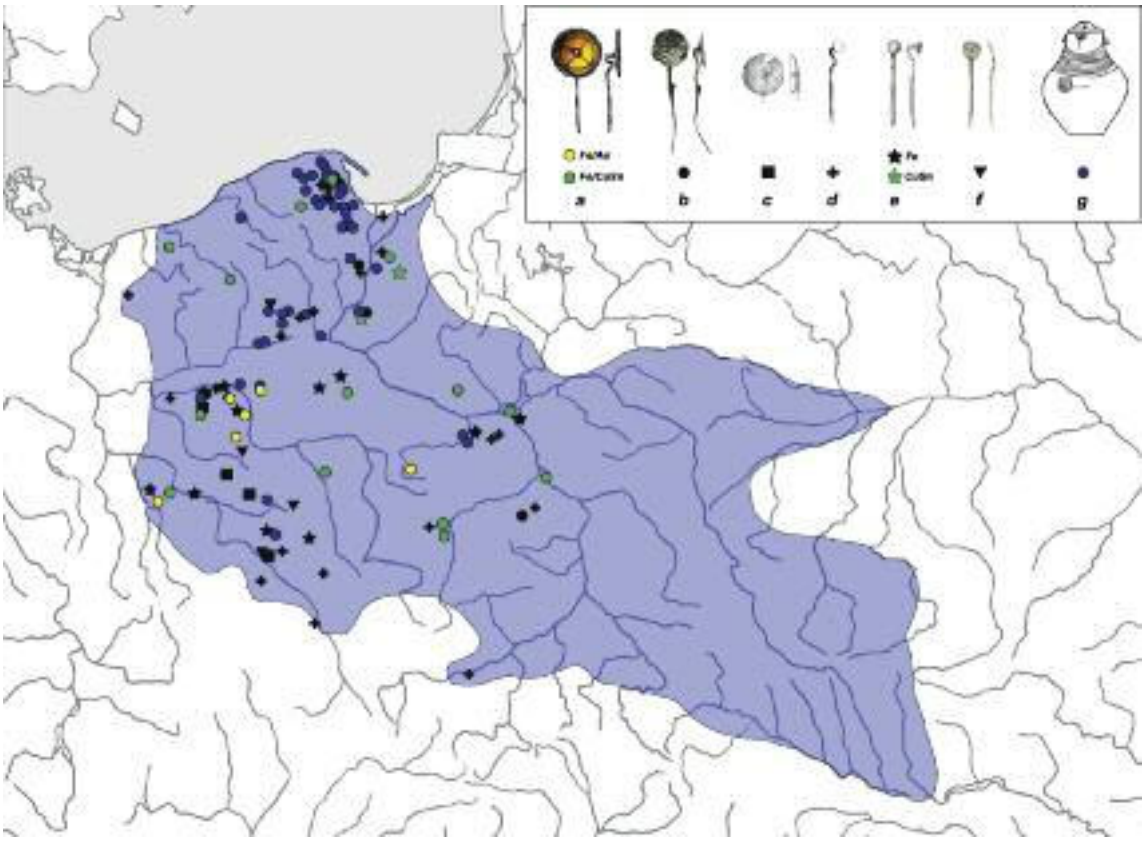

Fig. 2. Spatial range of disc-headed pins and their representations on Pomeranian culture pottery: a – Mrowino type; b – Gogolewo type; c – Zakrzewo type; d – Skurcz type; e – Brzozówiec type; f – Wytomyśl type; g – urns with representations of pins (map B. Kaczyński)

Fig. 3. Examples of representations of pins on face urns and their physical counterparts: a – face urn from Tłukomy, Piła County (Berendt 1879, pl. XIV:64); b – Skurcz/Brzozówiec type pins; c – face urn from Żarnowiec, Puck County (Kwapiński 1999, pl. CXCVIII); d – Mrowino type pin with jingle rattles

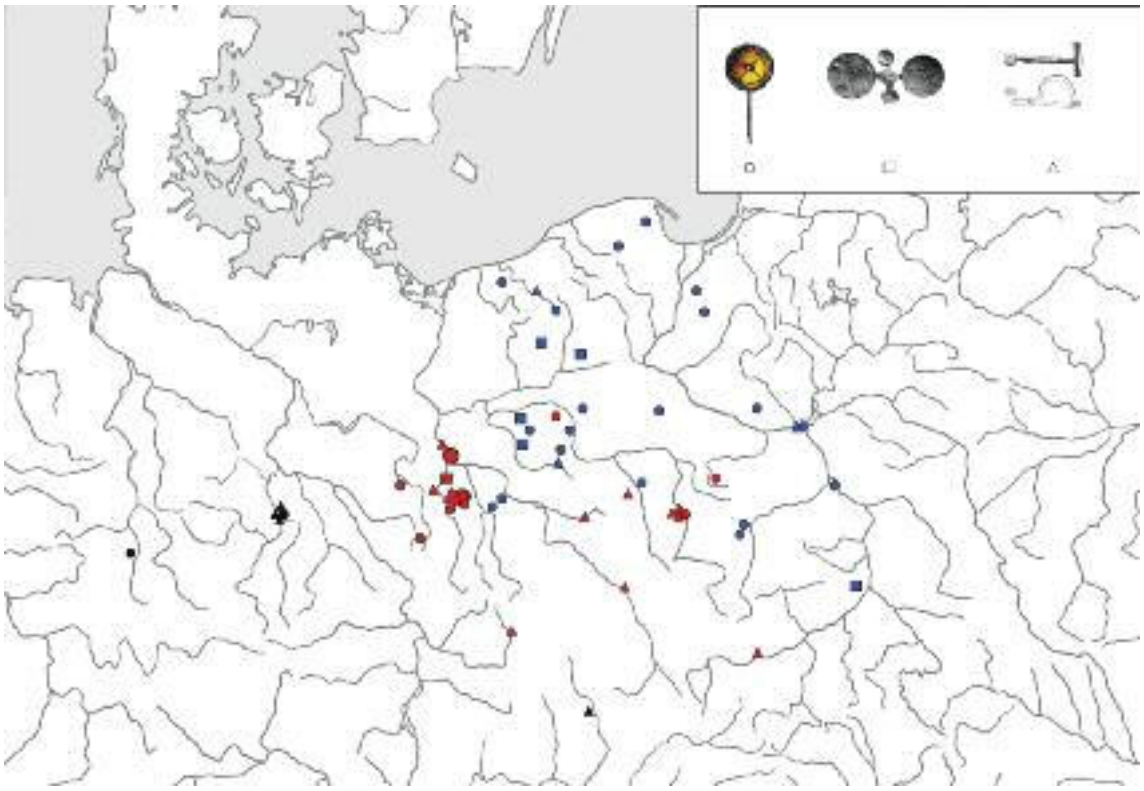

Fig. 4. Spatial range of bowl-headed pins (Ger. *Schalchenkopfnadeln*).[82] Red dots – straight body pins; black dots – swan's-neck pins (map B. Kaczyński)

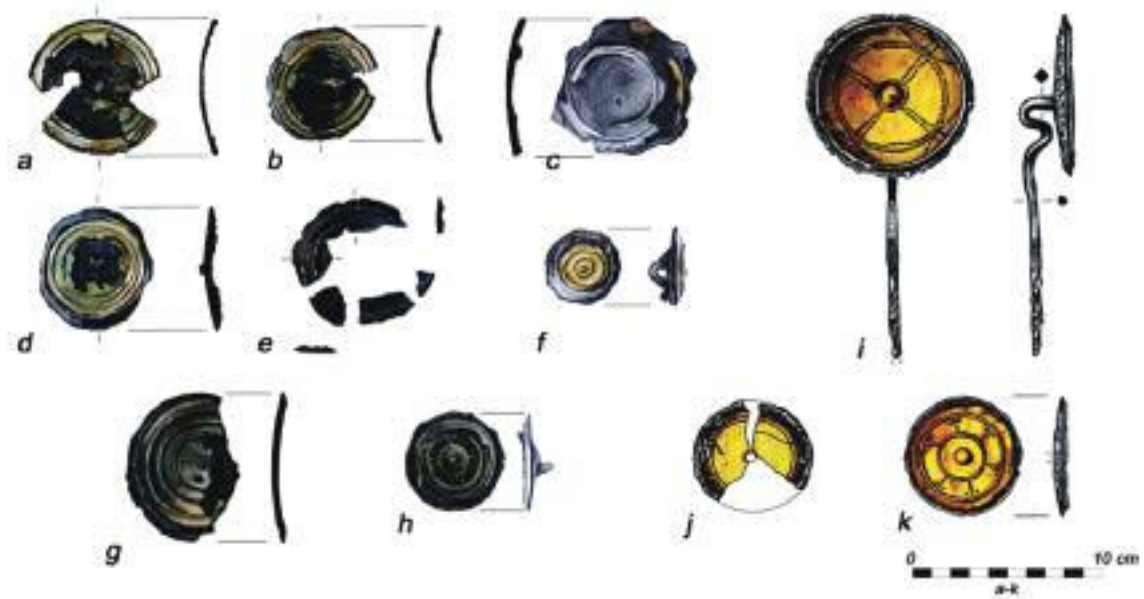

Fig. 5. Selected Mrowino type pins from the middle Oder region: a–h – gord in Wicina, Żary County (Michalak 2010, figs. 29:1, 3–5, 30:1–4); i–k – treasure from Bieszków, Żary County (Orlicka-Jasnoch 2013, fig. 7:1–3)

[82] Based on Badou 1960, Tackenberg 1971; Laux 1976; Řihovský 1979; Buck 1979; Peschel 1990; Gedl 1991; Heyd 1998, with the author's additions.

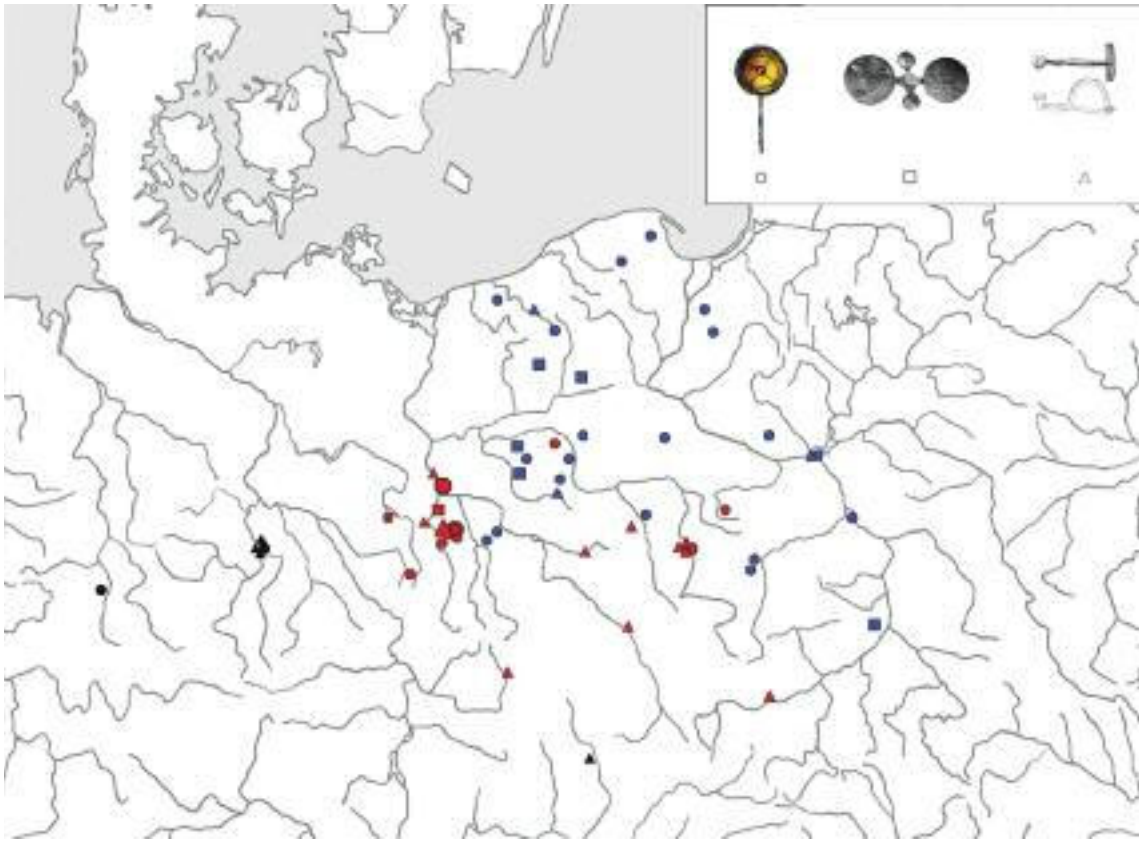

Fig. 6. Spatial range of Mrowino-type pins (circles), Tłukomy-type cross fibulae[83] (squares), and Wicina-type decorated-foot fibulae[84] (triangles). Blue symbols – artefacts from the Pomeranian culture sites; red symbols – artefacts from the Lusatian culture sites; black symbols – artefacts from sites of other cultures (map B. Kaczyński)

Bibliography

ADAMIK 2012 — J. ADAMIK, *Idea skrzyni kamiennej jako formy grobu na terenie ziem polskich w późnej epoce brązu i wczesnej epoce żelaza*, Rzeszów.

ANDRZEJOWSKA 1981 — M. ANDRZEJOWSKA, "Kolczyki ludności kultury pomorskiej", *Wiadomości Archeologiczne* 46/2, pp. 185–229.

ANTONIEWICZOWA 1929 — J. ANTONIEWICZOWA, "Groby ciałopalne w obstawie kamiennej w Nowodworach koło Warszawy", *Światowit* 13, pp. 95–148.

BADOU 1960 — E. BADOU, *Die regionale und chronologische Einteilung der jüngeren Bronzezeit im nordischen Kreis*, Stockholm.

BERENDT 1879 — G. BERENDT, "Nachtrag zu den Pommerellischen Gesichtsurnen", *Schriften der Physikalisch-Ökonomischen Gesellschaft zu Königsberg* 13, pp. 113–160.

BEZZENBERGER 1904 — A. BEZZENBERGER, *Analysen vorgeschichtlicher Bronzen Ostpreussens*, Königsberg.

[83] Considered were solely Tłukomy-type cross fibulae; due to differences in technology and style, not included was the Sinołęka type (cf. GEDL 1993, p. 153).

[84] After WOŹNIAK 2010, pp. 50–51, map 1.

Biborski, Stępiński 2013 — M. Biborski, J. Stępiński, "Badania metaloznawcze przedmiotów żelaznych", [in:] M. Cieślak-Kopyt, I. Miraś, *Gulin-Młyn, stanowisko 1. Cmentarzyska kultury pomorskiej i przeworskiej w regionie radomskim* (= *Ocalone Dziedzictwo Archeologiczne* 3), Pękowice – Radom, pp. 137–151.

Blajer 2001 — W. Blajer, *Skarby przedmiotów metalowych z epoki brązu i wczesnej epoki żelaza na ziemiach polskich*, Cracow.

Buck 1979 — D.-W. Buck, *Die Billendorfer Gruppe. Textband* (= *Veröffentlichungen des Museums für Ur- und Frühgeschichte* 12), Potsdam.

Bukowski 1993 — Z. Bukowski, "Tak zwany szlak bursztynowy z wczesnej epoki żelaza w międzyrzeczu Łaby i Wisły w świetle skarbów z importami i bursztynem", [in:] *Miscellanea archeologica Thaddaeo Malinowski dedicata quae Franciscus Rożnowski redigendum curavit*, Słupsk – Poznań, pp. 73–94.

Chomentowska 1970 — B. Chomentowska, "Cmentarzyska kultury pomorskiej na Mazowszu", *Światowit* 31, pp. 189–280.

Cieślak-Kopyt, Miraś 2013 — M. Cieślak-Kopyt, I. Miraś, *Gulin-Młyn, stanowisko 1. Cmentarzyska kultury pomorskiej i przeworskiej w regionie radomskim* (= *Ocalone Dziedzictwo Archeologiczne* 3), Pękowice – Radom.

Claus 1941–1942 — M. Claus, *Die Thüringische Kultur der älteren Eisenzeit* (= *Irmin* 2/3), Jena.

Czopek 1985 — S. Czopek, "Problematyka badawcza południowo-wschodniej strefy kultury pomorskiej", *Archeologia Polski* 30/2, pp. 367–410.

Czopek 1992 — S. Czopek, *Południowo-wschodnia strefa kultury pomorskiej*, Rzeszów.

Czopek 1998 — S. Czopek, "Uwagi o stanie badań nad kulturą pomorską", [in:] *20 lat badań w Masłomęczu*, I: *Weterani*, ed. A. Kokowski, Lublin, pp. 59–70.

Durczewski 1950 — D. Durczewski, "Skarby halsztackie z Wielkopolski", *Przegląd Archeologiczny* 13, pp. 7–108.

Fudzińska, Fudziński 2013 — E. Fudzińska, P. Fudziński, *Wielokulturowe cmentarzysko w Nowym Targu, stan. 6, gm. Stary Targ*, Malbork.

Fudziński 2011 — P. Fudziński, *Kultura pomorska na Pojezierzu Starogardzkim* (= *Monografie Instytutu Archeologii Uniwersytetu Łódzkiego* 8), Łódź.

Fudziński, Gładykowska-Rzeczycka 2000 — M. Fudziński, J. J. Gładykowska-Rzeczycka, *Cmentarzysko ludności kultury pomorskiej w Rątach, gm. Somonino*, Gdańsk.

Gedl 1991 — M. Gedl, *Die Hallstatteinflüsse auf den polnischen Gebieten in der Früheisenzeit* (= *Prace Archeologiczne* 48), Cracow.

Gedl 1993 — M. Gedl, "Zapinki krzyżowe w kulturze pomorskiej", [in:] *Miscelanea archaeologica Thaddaeo Malinowski dedicata quae Franciscus Rożnowski redigendum curavit*, Słupsk –Poznań, pp. 153–165.

Gedl 2004 — M. Gedl, *Fibeln in Polen* (= *Prähistorische Bronzefunde* XIV/10), Stuttgart.

Götze 1912 — A. Götze, "Der Schlossberg bei Burg im Spreewald", *Praehistorische Zeitschrift* 4, pp. 264–350.

Griesa 1982 — S. Griesa, *Die Göritzer Gruppe* (= *Veröffentichungen des Museums für Ur- und Frühgeschichte* 16), Potsdam.

Hachmann 1950 — R. Hachmann, "Studien zur Geschichte Mitteldeutschlands während der älteren Latènezeit", *Archaeologia Geographica* 1/3, pp. 33–48.

Heyd 1998 — V. Heyd, *Das prähistorische Gräberfeld von Niederkaina bei Bautzen*, III (= *Veröffentlichungen des Landesamtes für Archäologie mit Landesmuseum für Vorgeschichte* 26), Stuttgart.

Heynowski 2000 — R. Heynowski, *Die Wendelringe der späten Bronze- und der frühen Eisenzeit* (= *Universitätforschungen zur prähistorischen Archäologie* 64), Bonn.

Hoffmann 2000 — M. J. Hoffmann, *Kultura i osadnictwo południowo-wschodniej strefy*

nadbałtyckiej w I tys. p.n.e. (= *Rozprawy i Materiały Ośrodka Badań Naukowych im. Wojciecha Kętrzyńskiego w Olsztynie* 191), Olsztyn.

Jadczykowa 1995 — I. Jadczykowa, "Lateńska faza kultury pomorskiej w Polsce Środkowej", [in:] *Kultura pomorska i kultura grobów kloszowych. Razem czy osobno? Materiały z konferencji w dniach 24–26 listopada 1993*, ed. T. Węgrzynowicz, M. Andrzejowska, J. Andrzejowski, E. Radziszewska, Warsaw, pp. 141–158.

Jasnosz 1973 — S. Jasnosz, "Grób skrzynkowy ludności kultury pomorskiej w Obornikach Wlkp.", *Fontes Archaeologici Posnanienses* 24 (1973), pp. 154–161.

Kaczmarek 2005 — M. Kaczmarek, "Uwagi o wczesnej fazie kultury pomorskiej w Wielkopolsce", [in:] *Aktualne problemy kultury pomorskiej*, ed. M. Fudziński, H. Paner, Gdańsk, pp. 159–182.

Kaczyński 2011 — B. Kaczyński, *Zespół nekropoli kultury grobów kloszowych z powiatu grodziskiego, Grodzisk Mazowiecki, stan. X, XII, XVIII, oraz Kozery, stan. VII* (unpublished MA thesis, Institute of Archaeology, University of Warsaw).

Kamińska 1992 — M. Kamińska 1992, "Napierśniki kultury pomorskiej i ich wyobrażenia na popielnicach twarzowych", *Wiadomości Archeologiczne* 52/1, pp. 17–42.

Kleemann 1942 — O. Kleemann, "Die Bronzefunde von Osterode und Dittersdorf Kr. Mohrungen Ostp.", *Altpreussen* 7/1, pp. 2–7.

Kneisel 2001 — J. Kneisel, "Zur Verbreitung geschlechtsspezifischer Motive in der Gesichtsurnenkultur", [in:] *Sztuka epoki brązu i wczesnej epoki żelaza w Europie Środkowej*, ed. B. Gediga, A. Mierzwiński, W. Piotrowski (= *Biskupińskie Prace Archeologiczne* 2), Wrocław – Biskupin, pp. 291–306.

Kneisel 2012a — J. Kneisel, *Anthropomorphe Gefäße in Nord- und Mitteleuropa während der Bronze- und Eisenzeit. Studien zu den Gesichtsurnen — Kontaktzonen, Chronologie und sozialer Kontext* (= *Studien zur Archäologie in Ostmitteleuropa* 7.1), Bonn.

Kneisel 2012b — J. Kneisel, "Gesichtsurnen und ihre Kopfbedeckung. Neue Erkenntnisse zum Phänomen der Gesichtsurnen im nordeuropäischen Kontext", [in:] *Peregrinationes archaeologicae in Asia et Europa Joanni Chochorowski dedicatae*, ed. W. Blajer, Cracow, pp. 39–56.

Kołodziejski 1970 — A. Kołodziejski, "Najeźdzcy zjawili się jesienią", *Z Otchłani Wieków* 36, pp. 5–10.

Kołodziejski 1973 — A. Kołodziejski, "Badania cmentarzyska w Domaniowicach, pow. Głogów, w latach 1964–1971", *Sprawozdania Archeologiczne* 25, pp. 113–134.

Kossack 1987 — G. Kossack, "Der Bronzehort von Wicina [Witzen] und seine Stellung im Kultursystem der frühen Eisenzeit", *Folia Praehistorica Posnaniensia* 3, pp. 107–134.

Kostrzewski 1920 — J. Kostrzewski, "Przyczynki do poznania kultury grobów skrzynkowych wczesnej epoki żelaza. Część I", *Przegląd Archeologiczny* 1, pp. 112–137.

Kostrzewski 1922 — J. Kostrzewski, "Przyczynki do poznania kultury grobów skrzynkowych z wczesnej epoki żelaznej. Część II", *Przegląd Archeologiczny* 2, pp. 25–59.

Kostrzewski 1923 — J. Kostrzewski, *Wielkopolska w czasach przedhistorycznych*, wyd. II, Poznań.

Krąpiec, Szychowska-Krąpiec 2013 — M. Krąpiec, E. Szychowska-Krąpiec, "Analiza dendrochronologiczna drewna z badań grodziska w Wicinie w latach 2008–2012", [in:] *Wicina. Badania archeologiczne w latach 2008–2012 oraz skarb przedmiotów pochodzących z Wiciny*, Zielona Góra, pp. 371–418.

Krzyżaniak 1971 — L. Krzyżaniak, "Ze studiów nad kulturą pomorską w Wielkopolsce", [in:] *Materiały do prahistorii ziem polskich*, IV: *Epoka brązu i wczesna epoka żelaza*, 1: *Materiały kultury łużyckiej i kultury pomorskiej*, ed. W. Hensel, Warsaw, pp. 195–239.

Kunkel 1931 — O. Kunkel, *Pommersche Urgeschichte in Bildern*, Stettin.

Kwapiński 1999 — M. Kwapiński, *Korpus kanop pomorskich*, I: *Pomorze*, Gdańsk.

Kwapiński 2007 — A. Kwapiński, *Korpus kanop pomorskich*, II: *Polska środkowa i południowo-zachodnia*, Gdańsk.

La Baume 1934 — W. La Baume, *Urgeschichte der Ostgermanen*, Gdańsk.

La Baume 1963 — W. La Baume, *Die Pommerelischen Gesichtsurnen* (= *Kataloge vor- und frühgesichichtlicher Altertümer* 17), Mainz.

Laux 1976 — F. Laux, *Die Nadeln in Niedersachsen* (= *Prähistorische Bronzefunde* XIII/4), Munich.

Lorkiewicz, Muzolf 2005 — W. Lorkiewicz, B. Muzolf, "Cmentarzyska w Konstantynowie-Ignacewie st. 18 oraz Grabku st. 11, woj. łódzkie, na tle cmentarzysk pomorsko-kloszowych z terenów Polski środkowej", [in:] *Aktualne problemy kultury pomorskiej*, ed. M. Fudziński, H. Paner, Gdańsk, pp. 183–212.

Łonak, Szybowicz, Tomaczak 1980 — W. Łonak, B. Szybowicz, E. Tomaczak, "Cmentarzysko kultury pomorskiej w Pawłowicach Namysłowskich, woj. Opole", *Silesia Antiqua* 22, pp. 39–52.

Łuka 1963 — L. J. Łuka, "O skarbach kultury pomorskiej na Pomorzu Gdańskim", [in:] *Munera archaeologica Iosepho Kostrzewski quinquagesimum annum optimarum artium studiis deditum peragenti ab amicis collegis discipulis oblata*, ed. K. Jażdzewski, W. Hensel, W. Kočka, Poznań , pp. 231–252.

Łuka 1966 — L. J. Łuka, *Kultura wschodniopomorska na Pomorzu Gdańskim*, I (= *Biblioteka Archeologiczna* 19), Wrocław – Warsaw – Cracow.

Łuka 1968 — L. J. Łuka, "Obrządek pogrzebowy u plemion kultury wschodniopomorskiej – Część I", *Pomorania Antiqua* 2, pp. 33–74.

Łuka 1971 — L. J. Łuka, "Obrządek pogrzebowy ludności kultury wschodniopomorskiej na Pomorzu Gdańskim – Część II", *Pomorania Antiqua* 3, pp. 21–100.

Łuka 1979 — L. J. Łuka, "Kultura wejherowsko-krotoszyńska", [in:] *Prahistoria ziem polskich*, IV: *Od środkowej epoki brązu do środkowego okresu lateńskiego*, ed. J. Dąbrowski, Z. Rajewski, Wrocław – Warsaw – Cracow – Gdańsk, pp. 147–168.

Łuka 1982 — L. J. Łuka, "Metalurgia brązu w kulturze wschodniopomorskiej", *Pamiętniki Muzeum Miedzi w Legnicy* 2, pp. 209–223.

Malinowski 1989 — T. Malinowski, "Kultura pomorska", [in:] *Pradzieje Ziem Polskich*, I/II, ed. J. Kmieciński, Warsaw – Łódź, pp. 716–753.

Marcinkian 2010a — A. Marcinkian, *Ziemia Lubuska w dobie cywilizacji łużyckiej. Część 1 – katalogowa*, Zielona Góra.

Marcinkian 2010b — A. Marcinkian, *Ziemia Lubuska w dobie cywilizacji łużyckiej. Część 2 – analityczna*, Zielona Góra.

Michalak 2010 — A. Michalak, "Zabytki metalowe z grodziska ludności kultury łużyckiej w Wicinie", [in:] *Wicina. Katalog zabytków metalowych*, ed. A. Michalak, A. Jaszewska, Zielona Góra, pp. 21–53.

Nosek 1946 — S. Nosek, *Kultura grobów skrzynkowych i podkloszowych w Polsce południowo-zachodniej* (= *Prace Archeologiczne* 3), Cracow.

Orlicka-Jasnoch 2013 — J. Orlicka-Jasnoch, "Skarb przedmiotów brązowych i żelaznych z Bieszkowa, gm. Jasień", [in:] *Wicina. Badania archeologiczne w latach 2008–2012 oraz skarb przedmiotów pochodzących z Wiciny*, Zielona Góra, pp. 491–538.

Ossowski 1879 — G. Ossowski, *Prusy Królewskie*, Cracow.

Pazda 1970 — S. Pazda, "Ze studiów nad kulturą wschodniopomorską na Dolnym Śląsku", *Archeologia Polski* 15, pp. 89–113.

Peschel 1990 — K. Peschel, *Die Billendorfer Kultur westlich der Elbe* (= *Veröffentlichungen des Landesmuseums für Vorgeschichte Dresden* 21), Berlin.

Petersen 1926 — E. Petersen, "Beitrag zur Kenntnis der ostgermanischen Geräte und Schmuckgegenstände aus der frühen Eizenzeit", *Blätter für Deutsche Vorgeschichte: Zeitschrift der Danziger Gesellschaft für Deutsche Vorgeschichte* 4, pp. 27–33.

Petersen 1929a — E. Petersen, *Die frühgermanische Kultur in Ostdeutschland und Polen*, Berlin.

Petersen 1929b — E. Petersen, "Neue Ergebnisse über die frühgermanische Kultur in Schlesien", *Altschlesien* 2, pp. 196–240.

Pudełko 1995 — E. Pudełko, "Materiały kultury pomorskiej z badań ratowniczych lewobrzeża dolnej Prosny", [in:] *Kultura pomorska i kultura grobów kloszowych. Razem czy osobno? Materiały z konferencji w dniach 24–26 listopada 1993*, ed. T. Węgrzynowicz, M. Andrzejowska, J. Andrzejowski, E. Radziszewska, Warsaw, pp. 281–298.

Różycka 1950 — T. Różycka, "Wyroby żelazne kultury łużyckiej i pomorskiej na Śląsku", *Silesia Antiqua* 2, pp. 49–102.

Řihovský 1979 — J. Řihovský, *Die Nadeln in Mähren und im Ostalpengebiet (von der mittleren Bronze- bis zur älteren Eisenzeit)* (= *Prähistorische Bronzefunde* XIII/5), Munich.

Seyer 1982 — H. Seyer, *Siedlung und archäologische Kultur der Germanen im Havel-Spree-Gebiet in der Jahrhunderten vor Beginn u. Z.* (= *Schriften zur Ur- und Frühgeschichte* 34), Berlin.

Simon 1993 — K. Simon, "Zur Chronologie von Grabinventaren der Thüringischen Kultur in der Späthallstattzeit", *Bericht der Römisch-Germanischen Kommission* 74, pp. 346–390.

Tackenberg 1922 — K. Tackenberg, "Neue schlesische Funde der frühgermanischen Zeit", [in:] *Festschrift zur Hundertjahrfeier der Sängerschaft Leopoldina*, Breslau, pp. 3–37.

Tackenberg 1926 — K. Tackenberg, "Die frühgermanische Kultur in Schlesien", *Altschlesien* 1, pp. 121–156.

Tackenberg 1971 — K. Tackenberg, *Die jüngere Bronzezeit in Nordwestdeutschland*, I: *Die Bronzen*, Hildesheim.

Waluś 1979 — A. Waluś, "Wytwórczość metalurgiczna kultury pomorskiej a kultury kurhanów zachodniobałtyjskich", [in:] *Problemy kultury pomorskiej*, ed. T. Malinowski, Koszalin, pp. 219–228.

Waluś 2014 — A. Waluś, "Zabytki metalowe kultury kurhanów zachodniobałtyjskich wczesnej epoki żelaza", *Barbaricum* 10, pp. 9–198.

Węgrzynowicz 1978 — T. Węgrzynowicz, "Cmentarzysko kultury grobów kloszowych w Drohiczynie, woj. białostockie, na stanowisku Kozarówka II", *Wiadomości Archeologiczne* 48/2, pp. 49–60.

Woźniak 2010 — Z. Woźniak, "Kontakty mieszkańców ziem polskich ze światem celtyckim u schyłku okresu halsztackiego i we wczesnym okresie lateńskim", *Przegląd Archeologiczny* 58, pp. 39–104.

Ząbkiewicz-Koszańska 1972 — H. A. Ząbkiewicz-Koszańska, "Cmentarzyska kultury łużyckiej i kultury przeworskiej na st. 1 w Chojnem w pow. sieradzkim", *Prace i Materiały Muzeum Archeologicznego i Etnograficznego, seria archeologiczna* 19, pp. 173–248.

Streszczenie

Uwagi na temat szpil tarczowatych kultury pomorskiej

Jednym z najbardziej charakterystycznych atrybutów kultury pomorskiej są szpile tarczowate. Zabytki te od czasów jedynej monografii kultury pomorskiej, wykonanej przez Ernsta Petersena w 1929 roku, oraz licznych prac autorstwa Józefa Kostrzewskiego z lat dwudziestych i trzydziestych XX wieku nie doczekały się szczegółowego opracowania. Poglądy przedstawione w wyżej wymienionych dziełach cytowane są w literaturze po dziś dzień, zwłaszcza w opracowaniach zabytków wykopaliskowych lub przy okazji studiów regionalnych.

Szpile tarczowate nie należą do jednorodnych form zabytków. Ze względu na ukształtowanie szyjki można podzielić je na dwie grupy: szpile z łabędzią szyjką oraz szpile z wolem (półokrągłym wygięciem). W obrębie grupy I na podstawie ukształtowania, wielkości i ornamentyki główki wydzielono cztery odmiany: Mrowino, Gogolewo, Brzozówiec i Skurcz, nazwane od miejscowości, w których dane odmiany zostały odkryte po raz pierwszy. W grupie II na podstawie tych samych kryteriów wydzielono dwie odmiany: Zakrzewo i Wytomyśl.

Zabytki będące tematem artykułu wykazują małe zróżnicowanie regionalne. Szpile grupy I występują w północno-zachodniej, zachodniej i środkowej strefie kultury pomorskiej. Z okazów szpil, które mają charakter regionalny, wymienić należy szpile odmian Brzozówiec, Wytomyśl i Zakrzewo. Szpile z wolem (grupy II) odmian Wytomyśl i Zakrzewo występują w rejonie Dolnego Śląska oraz Wielkopolski. Okazy te można traktować jako importy lub naśladownictwa zabytków występujących licznie w kulturze jastorfskiej, zwłaszcza w Brandenburgii, Saksonii oraz Turyngii.

Szpile tarczowate należą do kategorii zabytków najczęściej przedstawianych na popielnicach twarzowych. Niektóre wizerunki szpil są na tyle rzetelnie oddane, że można je wiązać z konkretnymi odmianami szpil.

Szczególna uwaga zwrócona została na najbardziej okazałe szpile odmiany Mrowino. Za prototyp tego typu szpil uznać można rozprzestrzenione w dorzeczach Łaby i Wezery szpile z małą miseczkowatą główką, występujące w zespołach grobowych od okresu V OEB. Od okresu HaC szpile te posiadają charakterystyczne łabędzie wygięcie szyjki. Najliczniej występują w dorzeczu środkowej Łaby i dolnej Soławy. Z tego obszaru znane są pierwsze szpile z dużymi miseczowatymi główkami, rejestrowane w zespołach, które odnosić można do starszego okresu HaD. Szpile odmiany Mrowino pojawiają się w kulturze pomorskiej za pośrednictwem grupy białowickiej i górzyckiej. Z obszarów środkowego Nadodrza pochodzą najliczniejsze serie tego typu zabytków, odkrywane w kontekście skarbów, osad obronnych i cmentarzysk. Współwystępują najczęściej z zapinkami z ozdobną nóżką typu Wicina, które datowane są na HaD_3. Szpile odmiany Mrowino na obszarach środkowego Nadodrza datować należy od okresu HaD_2 do HaD_3/LTA, na co wskazują inwentarze obiektów, w których były odkrywane.

W obrębie kultury pomorskiej znane są 22 egzemplarze tego typu szpil. Niestety, specyfika wspomnianej kultury nie pozwala na precyzyjne ustalenie chronologii, głównie za przyczyną braku współwystępowania w zespołach grobowych szpil z innymi dobrze datowanymi zabytkami. Wyjątkiem jest stanowisko w Warszawie-Nowodworach, gdzie w jednym grobie skrzynkowym szpila występowała z zapinką z ozdobną nóżką typu Wicina, datowaną na okres HaD_3.

Szpile z dużą miseczkowatą główką, zaliczone do typu Wicina, należy datować tak samo jak na obszarach grup białowickiej i górzyckiej. Zabytki kultury pomorskiej, zwłaszcza z obszarów Wielkopolski, wykazują bliskie związki stylistyczne pod względem formalnym, dekoracyjnym i technicznym. Niektóre szpile są na tyle podobne, że można uważać, iż wyszły spod ręki tego samego wykonawcy.

Istotnym argumentem za przyjęciem datowania na młodszą część okresu HaD jest fakt, że w sposób analogiczny jak szpile odmiany Mrowino zdobione były tarczki bardzo charakterystycznych dla kultury pomorskiej zapinek typu Tłukomy. Warte podkreślenia jest to, że wspomniane zapinki grupują się zwłaszcza na obszarach Wielkopolski, miejscu, skąd znane są najbardziej okazałe ze szpil odmiany Mrowino, co sugerować może, że na tym obszarze, pod wpływem kulturowym środkowego Nadodrza, wykształciły się „warsztaty" ludności kultury pomorskiej, które trudniły się produkcją omawianych szpil i fibul krzyżowych typu Tłukomy.

Bartłomiej Kaczyński
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
bartlomiej.kaczynski@yahoo.com

Paweł Janik

ORIGINS OF "HUNNIC" CAULDRONS IN CONTEXT OF METAL VESSEL DEVELOPMENT AMONG GREAT STEPPE NOMADS

Abstract: The objective of the present paper is to trace the path of development of metal vessels among the Great Steppe nomads in the first millennium BC and first millennium AD, which led to the emergence of a characteristic cauldron type, traditionally associated with the Huns. In my research on the evolution of these items, I developed a typology that could be used also to describe other types of metal vessels made by the nomads. Contrary to assertions by a number of scholars, I maintain that the "Hunnic" type of cauldron developed out of a Scytho-Sarmatian tradition. The place of development of the "Hunnic" type of vessel, that is a cauldron with a bell-shaped body ornamented with mushroom-shaped knobs, was the Dzungaria area between the Tian Shan and Altai mountains. The emergence of the form is dated to the second quarter of the first millennium AD. The vessels constitute one of a number of traits common to the material culture of European Huns and Xiongnu.

Key words: Asia, Europe, Huns, cauldrons, metal vessels, typology, Xiongnu

Introduction

The present paper considers origins and development of the cauldron type known traditionally as "Hunnic". It presents the results of the author's research to determine where and how the "Hunnic" type of vessel developed, as well as to decide the question of their role as the link between the European Huns and their putative Asian ancestors — the Xiongnu. In order to address the above questions, I developed a typology of nomad metal vessels, allowing me to trace the development of the items. This could find application well beyond the present article and be used in describing any metal vessels of the Great Steppe nomads.[1]

I do not discuss here the history of research into Hunnic cauldrons,[2] although it is worth noting that existing literature contains assertions that these cauldrons had nothing to do with vessels of Scythian or Sarmatian manufacture and that the form of the latter could have no contribution to the origins of the Hunnic cauldrons.[3] My analysis points to quite the opposite conclusions, which I set out in the latter part of the paper.

The vessels under consideration are known as "Hunnic" because a number of them have been found in contexts identified as Hunnic. It must, however, be borne in mind that the conventional

[1] Great Steppe — grasslands spreading from the Carpathian Basin to the Manchuria.

[2] It is exhaustively discussed by Miklós Érdy (Érdy 1995, pp. 10–16) and Otton Mènanchen-Helfen (Mènanchen-Helfen 1973, pp. 306–325).

[3] Mènanchen-Helfen 1973, p. 332.

name does not necessarily indicate they were all used by the Huns, Xiongnu or other related or confederated tribes. Nevertheless, the form arose undoubtedly in the Hunnic milieu; any people who used them must perforce have enjoyed closer or looser relations with the Huns. The items under consideration here have been found in two archaeological contexts — in graves or as special deposits, frequently located close to bodies of water. They were deposited in whole or just in part.

The Hunnic type vessels were cast from copper or bronze — mostly in two, three or even four casts with individual parts soldered together. They were bell-shaped and had rectangular handles typically ornamented with mushroom-shaped knobs [Fig. 1]. The better part of specimens also had a distinct stand. Decorative bands, frequently encountered on the cauldrons, were used to cover the soldering. This technique first appeared among Eurasian nomads in the first millennium BC in the Far East and was borrowed from Chinese metalworking,[4] where it had been in use since the Shang dynasty (ca. 16th–11th centuries BC). Although the art of working bronze had long been familiar to Eurasian nomads,[5] casting and soldering only came to be used for manufacturing cauldrons in the tenth century BC.[6] The rapid spread of this type of vessel over the vast areas of the Great Steppe was linked to the expansion of the Scythian-Saka cultural phenomenon.[7] The Hunnic form, in turn, emerged probably in the second quarter of the first millennium AD.

The "Hunnic" cauldrons were used presumably for cooking, although it remains unclear whether for cult or practical purposes.[8] They were most likely placed directly on a fire or on embers, as seen from the many specimens that have a sooty stand,[9] as well as from iconography.[10] This method of using the vessels necessitated having an empty stand. Around the third century BC in the Far East an openwork stand comes to be employed [Fig. 4.2], presumably to facilitate access to fire.[11] The idea did not, however, spread to western Eurasia. When it comes to handles, they seem to have been used exclusively for carrying and manipulating the cauldrons on fire/embers. Iconographic sources fail to point to their use to hang the vessels. In general, the quality of execution of the vessels under consideration was poor,[12] suggesting a purely utilitarian role. Some specimens also show signs of repair in the form of riveted patches (eg. No. 6).

Typology

I begin by defining the terms used in his paper. By a "Hunnic type cauldron" or "Hunnic cauldron" [Fig. 2.1–10] I mean a vessel with a bell-shaped body, frequently carrying ornamented with horizontal or vertical decorative bands with a single row of circles below them, and square handles placed vertically on the rim and decorated with mushroom-shaped knobs (occasionally found on the rim as well). By the terms "Hun-linked cauldrons" I mean the aforementioned collection of vessels of the Hunnic type as well as an extra four cauldrons with a bell-shaped body and square handles on the rim, but without mushroom-shaped knobs and with different ornamentation on the body [Fig. 2.11–14]. That makes for a total of 24: 14 complete and 10 fragmentary vessels. The collection of "Hun-linked cauldrons" owes its name to the fact it is comprised of items found in archaeological contexts connected to that people and dated to phase D of the great Migration Period. It is of course impossible to be certain that they were all made or used by the Huns, but it seems likely. In my paper I do not take into account the aforementioned fragmentary finds, since

[4] Bavarian, Reiner 2006, pp. 9–10; Linduff, Mei 2009, p. 268.
[5] Chochorowski 1999a, pp. 269–271.
[6] Jin 2009, pp. 167 & 428, fig. 115.22.
[7] Chochorowski 1999b, pp. 308–358; Jin 2009, p. 208.
[8] Érdy 1995, pp. 27–30; Mèanchen-Helfen 1973, pp. 326–330; Spertino 1995.
[9] Érdy 1995, p. 8; Mèanchen-Helfen 1973, p. 326.
[10] Érdy 1995, pp. 62–64, figs. 5–7.
[11] Érdy 1995, pp. 46–47.
[12] Mèanchen-Helfen 1973, p. 319.

they provide no information on the shape of whole vessels, which plays such an important part in my reasoning. Both in Hunnic-type vessels and in associated cauldron types there is no rule regarding presence or absence of the stand. If this structural element is found, it is always single and never openwork. An even larger category is that of "Hun-linked cauldrons" which includes two vessels quite different in form (without a bell-shaped body or rectangular handles placed vertically on the rim) but come from archaeological contexts linked to the Huns [Fig. 2.15–16].

For the purpose of studying the origins of the Hunnic-type cauldrons I have developed my own typology of nomad vessels. This facilitates the development of a diagram of their development, territorial spread and chronology. Such typologies have already been developed by Miklós Érdy (1995) and Jianjun Mei (2002). The former aims to trace the origins of the Hunnic cauldron against the background of the entire Great Steppe, but it lacks a clear structure. The latter is easier to understand but applies only to vessels from the Chinese province of Xinjiang. In order to gain a good understanding of the "Hunnic" cauldron, analysis is necessary of the development of each separate part, that is the body, rim and stand (with the stand as the least important). I thus propose a tripartite typology, treating each element separately. It is a compromise between a typology that precisely reflects the details of the formal evolution of the vessels and a transparent and easy-to--use typology. Another of its benefits is that it may be used to describe all cast cauldrons made by Eurasian Steppe nomads between the tenth century BC and the fifth century AD.

The first term, marked with a capital Latin letter, describes the shape of the belly or body of the vessel [Fig. 3]. I have identified the following variants:

A — spheric shape;
B — semi-spheric shape;
C — semi-bell shape;
D — bell shape, often with a separate rim, protruding outwards.

The second term, described with an Arabic numeral, describes the stand or its absence [Fig. 4]. These are the possible variants:

0 — no stand or vestigial form;
1 — one stand in a wide variety of shapes (but without openwork);
2 — single, openwork stand;
3 — three legs.

The third term, marked with a minor letter of the Latin alphabet, describes the handles [Fig. 5]. The first three varieties (a–c) have handles of a shape close to a sphere. The remaining variants show greater diversity. Here they are:

a — handles placed more or less vertically to the sides of the vessel, sometimes slightly extending above the rim;
b — handles "lying" horizontally to the sides of the vessel, sometimes slightly extending above the rim;
c — two pairs of handles placed on the sides of the vessel: one pair vertical, the other horizontal;
d — round or semi-round holders placed more or less vertically on the rim or just below;
e — round handles placed vertically on the rim, decorated with mushroom-shaped knobs (such decoration may also appear on the rim);
f — rectangular (or close to rectangular) holders placed horizontally on the rim;
g — rectangular (or close to rectangular) holders decorated with indentations in the shape of two bows;
h — rectangular (or close to rectangular) holders placed vertically on the rim, additionally decorated with mushroom-shaped knobs (such decoration may also appear on the rim).

It should be noted that the typology has been built on the basis of the most common types of nomad vessels. It may, of course, happen that a specimen will not fit into any of the categories described above, but this will be a rare occurrence. Such exceptions do not, moreover, seem to have influenced the evolution of the Hunnic type of cauldron.

The origins of cast cauldrons among the Great Steppe nomads

Cauldrons appeared among nomadic peoples as early as the Srubna (Timber-grave) and Andronovo cultures,[13] but these were made by hammering bronze plates with structural elements fixed by riveting [Fig. 6.B]. The earliest cast cauldrons, using soldering, turn up in nomad societies around the tenth century BC in today's northern China.[14] This technique was presumably borrowed from the Chinese culture of the western Zhou dynasty (ca. 1100–771 BC). They were mostly vessels with a spheric (type "A" [eg. Fig. 3.A]) or semi-spheric (type "B" [eg. Fig. 3.B]) shape of the body.[15] It is posited that the former may have derived from a type of small cauldrons/situlae [Fig. 6.], found in the Bronze Age Caucasus.[16] Due, however, to a serious chronological discrepancy and absence of intermediary examples, the hypothesis remains highly speculative. It is, however, possible that the the "A" or "B" body type and handles of "a" type developed out of bronze vessels of the *tou* type dated to the western Zhou period [Fig. 7.B].[17] Three-legged cauldrons were also in all likelihood inspired by Chinese vessels of the *ding* type [Fig. 7.A], popular ever since the Shang period (16th–11th century BC). The oldest nomad cauldrons with three legs date back to the seventh century BC and come from areas of present-day Xinjiang, southern Siberia and Zhetysu (Семиречье).[18] Such three-legged vessels had, however, no impact on the development of Hunnic-type vessels. In the ninth or eighth century BC there appear vessels of a semi-bell type "C" [Fig. 3.C],[19] and in the seventh century a bell-shaped "D" type [Fig. 3.D]. That is not, however, to say that manufacture ceased of "A" and "B" types; on the contrary, they are still found in the fourth–fifth century AD [Fig. 8].

The origins of "Hunnic"-type cauldrons[20]

The origins of Hunnic-type cauldrons seem to have been influenced by the following vessel types: from the types B1d (found from the ninth to the fourth century BC in northern China and from the second to the first century BC in eastern Europe), B1d/e (found in Xinjiang from the eight to the fourth century BC), C1d (found in northern China between the eight and the third century BC and in central Siberia between the seventh century BC and the first century AD) and C1d/e (found in northern China from the tenth to the third century BC and in western Siberia from the third to the first century BC) the following vessel types developed: B1e, B/C1e, C2a/d, C2d, C2g, D1d, D1e and D2d [Figs. 8 & 9]. Such objects were characteristic of the Scytho-Saka and then Sarmatian culture. The type B1e was found between the third and the first century BC in central and western Siberia. The type B/C1e was present from central Siberia to eastern Europe over the second century BC to the first century AD. Type C2a/d is found in Xinjiang between the second century and the end of the first century BC. Type C2d was characteristic of the areas around the Baikal and the

[13] Terenožkin 1982, pp. 218–223.
[14] Jin 2009, pp. 167 & 428.
[15] Érdy 1995, p. 92, pl. 6.3.1; Jin 2009, pp. 167, 172–173 & 428.
[16] Mączyńska 1996, pp. 4–5; Puturidze 2005, p. 12, fig. 5.a.
[17] Erdberg, Fong 1978, pp. 146–147, fig. 84.
[18] Bernshtam 1952, p. 47; Mei 2002, pp. 2–4.
[19] Bunker 2002, pp. 194–195, fig. 185.
[20] Individual types and bibliographical references are to be found in comments to Fig. 9.

upper Angara (territory of the Dingling tribe) between the second and first century BC. Type C2g is the first cauldron type with rectangular handles and was in use from the third century BC to the third century AD in present-day Inner Mongolia. Type D1d, in turn, appeared from the eight century BC to the second century AD in northern China and between the third century BC and second century AD in western Siberia. Type D1e can be attested for eastern Europe from the fourth century BC to the second century AD, while in northern China and central Siberia only in the second century AD. Type D2d, similar to the previous one, is only encountered between northern China and Tuva from the third century BC to the third century AD. It is worth noting that mushroom-shaped knobs on handles of the "e" type emerge in central Siberia's Tagar culture in the fourth century BC.[21] From here they expanded rapidly towards Europe, while reaching northern China only in the second century BC, despite the fact that is where their predecessor, a single knob, first appeared. Types C2a/d, C2d, C2g and D2d may have given rise to type D1g found between Inner Mongolia and Altai over the first to fourth centuries AD, as well as D2g, known from present-day northern China and Mongolia and dated to the third century BC to the third century AD. The decisive role in the emergence of the Hunnic type of cauldron was, however, played by the D1g type, which constituted the base form for all the vessels of this type with only the mushroom-shaped knobs missing. In Chinese literature cauldron types D1f, D1g, D2f and D2g are named *fu*[22] [Fig. 10]. Out of types B1e, B/C1e and D1e, in turn, evolved C0e, known from eastern Europe between the second and fourth centuries AD, which continued the idea of mushroom-shaped knobs in western Eurasia. At the same time, however, this type of decoration continued in use in the Far East, as seen from type A2e. It was the combination of the mushroom-shaped knob with the bell-shaped body rectangular handles that created Hunnic-style vessels (D0h and D1h) and associated forms (D0g and D1f). This took place presumably in the region of Altai, Dzungaria and Tien Shan in the second to fourth centuries AD. From the vicinity of Lake Teletskoye in the Altai, there comes a cauldron (No. 1), that constitutes the intermediate form between D0g and D0h. At Černaja Kuria, in turn, a very early specimen of D0h (No. 2) has been found with rudimentary mushroom-shaped knobs. A cauldron has been found near Urumqi that belongs to the developed D1h type. It is probably from the area of Altai, Tien Shan and Dzungaria that the Huns carried with them types D0g, D0h, D1g and D1h to Europe, where such cauldrons were found at the end of the fourth century and in the first half of the fifth century. It is these four vessel types that make up the Hun-linked vessel category [Fig. 9: D0g, D1f, D1h and D0h.]

Summary

From the above it follows that Hunnic-type cauldrons emerged most likely in the second quarter of the first millennium AD in the areas of Altai, Tien Shan, Dzungaria and Zhetysu. This type of vessel developed presumably out of the combination of elements which were originally separate, namely decorative knobs in the shape of mushrooms, known from Scytho-Sarmatian vessels, bell-shaped body and rectangular handles. It is worth noting that the area of Zhetysu, Tien Shan and

[21] Chochorowski 1999b, pp. 351–352; Érdy 1995, p. 25.

[22] It must be noted that the name *fu* is inconvenient, since Chinese has two characters for bronze vessels, both pronounced identically (as more or less *fu*). The first, written 釜, applies to large, decorative Chinese vessels of the Spring and Autumn period (8th–5th century BC), as well as to cauldrons for pressure cooking and to other vessels of that type. The cauldrons under consideration here, the D2g type, are described with the character 鍑. It consists of two parts. The left one means "metal" and indicates an object made of that material. The right part signifies the action of "restitution" or "returning". The combination of these characters carries no meaning and has a purely phonetic function. It is important to draw attention to this issue and explain it, as western literature uses the name *fu* for a wide variety of vessels that have nothing in common with the category under consideration here.

Dzungaria played host to a fraction of the Xiongnu that presumably gave rise to the European Huns.[23] This cauldron type presumably made its way to Europe with them. Although a vessel of the Hunnic type is yet to be found between Xinjiang and eastern Europe,[24] everything seems to point to its arrival in Europe from the Zhetysu – Tien Shan – Dzungaria area. The cauldrons under consideration thus constitute a common element for the Xiongnu and the European Huns, found in both cultures.

Fig. 1. Example of a "Hunnic" cauldron from Şestaci, Moldova (No. 15)

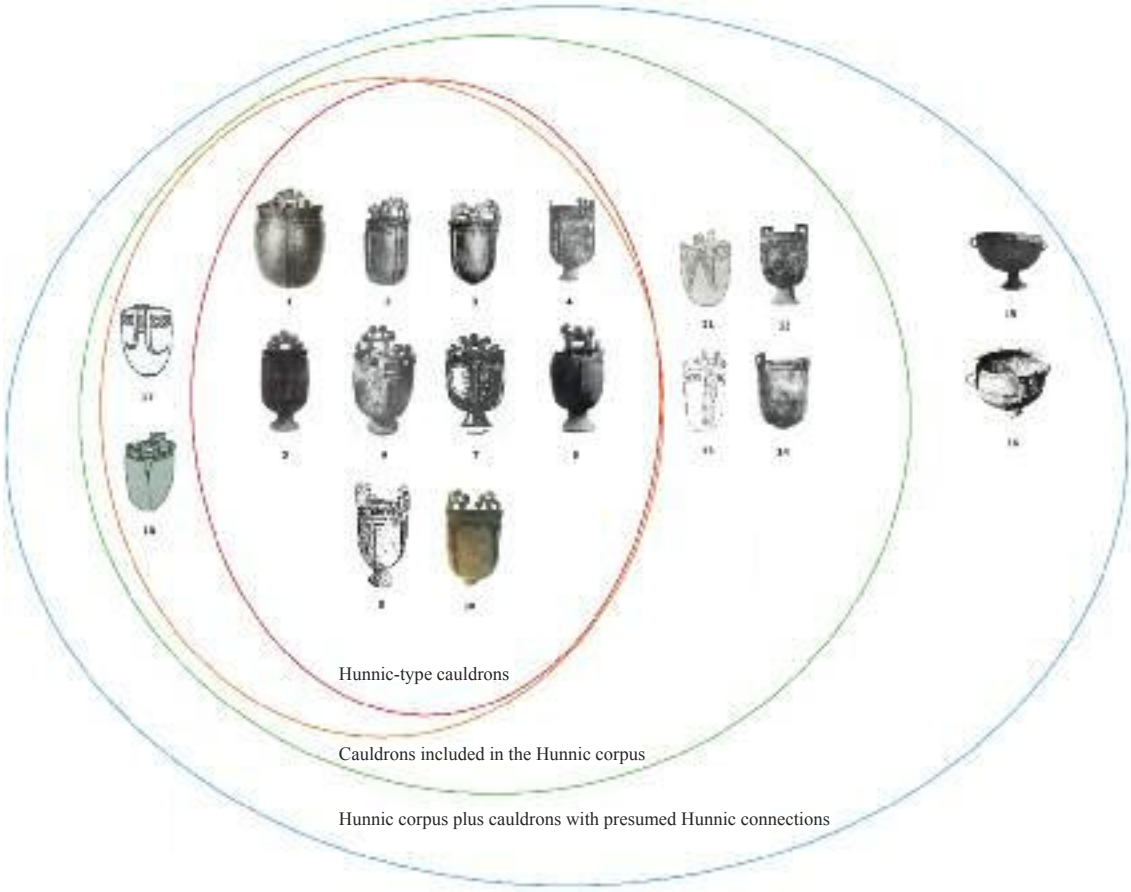

Fig. 2. Diagram of interconnections between Hunnic-type vessels (1–9), "Hun-linked" vessels (1–14), vessels of completely different form that may have been used by the Huns (15–16) and cauldrons seen as prototype for the Hunnic corpus (17–18): 1. Kizil-Adir 10); 2. Törtel (No. 11); 3. Kurtcsibrák (No. 12); 4. Bántapuszta (No. 13); 5. Desa (No. 14); 6. Şestaci (No. 15); 7. Habaz (No. 16); 8. Ivanovka (No. 17); 9. Urumczi (No. 3); 10. Balatonlelle-Rádpuszta (No. 18); 11. Solikamsk (No. 6); 12. Osoka (No. 7); 13. Verhnij Konec (No. 8); 14. Jędrzychowice (No. 9); 15. Münstermaifeld, (No. 5); 16. Borovoe (No. 4); 17. Lake Teletskoye (No. 1); 18. Černaja Kuria (No. 2)

[23] Érdy 2008, pp. 11–15.
[24] Except a single uncertain piece from Uzbekistan (Mèanchen-Helfen 1973, p. 321).

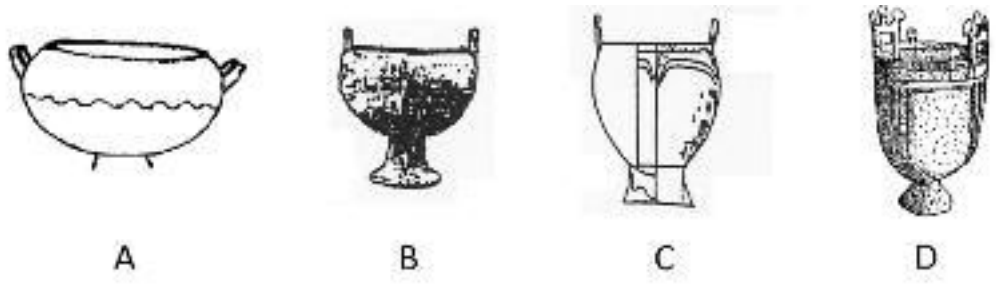

Fig. 3. Types of cauldron body included in the typology (based on: Érdy 1995, pls. 6.5.1 & 6.2.41; Mei 2002, fig. 3.2; Mèanchen-Helfen 1973, fig. 33)

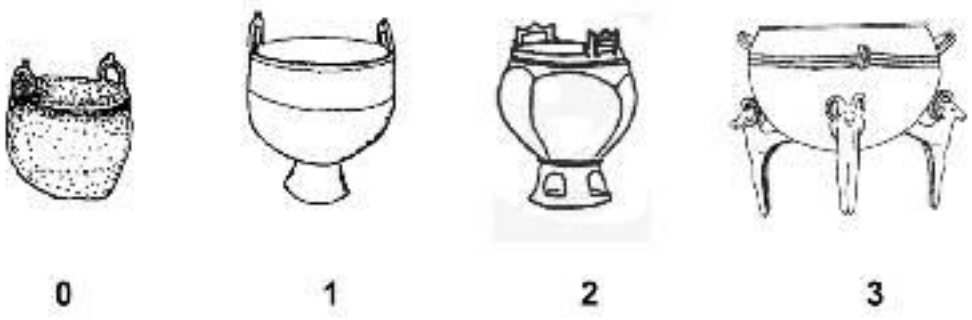

Fig. 4. Types of cauldron stand included in the typology (based on: Bernshtam 1952, fig. 20; Érdy 1995, pls. 6.3.1 & 6.8.2; Mei 2002, fig. 2.12)

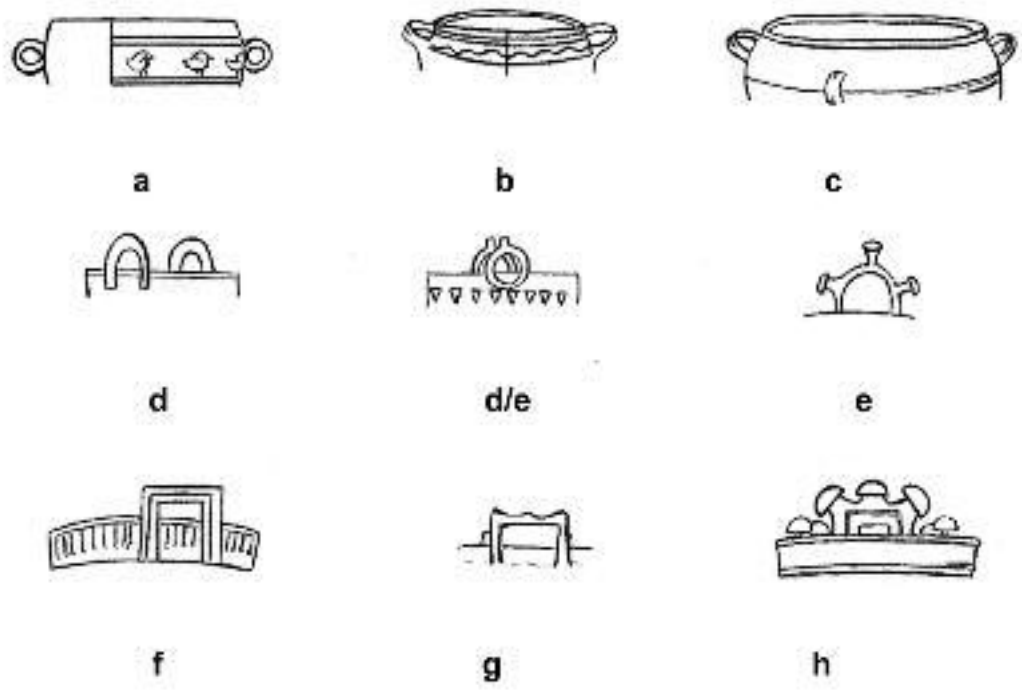

Fig. 5. Types of cauldron handles included in the typology (based on: (a) Jin 2009, pp. 72–73 & 367; (b) Érdy 1995, pp. 19 & 74, pl. 2.9; (c) Mei 2002, fig. 3.7; (d) Érdy 1995, p. 75, pl. 2.15; (d/e) Mei 2002, figs. 2.3 & 090.2; (e) Érdy 1995, p. 79, pl. 3.19; (f) Mèanchen-Helfen 1973, pp. 316 & 318, fig. 46; (g) Érdy 1995, p. 91, pl. 6.2.41; (h) Érdy 1995, p. 72, pl. 1.19)

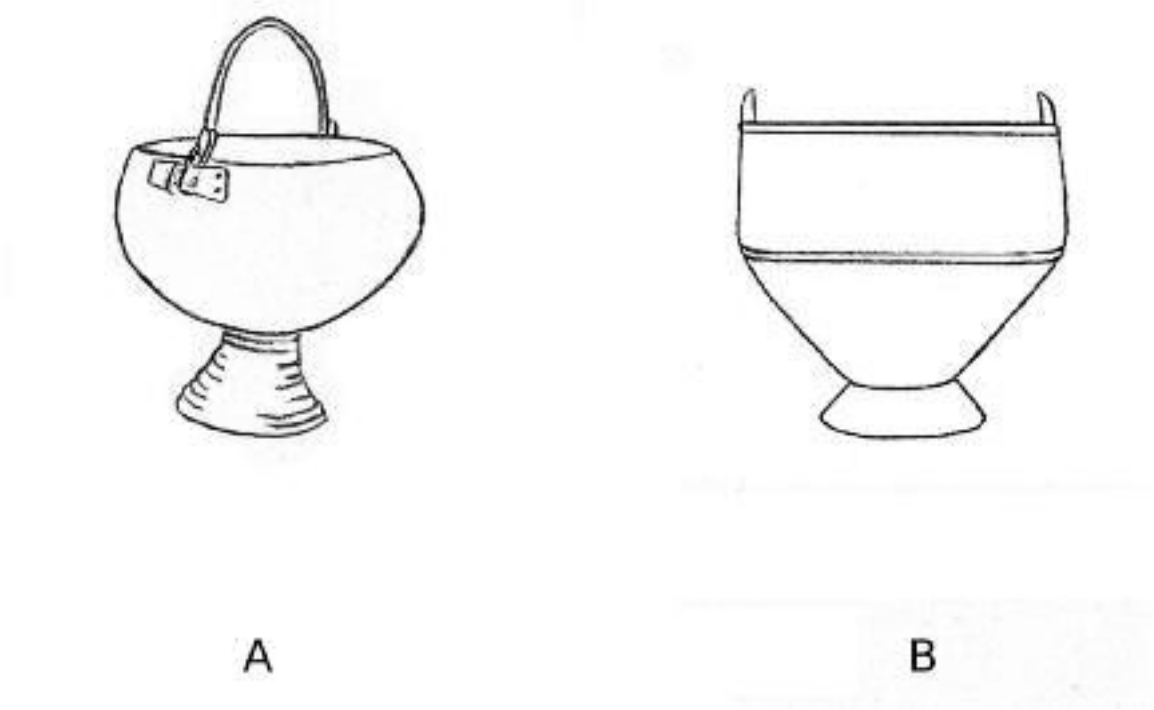

Fig. 6. A. Vessels from tumulus V at Trialeti, Georgia, mid-second millennium BC (based on: PUTURIDZE 2005, p. 12, fig. 5.a); B. Vessel from tumulus at Staromihajlovka, Stavropol Krai, Russian Federation, 14th–13th centuries BC (based on: TERENOŽKIN 1982, pp. 221–222, fig. 4.9)

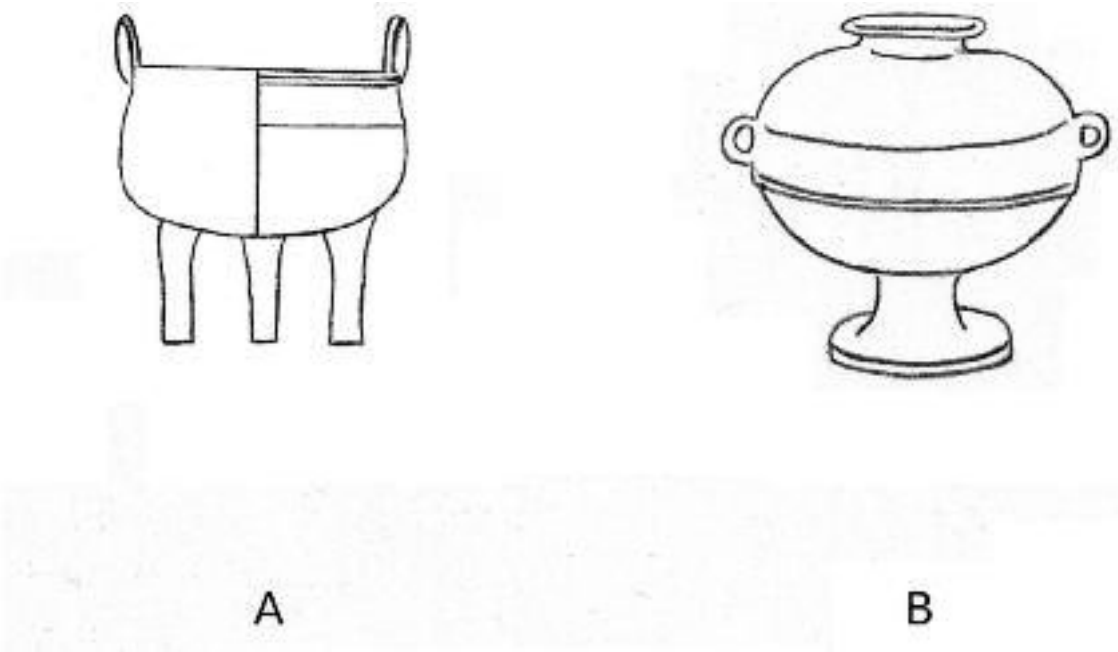

Fig. 7. Illustration of two types of popular Chinese Bronze Age vessels:
A. *Ding* from grave no. 30 at Lutaishan (based on: LI 2006, p. 326, fig. 41);
B. *Tou* from Chang-qi (based on: WEBER 1968, p. 220, fig. 63.e)

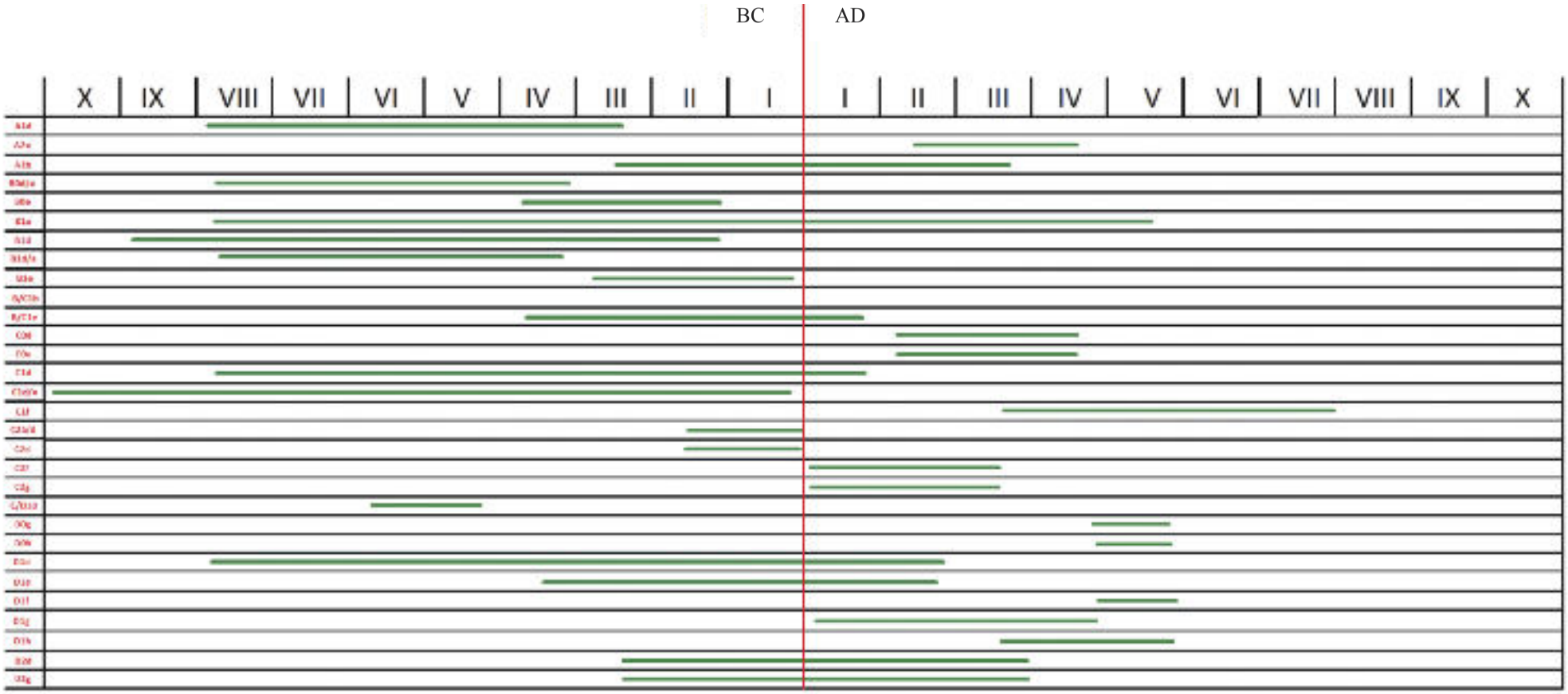

Fig. 8. Chronology of vessel types discussed in the paper

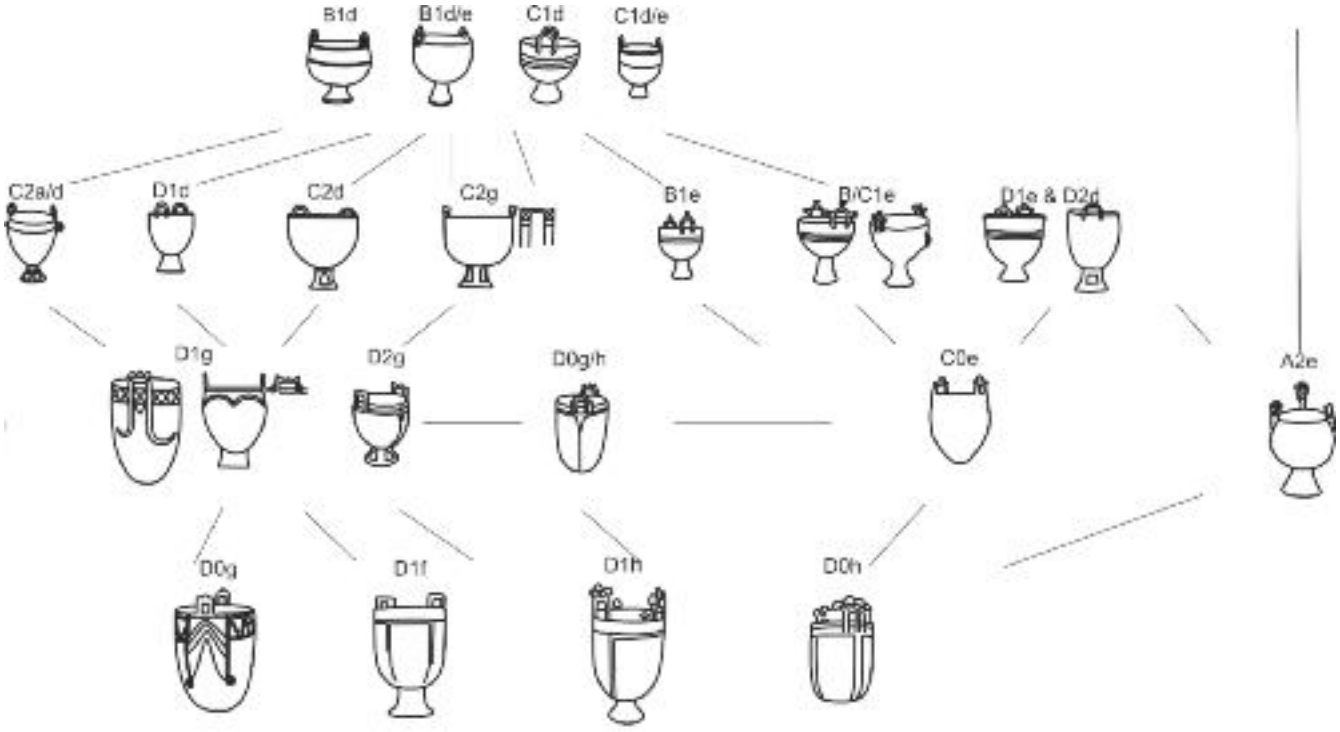

Fig. 9. Diagram of development of nomad vessels leading up to Hunnic-type cauldrons and associated types (based on: (B1d) Jin 2009, pp. 169–172 & 445, fig. 129b.1; (B1d/e) Mei 2002, fig. 2.5; (C1d) Érdy 1995, p. 82, pl. 5.1; (C1d/e) Mei 2002, fig. 2.12; (C2a/d) Mei 2002, fig. 2.2; (D1d) Érdy 1995, p. 75, pl. 2.15; (C2d) Érdy 1995, p. 82, pl. 5.5; (C2g) Érdy 1995, p. 91, pl. 6.2.34; (B1e) Érdy 1995, p. 79, pl. 3.15; (B/C1e) Érdy 1995, p. 82, pl. 5.6; Hampel 1897, pp. 12–13, fig. 12; (D1e) Érdy 1995, p. 80, pl. 3.21; (D2d) Érdy 1995, p. 90, pl. 6.2.29; (D1g) Mèanchen-Helfen 1973, pp. 316–317 & 320, fig. 48; Érdy 1995, p. 91, pl. 6.2.41; (D2g) Érdy 1995, p. 88, pl. 6.2.16; (D0g/h) Érdy 1995, p. 42, pl. 3.4; (C0e) Meliukov 1989, pp. 302 & 383, pl. 78.31; (A2e) Bunker 2002, pp. 196–197, fig. 187; (D0g) Mèanchen-Helfen 1973, pp. 315–316, fig. 44; (D1f) Werner 1956, pp. 59–60, pl. 27.11; (D1h) Mei 2002, fig. 3.6; (D0h) Hampel 1897, pp. 9–10, fig. 9)

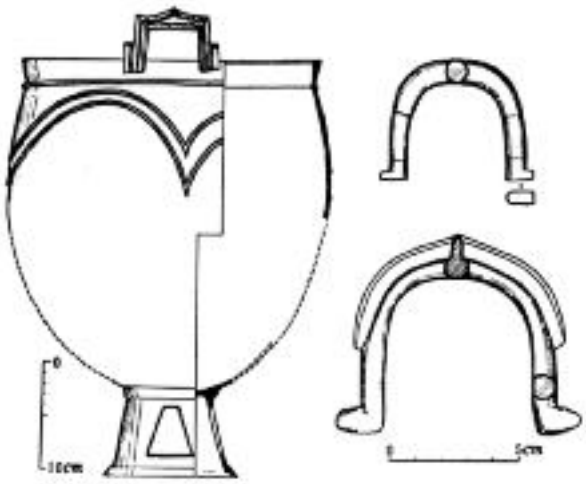

Fig. 10. Cauldron of *fu* type (based on: Mèanchen-Helfen 1973, p. 331, fig. 54)

Fig. 11. Geographic range of Hunnic-type cauldrons: 1. Lake Teletskoye; 2. Černaja kuria; 3. Nanshan; 4. Borovoe; 5. Münstermaifeld; 6. Solikamsk; 7. Osoka; 8. Verhnij Konec; 9. Jędrzychowice/Hockricht; 10. Kizil-Adir; 11. Törtel; 12. Kurtcsibrák; 13. Bántapuszta; 14. Desa; 15. Şestaci; 16. Habaz; 17. Ivanovka; 18. Rádpuszta-Temetőalja-dűlő

Catalogue

1 [Figs. 2.17 & 9.D1g]
Found: Lake Teletskoye (Altaic Altyn-Köl — "Golden Lake"), Altai Republic, Russian Federation
Context: cauldron deposited near Lake Teletskoye
Material: bronze
Dimensions: height 27 cm, radius 25–27 cm
Type: D1g
Dated: 2nd–4th century AD
Source: Érdy 1995, p. 76, pl. 3.3; Mèanchen-Helfen 1973, pp. 316–317 & 320, fig. 48
Comments: One occasionally comes across in specialist literature the erroneous assertion that the specimen comes from Biysk. Considered by some a Hunnic-type cauldron due to characteristic ornamentation and shape of handles. Currently held at the State Historical Museum, Moscow. The specimen had a single support, now damaged.

2 [Figs. 2.18 & 9.D0g/h]
Found: Černaja Kuria, Altai Republic, Russian Federation
Context: unknown
Material: bronze
Dimensions: unknown
Type: D0g/h
Dated: 2nd–4th century AD
Source: Érdy 1995, p. 42, pl. 3.4
Comments: Lack of detailed information on the place and context of the find. It is the earliest known example of the combination of square handles with mushroom-shaped knobs. Such ornamentation also appears next to the handles. In terms of decoration, shape of the body and handles, the vessel very closely resembles Hunnic-type cauldrons — presumably representing the point of departure for the Hunnic style.

3 [Figs. 2.9 & 9.D1h]
Found: Nanshan, Urumqi, Xinjiang, People's Republic of China
Context: loose find
Material: bronze with addition of lead
Dimensions: height 57 cm, radius 39 cm
Type: D1h
Dated: 2nd–5th century
Source: Érdy 1995, p. 46; Mei 2002, fig. 3.6
Comments: The cauldron was found by a pastoralist and transferred to the museum at Urumqi after several years. The vessel shows surprising similarity to Hunnic-era cauldrons from western Eurasia, both in terms of form and decoration. Despite differences in opinion, Miklós Érdy believes the specimen was not a western import and was made in the second century AD in the Altai region. I would personally propose a dating to the end of the third century at the earliest.

4 [Fig. 2.16]
Found: Borovoe, north Kazakhstan
Context: grave — individual burial of a steppe rider (Hun?)
Material: bronze
Dimensions: unavailable
Type: B1?a
Dated: first half of 5th century AD
Source: Mèanchen-Helfen 1973, p. 324, fig. 51; Werner 1956, pp. 57 & 122, pl. 51.5
Comments: The cauldron was found in a grave with a pit surrounded by stone stabs (perhaps Xiongnu tradition). The vessel was found in a layer of rubble on top of human remains. Grave goods included polychrome jewellery (characteristic of e.g. European Huns), triple leaf-shaped arrowheads, bone beads, copper buckle and earrings of copper wire. According to J. Werner, the cauldron, together with the rest of the grave furnishing and other finds linked to European Huns would testify to the territorial extent of Attila's state all the way to the present-day Kazakhstan (Werner 1956, pp. 57–58). I believe this to be an exaggeration, as the presence of western elements may simply testify to the intensity of trade contacts between different nomad groups, including the Asian cousins of the European Huns. Besides, the polychrome style developed in Central Asia. When it comes to the handles, they combine elements of "c" and "a" types.

5 [Fig. 2.15]
Found: Münstermaifeld, Rhineland, Germany
Context: grave — the cauldron served as an urn
Material: bronze
Dimensions: height ca. 33 cm, radius ca. 39 cm
Type: B1a
Dated: beginning of 5th century AD?
Source: Werner 1956, p. 58, pl. 26.2
Comments: The cauldron, which served as an urn, was found in a layer of "ashes" in the vicinity of a Roman villa. It is unclear if the vessel is to be linked to the Huns. While cremation was occasionally practiced among the Huns (Dąbrowski 1975, pp. 80–81), this cauldron form is not typical of them. Perhaps the specimen was used by a Sarmatian people (Mèanchen-Helfen 1973, p. 325). For the Sarmatians, however, cremation was also unusual. The vessel may have found its way to Rhineland with the Alans or Huns, but may have been used as an urn by the members of an accompanying Germanic tribe.

6 [Figs. 2.11 & 9.D0g]
Found: Solikamsk, Perm oblast, Russian Federation
Context: loose find
Material: bronze
Dimensions: height 19 cm
Type: D0g?
Dated: end-4th – first half of 5th century AD
Source: Mèanchen-Helfen 1973, pp. 315–316, fig. 44
Comments: The find's location, atypical decoration for this type of item and small height may all cause some surprise. It was probably an import and imitation since it is highly dubious that the area around today's Perm was ever under Hun rule. The specimen was repaired near one of the handles.

7 [Figs. 2.12 & 9.D1f]
Found: Osoka, Ulyanovsk oblast, Russian Federation
Context: cauldron found in sand near Osoka stream
Material: copper, cauldron cast in two casts
Dimensions: height 53.2 cm, radius 31.2 cm, weight 17.7 kg
Type: D1f
Dated: end-4th – first half of 5th century AD
Source: Mèanchen-Helfen 1973, pp. 316–317, fig. 45; Werner 1956, pp. 59–60, pl. 27.11

8 [Fig. 2.13]
Found: Verhnij Konec, Komi Republic, Russian Federation
Context: unknown
Material: bronze
Dimensions: unavailable
Type: D1f
Dated: end-4th – first half of 5th century AD
Source: Mèanchen-Helfen 1973, pp. 316 & 318, fig. 46

9 [Figs. 2.14 & 3.D]
Found: Jędrzychowice (German Hockricht — name more commonly found in literature), Lower Silesia, Poland
Context: allegedly grave
Material: bronze, cauldron cast in two casts
Dimensions: height 55 cm
Type: D1f
Dated: first half of 5th century AD?
Source: Mèanchen-Helfen 1973, p. 308, fig. 33; Werner 1956, pp. 59–60, pl. 27.10
Comments: The cauldron was allegedly cast in bronze, but the alloy was mixed in such an uneven manner that different parts of the vessel show very different percentage of copper. It was originally claimed the vessel came from a disturbed burial (supposedly indicated by the find of bones in its vicinity). There are, however, indications that it was deposited near an ancient stream, as is the case with many items of this kind. This could be indicated by a long strip of white sand to the north of the cauldron. The bones were, on the other hand, small in number and it was impossible

to determine whether they came from the same context. In addition, three buckles, a Roman bronze vessel and several ornaments, including presumably fragments of a diadem, were found. It is possible the items, together with the cauldron, made up a single deposit. The stand of the specimen is damaged.

10 [Fig. 2.1]
Found: Kizil-Adir cave on Ural river, Orenburg oblast, Russian Federation
Context: grave? (just a single burial found)
Material: copper with small admixture of lead and silver (cauldron made up of three separately cast parts, welded together)
Dimensions: height 28.5 cm, height with handles 35.1 cm, height of mushroom-shaped knobs 1 cm, radius of rim 26.4 cm, radius of bottom 13.5 cm
Type: D0?h
Dated: 4th/5th century AD
Source: Érdy 1995, p. 74, pl. 2.1; Garjajnov 1980, pp. 259–262, fig. 3
Comments: The cauldron was found in a cave with a human burial and other objects (including a sword). It remains unclear if the vessel was a grave good since it was found in a different pit from the human remains. In addition to the cauldron itself, horse bones were found — possibly remains of a ritual feast. It is unclear if the specimen had no stand or if it has been broken off.

11 [Figs. 2.2 & 9.D0h]
Found: Törtel, Pest county, Hungary
Context: grave
Material: bronze, made in four casts
Dimensions: height 89 cm, radius 50 cm, height of handles 7 cm, thickness 3 cm
Weight: 41 kg
Type: D0h
Dated: end-4th – first half of 5th century AD
Source: Hampel 1897, pp. 9–10, fig. 9; Mèanchen-Helfen 1973, p. 309, fig. 34
Comments: Cauldron found underneath tumulus earthwork.

12 [Fig. 2.3]
Found: Kurtcsibrák, Tolna county, Hungary
Context: comes from peat-bog
Material: bronze, cauldron made in two casts
Dimensions: height 52 cm, radius 33 cm, thickness 0.8 cm
Weight: 16 kg
Type: D1h
Dated: end-4th – first half of 5th century AD
Source: Hampel 1897, pp. 10–12, fig. 10; Mèanchen-Helfen 1973, pp. 309–310, fig. 35
Comments: The specimen has a broken off stand. Presumably deposited by a body of water, as is characteristic for this find category.

13 [Fig. 2.4]
Found: Bántapuszta, Veszprém county, Hungary
Context: comes from marsh
Material: bronze

Dimensions: height 56 cm, radius 38 cm, thickness 0.45 cm
Weight: 20.1 kg
Type: D1h
Dated: end-4th – first half of 5th century AD
Source: Mèanchen-Helfen 1973, p. 310, fig. 36

14 [Fig. 2.5]
Found: Desa, Oltenia, Romania
Context: found in lake near Desa
Material: presumably copper and cuprite
Dimensions: height 54.1 cm, radius 29.6 cm, height of handles 11.4 cm, height of stand 9.8 cm
Type: D1h
Dated: end 4th – first half of 5th century AD
Source: Mèanchen-Helfen 1973, pp. 310 & 312, fig. 38; Werner 1956, pp. 58–60, pl. 28.3b
Comments: Said to be made of "reddish" bronze, which presumably means an alloy of copper with cuprite (copper oxide).

15 [Figs. 1 & 2.6]
Found: Şestaci, Moldova
Context: storage pit
Material: bronze
Dimensions: height 53 cm
Weight: 29 kg
Type: D1h
Dated: end-4th – first half of 5th century AD
Source: Mèanchen-Helfen 1973, p. 315, fig. 43
Comments: none

16 [Fig. 2.7]
Found: Habaz, near source of Malka river, Kabardino-Balkar Republic, north Caucasus, Russian Federation
Context: deposited by river
Material: bronze
Dimensions: height 57.5 cm, radius 31.5 cm
Weight: 20 kg
Type: D1h
Dated: 4th/5th century AD
Source: Érdy 1995, p. 72, pl. 1.19
Comments: The specimen comes from a deposit by a river. It may be perhaps linked with Caucasian Huns.

17 [Fig. 2.8]
Found: Ivanovka, Dnipropetrovsk Oblast, Ukraine
Context: unknown
Material: bronze
Dimensions: unavailable
Type: D1h

Dated: end-4th – first half of 5th century AD
Source: Mèanchen-Helfen 1973, pp. 316 & 319, fig. 47

18 [Fig. 2.10]
Found: Rádpuszta-Temetőalja-dűlő near Balatonlelle, Somogy county, Hungary
Context: single deposit with no accompanying objects
Material: coper, made in a single cast
Dimensions: height 60 cm (body alone 45 cm), radius 42 cm
Weight: 22 kg
Type: D1h
Dated: end-4th – first half of 5th century AD (mid-5th century, according to discoverers)
Source: Honti, Németh 2007, pp. 71–78
Comments: The cauldron found at depth of 150 cm, during road construction in 2006. Although Rádpuszta is close to Lake Balaton, it does not lie directly on the lake and thus the deposit was not at the water's edge (although it cannot be ruled out that the coastline was slightly different in the past). The specimen shows minor signs of repair, has a damaged stand and was presumably wrapped in some sort of material. While no objects were found in the same context, the discoverers date the find to the mid-5th century AD, arguing that two fibulae were found in the same area, one silver and one iron.

Bibliography

Bavarian, Reiner 2006 — B. Bavarian, L. Reiner, *Piece Mold, Lost Wax & Composite Casting Techniques of the Chinese Bronze Age*, Los Angeles.

Bernshtam 1952 — A. N. Bernshtam, *Istoriko-arheologičeske očerki central'nogo Tjan-Šanja i Pamiro-Altaja*, Moscow – Leningrad.

Bunker 2002 — E. C. Bunker, *Nomadic Art of the Eastern Eurasian Steppes: the Eugene V. Thaw and Other New York Collections*, New York – Singapore.

Chochorowski 1999a — J. Chochorowski, "Łowcy i pasterze w dobie brązowego oręża — epoka brązu na obszarach Eurazji", [in:] *Encyklopedia historyczna świata*, I: *Prehistoria*, ed. J. K. Kozłowski, Cracow, pp. 253–303.

Chochorowski 1999b — J. Chochorowski, "Żelazny oręż barbarzyńców — wczesna epoka żelaza poza zasięgiem cywilizacji klasycznych", [in:] *Encyklopedia historyczna świata*, I: *Prehistoria*, ed. J. K. Kozłowski, Cracow, pp. 304–395.

Dąbrowski 1975 — K. Dąbrowski, "Hunowie europejscy", [in:] *Hunowie europejscy, Protobułgarzy, Chazarzy, Pieczyngowie*, ed. E. Tryjarski, Wrocław – Warsaw – Cracow – Gdańsk, pp. 10–152.

Erdberg, Fong 1978 — E. von Erdberg, W. C. Fong, "Chinese bronzes: From the Collection of Chester Dale and Dolly Carter", *Artibus Asiae. Supplementum* 35, pp. 217–250.

Érdy 1995 — M. Érdy, "Hun and Xiong-nu type cauldron finds throughout Eurasia", *Eurasian Studies Yearbook* 67, pp. 5–94.

Érdy 2008 — M. Érdy, "Archaeological continuity between the Xiongnu and the Huns: Eight connections supported by written sources", *Danish Society for Central Asia's Journal*, 2008, pp. 11–27.

Garjajnov 1980 — B. A. Garjajnov, "Gunnskoe pogrebenie v peščere južnogo Priural'ja", *Sovetskaja Arheologija* 4, pp. 259–264.

Hampel 1897 — J. Hampel, *Skythische Denkmäler aus Ungarn*, Budapest.

Honti, Németh 2007	Sz. Honti, P. G. Németh, "Hun áldozati üst Balatonlelle-Rádpusztáról" [Hun-period sacrificial cauldron from site Balatonlelle-Rádpuszta], *Somogyi Múzeumok Közleményei* 17, pp. 71–78.
Jin 2009	J. Jin, *Chronological and Cultural Framework of Bronzes in Northern China during the 4th to the 3rd Millennia B.P.*, Tübingen.
Li 2006	F. Li, *Landscape and Power in Early China. The Crisis and Fall of the Western Zhou 1045–771 BC*, New York.
Linduff, Mei 2009	K. M. Linduff, J. Mei, "Metallurgy in ancient Eastern Asia: retrospect and prospect", *Journal of World Prehistory* 22, pp. 265–281.
Mączyńska 1996	M. Mączyńska, *Wędrówki ludów: historia niespokojnej epoki IV i V wieku*, Warsaw – Cracow.
Mei 2002	J. Mei, "The metal cauldrons recovered in Xinjiang, Northwest China", *Xinjiang wenwu* 13, pp. 1–4.
Mèanchen-Helfen 1973	O. Mèanchen-Helfen, *The World of the Huns: Studies in Their History and Culture*, Los Angeles.
Meliukov 1989	A. I. Meliukov, *Stepi evropejskoj časti SSSR v skifo-sarmatskoe vremja*, Moscow.
Puturidze 2005	M. Puturidze, "About the problem of South Caucasian – Near Eastern cultural relations according to the items of artistic craft during the first half of the 2nd millenium BC", *Metalla* 12.1, pp. 8–22.
Spertino 1995	G. Spertino, "I calderoni unni: un'ipotesi micologica", *Eleusis* 3, pp. 20–24.
Terenožkin 1982	A. I. Terenožkin, "Jagorl'ščkij kotel", *Sovetskaja Arheologija* 2, pp. 218–223.
Weber 1968	D. Weber, "Chinese pictorial bronze vessels of the Late Chou Period. Part IV", *Artibus Asiae* 30.2/3, pp. 145–213.
Werner 1956	J. Werner, *Beiträge zur Archäologie des Attila-Reiches*, Munich.

Streszczenie

Pochodzenie kotłów „huńskich" w kontekście rozwoju metalowych naczyń koczowników z Wielkiego Stepu

Celem niniejszego artykułu jest pokazanie drogi rozwoju metalowych naczyń nomadów z Wielkiego Stepu w I tysiącleciu p.n.e. i I tysiącleciu n.e., prowadzącej do powstania charakterystycznego typu kotłów, tradycyjnie łączonych z Hunami. Badając ewolucję tych przedmiotów, stworzyłem typologię, która może być stosowana również do opisywania wszelkich innych metalowych naczyń koczowników. Wbrew temu, co twierdziło wielu badaczy, dowodzę, że kotły typu „huńskiego" rozwinęły się z naczyń o tradycji scytyjsko-sarmackiej. Miejscem, gdzie powstały naczynia typu „huńskiego" — czyli kotły o dzwonowatym brzuścu zdobione grzybokształtnymi wypustkami — był obszar pomiędzy górami Tienszan, Ałtajem a Dżungarią. Wyodrębnienie się tej formy datuje się na 2 ćwierć I tysiąclecia n.e. Owe naczynia stanowią jeden z wspólnych elementów kultury materialnej europejskich Hunów i Xiongnu.

Paweł Janik
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
pawelj3@op.pl

Dominika Kossowska

CLASSICAL MOTIFS ON YINGPAN MUMMY'S CLOTHING

Abstract: A very well preserved mummy of a man has been found at grave 15 at the Yingpan site in the Tarim Basin. Chinese archaeologists have dated the find to the Later Han dynasty (1st–2nd centuries AD), but it seems to be much later. The burial presumably took place at the end of the Jin dynasty (5th century AD). It is difficult to establish who the deceased man was. According to some scholars, he was a local ruler, while others think him a wealthy merchant. His rich attire and generous grave goods testify to high status. The most interesting element of the man's clothing is a woollen robe adorned with classical motifs. Representations in a similar style are also found on two cloths discovered in the Tarim Basin. The provenance of the textiles remains unknown. They may have been made in local workshops, in Bactria or the Levant. Due to certain technological features, manufacture in Central Asia is presumed. Presence of classical motifs may be explained by the influence of traditions from the Graeco-Bactrian period. It is, however, more likely that they reached Central Asia via Roman imports. Similar ornamentation may have been found on imported textiles and metal or glass vessels.

Key words: Silk Road, textiles, classical motifs, Tarim Basin, Yingpan

The Silk Road is one of the most fascinating cultural phenomena. The vast Asian territories traversed by merchants from distant lands, by artisans, monks and political refugees became a focus for intense exchange, both commercial and cultural. The directions and intensity of contacts and influences may be glimpsed primarily from material remains. Interpretation of remains found in the course of archaeological excavations fails, of course, to provide a full picture of culture of any given region, but combined with analysis of textual evidence must serve as the basis for research on the transcultural dimension of the Silk Road.

One of the most puzzling issues connected to the long-term exchange of ideas and goods is that of contacts between the peoples of Central Asia[1] with the classical world and culture. The present paper is dedicated to the attire of the mummy at the Yingpan site [Fig. 1], which constitutes one piece of evidence for their presence. The man's robe is adorned with six rows of symmetrically placed human figures, animals and plants [Fig. 2]. If pomegranate trees and antithetically placed bulls or goats could derive from Persian art,[2] the people are represented in a classical convention.

[1] For "Central Asia" read both west Turkestan (present Uzbekistan, Turkmenistan, Afghanistan, Tajikistan and Kyrgyzstan) and east Turkestan (present Uyghur Autonomous Republic of Xinjiang).
[2] Li 2006, p. 247.

Fig. 1. Mummy from grave 15,
Yingpan (ZHOU, LI 2004, fig. 2)

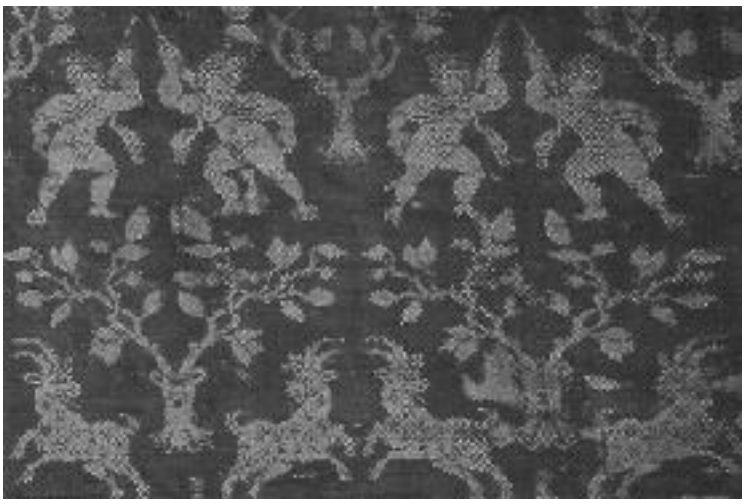

Fig. 2. Classical motifs on Yingpan mummy's woollen robe
(ZHOU, LI 2004, fig. 3)

They are naked, dwarfish figures of warring men, whose sole attire is a fluttering cape. Motifs derived from a variety of cultural traditions attest to the textile's manufacture in Central Asia. It is, however, intriguing how classical motifs found their way to east Turkestan. Were it to be a remnant of the Hellenistic period in Central Asia, it would testify to popularity of the motif in the Graeco-Bactrian kingdom, which would then be copied in subsequent centuries. Given the absence of similar representations seems, however, to point to the possibility that it reached Central Asia with imports from the Roman Empire. In order to correctly interpret the way classical motifs took to find themselves on the mummy's robe, one must reconsider the dating of the find and the textile's provenance.

The Yingpan lies in the Tarim Basin in the Uyghur Autonomous Republic of Xinjiang (the People's Republic of China). In the past, it lied on the trade routes linking the West to China. This particular route was a branch of the northern road between the Tien-Shan mountain range and the Takla Makan desert. The fork in the road lied by the Iron Gates and led by the edge of the Quruk Tagh mountains to the city of Dunhuang in the Gansu Corridor. Yingpan was inhabited from the Chinese Han period (206 BC – AD 220) to the T'ang dynasty (AD 618–906).[3] The site was excavated over 1989–1999 by the Xinjiang Cultural Relics and Archaeology Institute. The city hosted a military garrison and remains of signal towers, temples, monasteries and simple dwellings have all been found.[4] Outside the city, an extensive cemetery (1000 m × 250 m) has been located, functional in the Han (206 BC – AD 220) and Jin (AD 265–420) period. Archaeologists excavating at Yingpan have identified 122 graves in an undisturbed context and 120 looted graves.[5] In 1995 a man's mummy, which constitutes the subject of the present paper, was found at grave 15. It was one of the richer burials, lying at some distance from the other graves. The man with Caucasoid features[6] was buried in a wooden painted coffin, covered by a woollen carpet with a stylised depiction of a lion. The body rested on silk fabric, which covered a felt blanket. The man's head was rested against a pillow of embroidered Chinese damask. The man's high status is also apparent from his clothing, consisting of woollen trousers covered in embroidered rosettes,[7] a woollen robe that constitutes the subject matter of the present paper and a silk shirt adorned with gold plaques. Ornaments of precious metal can also be found on his felt shoes and the mask that covered his face.

It is difficult to unambiguously determine identity of the man buried with such honours. Wang Binghua, the director of the the Xinjiang Cultural Relics and Archaeology Institute, sees in him the ruler of the local Shan kingdom,[8] though an overwhelming majority of scholars claim him to have been a wealthy merchant.[9] The issue will remain in the realm of speculation. Due to the intercultural character of oases in the Tarim Basin it is not even possible to determine the man's ethnic identity. The Tarim Basin was since at least the second millennium BC populated by a Caucasoid people linked to the Tokhars.[10] Around the second century BC the Shaka tribes reached Xinjiang. Their presence is confirmed primarily for the cities of Hotan oraz Tumxuk.[11] Merchants, primarily from Sogdiana, also inhabited the oases. One must also bear in mind the constant Chinese presence since at least the Han period and the Turkic population influx. Due to the Caucasoid features, it may be presumed the man was a Tokhar or, which seems more doubtful, Shaka. It cannot, however, be ruled out that the burial is of a Sogdian or Kushan. The Sogdians, as believers in the local version of Zoroastrianism, exposed their dead, although merchants in remote regions adopted local funerary practices,[12] which rules out the character of the burial as a firm indication of ethnicity. The man's clothes also fail to speak to his ethnic origins. A long robe and loose trousers were popular with all the people of Central Asia.

[3] Bunker 2004, p. 34.
[4] Zhou, Li 2004, p. 41.
[5] Zhou, Li 2004, p. 41.
[6] The man ca. 1.9 m tall, big eyes and auburn hair (Sheng 2010, p. 39).
[7] Very similar rosettes can be found on the felt carpet discovered at tumulus V at Pazyryk (Scythian, 5th century BC).
[8] Za Hansen 2010, p. 41.
[9] Zhao 2012, p. 46.
[10] Mallory, Mair 2000.
[11] Zhang 1996, pp. 284–285.
[12] Lerner 2005.

An issue fundamental to its analysis is the correct date for the textile. According to the excavation report of 1999, the grave may be dated to the Han dynasty (AD 25–220). That date has been adopted by some scholars as a given and become the cornerstone of a wider interpretation of cultural phenomena.[13] Further analysis of the burial has, however, demonstrated that its earliest possible date is in the fifth century AD.

Among the elements confirming the hypothesis of a later date for the burial is the hem on the woollen cloak, executed with a weft-faced compound tabby. This braid is known from east Turkestan, but the earliest such finds have been dated to the fourth century AD.[14] Such ornamentation at the Tarim Basin would be an anomaly at such an early date. Another factor that drove the author to reject the original dating of the find is the striking stylistic similarity of decoration to the woollen fabric from the Abegg-Stiftung collection [Fig. 3].[15] Depicted on it are cyclical motifs of eagles staring snakes, which crawl on vines, antithetically placed birds on either side of an amphora or cupids catching butterflies. The cupid figures [Fig. 4] are, moreover, represented in the same manner (dwarfish and disproportional), as the warriors on the Yingpan mummy's robe. The C_{14} radiocarbon date for the Abegg-Stiftung cloth is AD 430–631 (with 100 % precision).[16] The fabric's provenance remained unknown until another fragment was found at a looted grave at Yingpan.[17] Taking into account the similarities between the cloths and their finding at the same site, it seems highly likely that both were made at the same workshop, which moves the dating of grave 15 to the fifth century AD at the earliest. It is not the only Yingpan burial from the late Jin dynasty, as attested by the discovery of a glass vessel of Persian origins.[18] Such objects were a frequent export from the Sassanid empire to Central Asia and China in the fifth century AD.[19]

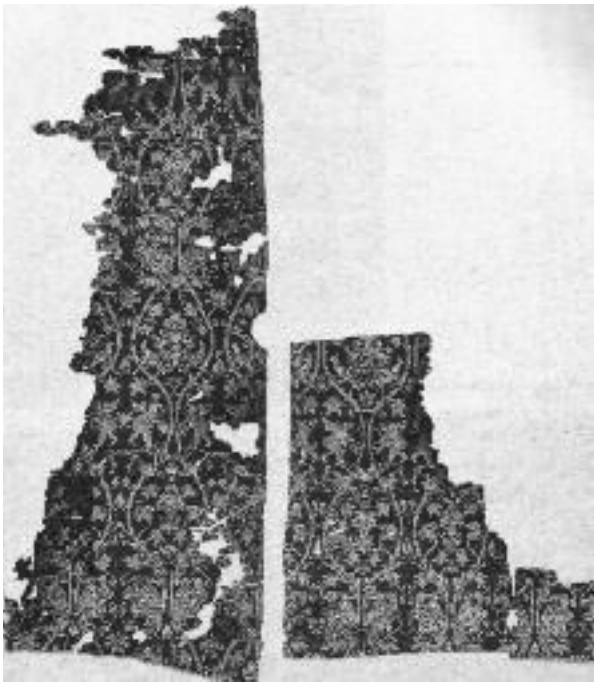

Fig. 3. Textile from Abegg-Stiftung collection (Bunker 2004, fig. 1)

Fig. 4. Cupids on textile from Abegg-Stiftung collection (Bunker 2004, fig. 2)

[13] Jones 2009; Yatsenko 2012.
[14] Yokohari 1991, pp. 49–47.
[15] Bunker 2004.
[16] Bunker 2004, p. 30.
[17] Zhou, Li 2004, p. 43.
[18] Gan 2009, p. 60.
[19] Jiayao 2002, pp. 79–94.

Another question raised by the analysis of the two cloths concerns the place of their manufacture. There are two possibilities to consider: the Byzantine Empire (primarily the regions of Levant and Syria famous for their textiles) and Central Asia. Let us look at the technical aspects of their execution. The woollen robe of the man buried at Yingpan is a double cloth. Its weave consists of the threads of warp and weft in two colours (red and yellow in this case) interlaced in such a way that each colour constitutes the background on one side and the pattern on the other. On the Yingpan cloth, the background on the right side is red and ornaments yellow, while the left side of the cloth has an identical pattern with reversed colours. The relationship of the strands of warp and weft stands at 1:1. The fabric density stands at 14–16 × 2 per cm for the warp and 44 × 2 per cm for the weft. Pairs of clockwise-spun warp threads (Z) were plied together in the opposite direction (S), while the pairs of the weft threads (Z) remained disconnected. The pattern is repeated cyclically every 118 cm throughout the length of the cloth and every 80 cm along its breadth.[20] In Iran and the Middle East no woollen double cloths have so far been found.[21] This may mean the cloth was manufactured in Central Asia.

The Abegg-Stiftung cloth was woven with a weft-faced compound tabby. It is a technique that allows for refined patterning of multicolour weft threads. Warp threads are divided into main and binding warp. They perform a merely technical function, binding the cloth together and separating individual weft threads. The relationship of the main warp thread to the binding warp in the cloth under study stands at 2:1. The cloth's density is 10–11 of binding warp per cm, 20–22 of main warp per cm and 30–33 × 2 of weft thread per cm. The warp is made up of white, uncoloured yarn twisted clockwise (Z), while weft threads are made of uncoloured yarn and dark green-blue yarn twisted in the same direction as the warp thread.[22]

According to Regula Schorta[23] most technical aspects point to Central Asian origins for the cloth. In the Mediterranean, threads in use were mostly twisted anticlockwise (S), whereas both cloths have threads twisted clockwise (Z). Other technical features not found in western weaving include double weft threads and the 2:1 ratio of main to binding warp. Since these features are characteristic of patterned fabrics found in the Tarim Basin, it seems reasonable to presume that they were manufactured locally.

Yet other clues to the fabric's provenance are provided by the chemical analysis of the dyes used in the Yingpan mummy's robe. Unfortunately this fails to yields unambiguous answers. The red dye contains alizarin and purpurin, which points to the use of *Rubia tinctorum*. The yellow dye is luteolin, found in plants such as reseda and dyer's broom (*Genista tinctoria*).[24] If the *Rubia tinctorum*-derived dye was used in Xinjiang, there is no evidence for use of plants containing luteolin. According to Chinese scholars, who published an analysis of fibres from the Yingpan site, the dye might have been imported from western Asia or the Middle East.[25] These results force us, however, to once again reconsider the question whether the cloths were manufactured locally.

Some scholars believe the cloths were woven in Bactria.[26] This would agree with Wu Min's theory of Kashmiri origins for the double cloth. According to this scholar, cloths made in this technique and found in Xinjiang were made in the Indo-Scythian or Kushan kingdom.[27] The hypothesis of the Yingpan cloth's origins in the Kushan kingdom must, however, be rejected as based on an excessively early date.[28] It should be borne in mind that as of the third century AD that kingdom was part of the Sassanid empire and then passed under rule of the Hephtalite state in the first half of the fifth century. All that is not, however, to rule out that the cloths were made by Kushan

[20] Li 2006, p. 247.
[21] Wu 2006, p. 227.
[22] Schorta 2004, p. 38.
[23] Schorta 2004, p. 38.
[24] Liu *et alii* 2011, pp. 1767–1769.
[25] Liu *et alii* 2011, p. 1769.
[26] Hansen 2010; Yatsenko 2012.
[27] Wu 2006, p. 227.
[28] Yatsenko 2012.

weavers.[29] It seems doubtful that the classical motifs could have survived from the Hellenistic era. If the cloths come from the area of Tokharistan,[30] the patterning imitates late Roman or Byzantine art.

It is worth pointing out that in addition to the cloths under consideration, another textile fragment with a similar pattern has been found at the Tarim Basin. It is a double cloth found at the Niya site in 1959.[31] The fabric has survived only partially, which impedes efforts to reconstruct the pattern. The right side consists of a dark background and yellow ornament in the form of grapevine motifs (vines, leaves and grapes), an animal (only the head can be made out) and a dwarf-fish figure holding a necklace and draped in a sash. The material's dating to the second century AD[32] seems doubtful. Due to the stylistic similarity and identical technique of manufacture it seems probable that it dates to the same period as the Yingpan cloths under consideration.

The classical world's contacts with the Middle and Far East took place on many levels. For centuries a maritime route linked it to India, as described by the anonymous Greek *Periplous of the Erythraean Sea*, as well as such authors as Ptolemy, Strabo, Pliny and Ammianus Marcellinus. In addition to the most convenient sea route, there were also overland routes from Syria (Palmyra, Aleppo, Damascus), via Mesopotamia and Iran, to Sogdiana, Bactria and Xinjiang. The overland Silk Road trade was dominated by Sogdian merchants. They contributed to the dissemination of Persian cultural elements across Central Asia, but were also involved in trade with other parts of the world. Elements from western Eurasia may have reached Central Asia both via these intermediaries and directly. Chinese sources describe Roman merchants of Syriac origins, who sporadically reached China and even Vietnam.[33] Imports from Rome and then Byzantium have been found in present-day India, Afghanistan and China.[34] Elements of western art may have turned up at workshops of artisans of western Asian / Roman origins whose presence in east Turkestan is attested by frescoes discovered at the Miran site in the Tarim Basin and dated to the third–fourth centuries. They show elements of Graeco-Roman art. One of the depictions is signed with the name Tito, a variant of Titus. They may have been executed by an artist of Mediterranean origins.[35]

Emma Bunker believes the motifs decorating the cloths under consideration are connected to afterlife symbolism. According to her, most depictions reached Central Asia with objects imported from the east of the Roman Empire. These would include seals, metal vessels and textiles.[36]

In addition to the aforementioned items, classical motifs may have reached Central Asian on glass vessels. At the Kushan palace of Begram (present Afghanistan) two chambers have been found, filled with valuables from Central Asia, India and China. Particularly worth noting is the collection of painted glassware from the Roman Empire. The objects were presumably made in Egypt ca. AD 50–125.[37] The oblong vases are decorated primarily with mythological motifs. They constitute another piece of evidence for the Mediterranean world's contacts with Central Asia. They reached the Kushan state most likely by sea, though there is no reason to rule out that similar objects were traded overland. Decorations on the vessels may have served as the prototype for motifs adapted in Central Asian art, including patterns on luxury textiles.

The textiles under consideration in the present study constitute indubitable evidence of Central Asia's cultural contacts with the Mediterranean world. It remains impossible to close the discussion of their provenance, but it seems probable that they were made at Central Asian workshops. Their ornaments presumably imitated motifs seen on imports from the Roman Empire. Fashion for such depictions was probably stimulated by frequent contact with objects of western provenance. We can only guess at the kind of goods that served as carriers of classical art. The most frequent among

[29] Hansen 2010.
[30] After the conquest of Bactria by Hephtalite tribes, the area came to be known as Tokharistan.
[31] Johnston Laing 1995, p. 4.
[32] Johnston Laing 1995, p. 4.
[33] Ball 2010, p. 135.
[34] Ball 2010, pp. 133–139.
[35] Ball 2010, p. 146.
[36] Bunker 2004, pp. 31–35.
[37] Ball 2010, p. 135.

them were presumably textiles, metal or glass vessels. It cannot, however, be ruled out that dissemination of classical art had an altogether different impulse. The author hopes that continued excavations will yield further evidence of contact between these cultural milieus and contribute to their greater understanding. She also hopes the textiles found along the Silk Road will be subjected to detailed technical analysis, which will allow for reconstruction of the technologies employed in individual weaving workshops. This will not only enrich our knowledge of the weaving industry, but will also allow to identify the origins of textiles and thus to reconstruct ancient trade routes and intensity of cultural influences.

Bibliography

Ball 2010	W. Ball, *Rome in the East*, *the Transformation of an Empire*, London – New York.
Bunker 2004	E. Bunker, "Late antique motifs on a textile from Xinjiang reveal startling burial beliefs", *Orientations* 35.4, pp. 30–36.
Gan 2009	F. Gan, "The Silk Road and ancient Chinese glass", [in:] *Ancient Glass Research along The Silk Road*, ed. F. Gan, New Jersey – London – Singapore – Beijing – Shanghai – Hong Kong – Taipei – Chennai, pp. 41–108.
Hansen 2010	V. Hansen, *Silk Road: A New History*, Oxford.
Jiayao 2002	A. Jiayao, "When glass was treasured in China", [in:] *Nomads, Traders and Holy Men along China's Silk Road*, ed. A. Juliano, J. Lerner (= *Silk Road Studies* 7), Turnhout, pp. 79–94.
Johnston Laing 1995	E. Johnston Laing, "Recent finds of western-related glassware, textiles, and metalwork in Central Asia and China", *Bulletin of the Asia Institute* 9, pp. 1–18.
Jones 2009	R. A. Jones, "Centaurs on the Silk Road: recent discoveries of Hellenistic textiles in western China", *The Silk Road* 6.2, pp. 23–32.
Lerner 2005	J. A. Lerner, *Aspects of Assimilation: The Funerary Practices and Furnishings of Central Asians in China* (= *Sino-Platonic Papers* 168), Philadelphia.
Li 2006	W. Li, "Textiles of the second to fifth century unearthed from Yingpan cemetery", [in:] *Central Asian Textiles and Their Contexts in the Early Middle Ages*, ed. R. Schorta, Riggisberg, pp. 243–264.
Liu *et alii* 2011	J. Liu *et alii*, "Identyfication of ancient textiles from Yingpan, Xinjiang, by multiple analytical techniques", *Journal of Archaeological Science* 38, pp. 1763–1770.
Mallory, Mair 2000	J. P. Mallory, V. H. Mair, *The Tarim Mummies. Ancient China and the Mystery of the Earliest Peoples from the West*, London.
Schorta 2004	R. Schorta, "Notes of the technology of the eagles and snakes, erote and butterflies wool taqueté in the Abegg-Stiftung collection", *Orientations* 35.4, pp. 37–40.
Sheng 2010	A. Sheng, "Textiles from the Silk Road, intercultural exchanges among nomads, traders and agriculturalist", *Expedition* 52.3, pp. 33–43.
Wu 2006	M. Wu, "The exchange of weaving techniques between China and Central and Western Asia from the third to the eight century. Based on new textiles finds in Xinjiang", [in:] *Central Asian Textiles and Their Contexts in the Early Middle Ages*, ed. R. Schorta, Riggisberg, pp. 211–242.
Yatsenko 2012	S. A. Yatsenko, "Yuezhi on Bactrian embroidery from textiles found at Noyon Uul, Mongolia", *The Silk Road* 10, pp. 39–48.
Yokohari 1991	K. Yokohari, "An essay on the debut of the Chinese samit based on the study of Astana textiles", *Bulletin of the Ancient Orient Museum* 12, pp. 41–101.

Zhang 1996 — G. Zhang, "The city-states of the Tarim Basin", [in:] *The Crossroads of Civilizations: A.D. 250 to 750*, ed. B. A. Litvinsky (= *History of Civilisations of Central Asia* 3), Paris, pp. 284–285.
Zhao 2012 — F. Zhao, *Recent Excavations of Textiles in China*, Hong Kong.
Zhou, Li 2004 — J. Zhou, W. Li, "The Yingpan cemetery on the Loulan branch of the Silk Road", *Orientations* 35.4, pp. 41–43.

Streszczenie

Antyczne motywy na stroju mumii z Yingpan

W grobie nr 15 na stanowisku Yingpan w Kotlinie Tarymskiej odkryto bardzo dobrze zachowaną mumię mężczyzny. Chińscy archeolodzy wydatowali znalezisko na okres panowania Późniejszej Dynastii Han (I–II w. n.e.). Wydaje się jednak, że pochówek był znacznie późniejszy. Prawdopodobnie pochodził z okresu przypadającego na schyłek rządów dynastii Jin (V w. n.e.). Trudno ustalić, kim był zmarły mężczyzna. Według niektórych badaczy był on lokalnym władcą, według innych zamożnym kupcem. O jego wysokim statusie świadczy bogaty strój oraz pokaźny inwentarz grobowy. Najciekawszym elementem ubioru mężczyzny jest wełniany płaszcz ozdobiony antycznymi motywami. Przedstawienia ukazane w podobnej stylistyce znajdują się jeszcze na dwóch tkaninach odkrytych w Kotlinie Tarymskiej. Proweniencja tkanin nie jest znana. Mogły one powstać zarówno w warsztatach lokalnych, baktryjskich, jak i na terytorium Lewantu. Z uwagi na pewne cechy technologiczne przypuszcza się jednak, że utkano je na terenie Azji Środkowej. Występowanie antycznych motywów może być wytłumaczone wpływem tradycji z okresu grecko-baktryjskiego, choć bardziej prawdopodobne wydaje się, że motywy te dotarły na terytorium Azji Środkowej wraz z importami rzymskimi. Podobne zdobienia mogły występować na sprowadzanych tkaninach, naczyniach metalowych, a także przedmiotach szklanych.

Dominika Kossowska
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
d.m.kossowska@student.uw.edu.pl

Marta Bajtler

CERAMIC AMPHORA STOPPERS FROM THE EAST COAST OF THE ADRIATIC

Abstract: Ceramic amphora stoppers in a very characteristic shape of a ceramic disc with a central handle have been found in large numbers in the Adriatic region. The most numerous finds come from the eastern part of the basin. They are also found on the Italian coast of the Adriatic, in Austria and (individual finds) in Malta, Cyprus and Egypt. The stoppers are typically closely linked to amphorae they used to seal, but there have also been finds of secondary use.

Key words: amphora stoppers, Adriatic, amphorae, stamps, finds

Introduction

In antiquity, ever since the beginnings of maritime transport, there existed the need for hermetic sealing of containers. From a very early period, plugs of various kinds are known to have been made of timber, ceramics, plaster or clay and to have been sealed with mortar, organic mixtures or resin. In contrast to organic stoppers (mixtures of mud, grasses, clay and leather or textiles), which rarely survive, and seals, which were destroyed in unsealing the containers, ceramic stoppers survive very well and were reusable.

In the Adriatic basin, numerous finds have been made of very characteristic ceramic amphora stoppers. Their shape resembles a ceramic disk with a central handle. The stoppers are of fairly standardised sizes since they sealed several types of morphologically similar amphorae (Greek--Italic MGS VI, Lamboglia 2, Dressel 6A and the slightly smaller Dressel 6B amphora). The radius of stoppers falls in the range of 6 cm to 12 cm. The largest group consists of disks with a 9–10 cm radius. Their thickness oscillates between 0.5 cm and 3.5 cm, though an overwhelming majority is 1–2 cm thick.

Classification

Classification of the stoppers from by morphological characteristics is not easy, as practically every disk is a slightly different shape. Broad categories may, however, be distinguished on the basis of production mode: stoppers were made from a mould, on a potter's wheel or cut out of bodies of larger vessels (primarily amphorae, but occasionally tiles) [Fig. 1]. There are also very sporadic handmade specimens [Fig. 2].

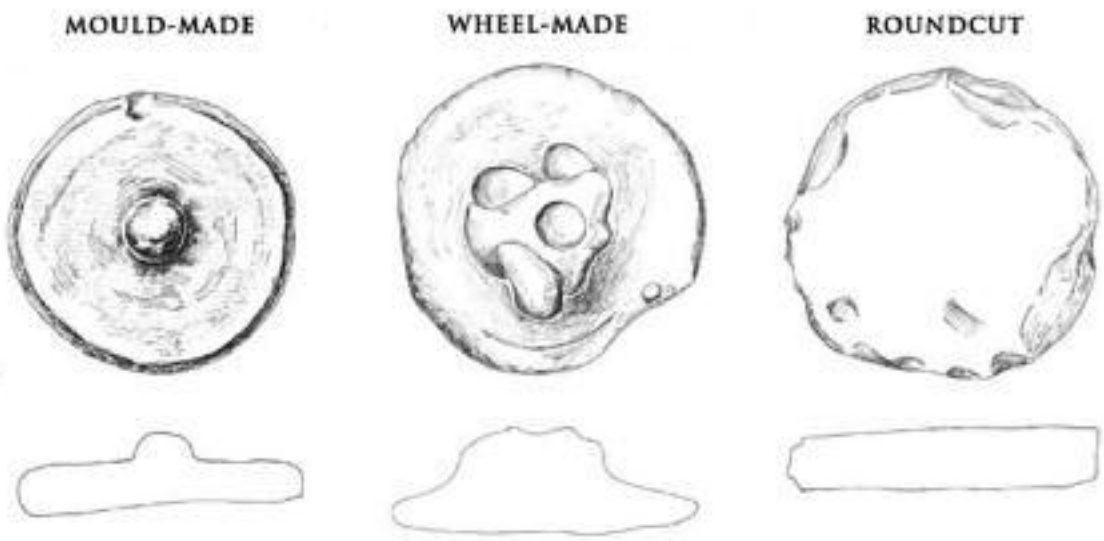

Fig. 1. Classification of stoppers by mode of production
(graph. M. Różycka, M. Bajtler)

Fig. 2. A handmade stopper, find from Risan
(photo J. Recław, graph. M. Bajtler)

In spite of just a few modes of manufacture, each stopper is different, as they were individually formed by the potter (even specimens from the same mould have individual characteristics). Differences in shape were erased in the process of sealing and filling in the gaps between the stopper and the neck of the vessel.

The largest group is made up of stoppers best described as ceramic disks. These stoppers have a flat or nearly flat bottom and a central knob of small or medium dimensions. These specimens are made in a mould, divided in halves or not [Figs. 3 & 4]. Clay was presumably squeezed into the mould by hand. The bottom surface was also polished by hand, hence occasional finger-marks and an uneven surface. Some disks also bear signs of removing excess clay with a wooden tool, leaving characteristic traces [Fig. 5].

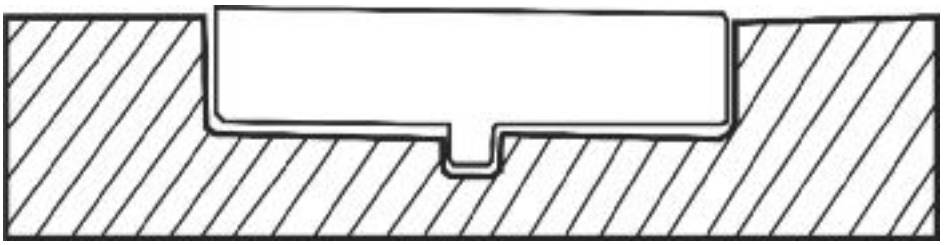

Fig. 3. A one-part mould for stopper production
(graph. M. Bajtler after Lete 2005)

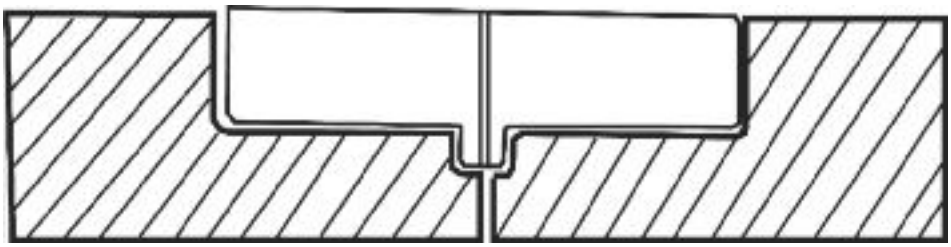

Fig. 4. A two-part mould for stopper production
(graph. M. Bajtler after Lete 2005)

Fig. 5. Marks of a wooden tool to remove excess clay, find from Risan
(photo J. Recław, graph. M. Bajtler)

Disks with a characteristic stripe running through the middle confirm use of moulds with two halves, as clay accumulated in the place where the halves were joined. The disks also frequently have an unevenly attached handle or unevenly glued parts [Fig. 6]. Such imperfections resulted presumably from detaching the mould in order to take out the stopper.

Decoration and handles were also made from a mould. Among the handles, the most frequent shape is round: small or large. There are also rectangular or square, oval or irregular shapes. Some also bear finger-marks. At first glance, these marks resemble those formed during the potter's forming of the handle during work on the wheel. The disks were, however, formed from a mould, since they bear impressed decoration and the handle looks as if it was deliberately squeezed after the impression [Fig. 7].

Fig. 6. Disconnected stopper halves, find from Risan
(photo J. Recław, graph. M. Bajtler)

Fig. 7. Disk from mould with deliberately squeezed handle, find from Risan
(photo J. Recław, graph. M. Bajtler)

Use of the mould allowed for mass production of stoppers of a uniform radius and thickness, while not calling for specialist skills. Manufacturing of the stoppers on a potter's wheel required more specialised skills [Fig. 8]. These stoppers have a characteristic weaving surface, sometimes a hollow at the centre of the bottom (under the handle) and a big, irregular handle, frequently with the potter's finger-marks. Not all of these features always coincide on a stopper. The greater part of the finds have a flat bottom and a large, handmade handle in widely variable shapes: some are extended upwards, slightly curled and massive, broad, formed in the shape of a hand or extensive cones, which take up most of the disk surface. Such stoppers also bear characteristic marks of being worked on the wheel.

The least numerous category of finds are the so-called "roundcuts", that is plugs cut out of bodies of larger vessels, typically amphorae [Fig. 9].

Fig. 8. Wheel-made stoppers, finds from Risan
(photo J. Recław, graph. M. Bajtler)

Fig. 9. Stopper cut from amphora body (or tile), find from Risan
(photo J. Recław, graph. M. Bajtler)

Decorations and inscriptions

Another characteristic feature of the Adriatic stoppers is that they bore decorations and marks [Fig. 10]. Decorations, individual letters or entire words turn up only on disks made from moulds (of one or two parts). They were impressed in the form of a convex relief during the stopper's production. Stoppers with the same relief frequently differ slightly in shape, which confirms they were formed individually.

Fig. 10. Stopper with PHILESPOTUS inscription impressed by mould, find from Risan (photo J. Recław, graph. M. Bajtler)

Among the decorations are found linear, solar or geometrical motifs. These may be single lines or bumps spread irregularly over the disk surface, but also more complex ornaments resembling the sun, star, rosette or floral motifs. There are also sporadic depictions of the anchor or trident.

Inscriptions were made in both Greek and Latin alphabets. In both are found single letters or letter sequences that fail to make up words. Sometimes — in inscriptions in both languages — entire names may be deciphered: Latin PHILESPOTUS[1] (Risan), SABBAIS[2] (Risan), ALEXANDER[3] (Narona), HILARIONIS[4] (Narona), HILARII[5] (Aquileia), PHILODA(mi)[6] (Narona); Greek ΦΙΛΟΝ[7] (Resnik), ΦΙΛΟ[8] (Aquileia), or abbreviations: CVE[9] (Risan) / GAE[10] (Resnik), DIO[11] (Risan), SISE[12] (Lorun). There is also a number of pseudo-inscriptions which merely imitate a seal with a name or are ineligible. The seals presumably belonged to the owner of the pottery workshop, the potter or wine producer, who would mark his product. Single letters may have been his initials or an abbreviation of the name. To date, only a small number of seals have been matched to similar examples on amphorae.[13]

[1] Bajtler 2013, p. 80.
[2] Bajtler 2013, p. 81.
[3] Abramić 1926–1927, p. 130, fig. 4a; Buljević 1997–1998, p. 233, pl. XXIX, 76.
[4] Abramić 1926–1927, p. 130, fig. 4c; Buljević 1997–1998, p. 234, pl. XXIX, 77.
[5] Braidotti, Magnani, Rosset 2012–2013, p. 41.
[6] Abramić 1926–1927, p. 130, fig. 4b.
[7] Lete 2005, p. 12.
[8] Braidotti, Magnani, Rosset 2012–2013, p. 41.
[9] Bajtler 2013, p. 82.
[10] Lete 2005, p. 12.
[11] Bajtler 2013, p. 82.
[12] Kovačić *et alii* 2011, p. 519.
[13] Bajtler 2013, 81-82; Kovačić *et alii* 2011, p. 519; Lindhagen 2009, p. 88.

Plugging

The process of plugging the amphorae may only be reconstructed on the basis of stoppers found intact in the vessel's neck. Several such examples are known[14] [Fig. 11]. For all of them, nothing but the stopper has survived. That does not indicate that no additional sealing was performed. A ceramic plug alone was insufficient to ensure a hermetic sealing of the amphora. Since, however, the amphorae found *in situ*, as well as the disks themselves (found in their hundreds at archaeological sites) fail to show any evidence of a sealing material, it must be concluded that the material used was less durable than mortar or resin. It may be presumed that unburned clay was used or some sort of an organic mixture. Such sealing must have covered only the space between the neck of the amphora and the stopper, since covering the seal on the stopper would make no sense [Fig. 12]. The stopper was secured inside the neck of the amphora with the handle up by squeezing it until it was fixed. It is known that the stoppers came in many sizes, but thanks to the shape of the vessel's neck, which widened towards the top, this meant merely that it would become fixed at a higher or lower point. It could be said that the stopper itself served merely as a plug and would only become a full stopper after further sealing.

Fig. 11. Amfora with stopper found *in situ*, find from Risan (photo M. Bajtler)

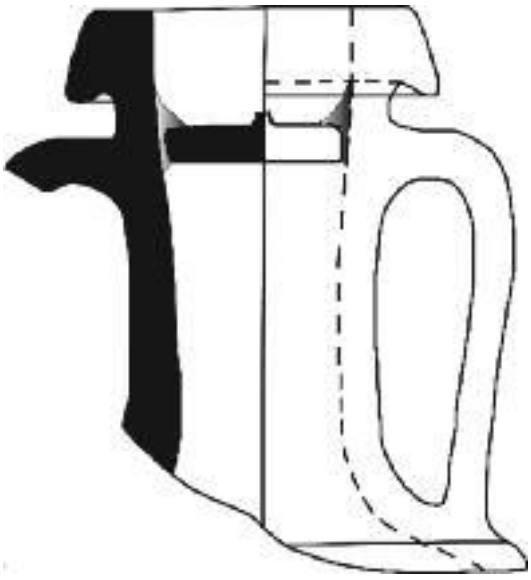

Fig. 12. Reconstruction of sealed amphora (graph. M. Bajtler after Lete 2005)

[14] Wreck Boka Kotorska 2 (Montenegro) (http://www.rpm-nautical.org/bokakotorska2.html — date of access: 17.06.2015); Wreck Sason 1 (Albania) (http://www.rpm-nautical.org/albania2011.html — date of access: 17.06.2015); southern Istria (Croatia) (Koncani Uhač 2008, p. 39).

Sealed amphorae

Ceramic stoppers were used over several centuries to seal several types of amphorae: the Greek--Italic MGS VI (3rd–2nd century BC), Lamboglia 2 (end of 2nd century BC – 1st century AD), Dressel 6A (end of 1st century BC – 1st century AD) and Dressel 6B (1st–2nd century AD). The former three types were used for transporting wine and represent a continuity of form. The earliest, Greek-Italic form evolved into Lamboglia 2 and then into Dressel 6A. This path of evolution is confirmed by existence of intermediate forms with morphological features of both types. The type Dressel 6B was an amphora produced in Istria to transport olive oil. Securing it with the same stoppers as wine amphorae may be evidence of adoption of cultural patterns that had functioned locally over prolonged periods.

Geographic range of finds

Finds of ceramic stoppers are most numerous at sites along trade routes, both maritime and overland. Their presence is confirmed in north Italy (Friuli and Veneto) and along the western coast of the Adriatic (Marche and Puglia) and in Austria, Slovenia, Croatia, Bosnia-Herzegovina, Montenegro and Albania. Sporadic finds are also known from Greece, Cyprus, Malta and Egypt [Fig. 13].

Fig. 13. Map of ceramic stopper finds (graph. M. Bajtler)

The sites found inland in contemporary Slovenia and Austria are linked to the amber route and the presence of Roman legions in conquered provinces and are the northernmost finds. The rest of the sites lie primarily along the shores of the Adriatic and its maritime routes. Hence the fairly frequent underwater finds, which however tend to contain only single specimens.[15] The exception is the Hutovo Blato lake[16] in Bosnia-Herzegovina. Hundreds of Lamboglia 2 amphora fragments and ca. 700 stoppers have been found at the site.[17] The amphorae are dated to the second–first century BC. A majority of the stoppers were made from one- or two-part moulds. There are also single finds of stoppers cut from the bodies of amphorae. The ceramic disks bore decorations and inscriptions in Greek or Latin. There are also single letters or a whole word HILA.[18] It is not quite known why and how boats transporting the wine in amphorae found their way to the bottom of the lake. It is clear that this was not a one-off occurrence (for example, a Roman attack on a pirate port), but a long-lasting process since the amphorae represent different stages of development. It is interesting that nearly all were found in fragments — just two among the hundreds were complete (type Dressel 6A).[19]

On the western shore of the Adriatic — in contrast to the east — sites with ceramic disks are counted in single digits. This may have several causes. One is the location of trade routes. From the Hellenistic period, the route along the eastern shore was more frequently used thanks to its easier navigability and numerous small trading posts developed on the littoral. Another is the possibility that the stoppers were manufactured on the eastern shore since they are found on practically every ancient site.

I am at present aware of 45 sites where a ceramic disk has been found, of which 39 are in the Adriatic basin. The finds come from land and underwater sites and are usually directly linked to amphora finds — for example at Risan (Rhizon[20]) in Montenegro or Vid (Narona[21]) and Resnik (Siculi[22]) in Croatia.

[15] Underwater archaeology has a unique character. It is rare for the entire cargo to be lifted from the water with only diagnostic elements selected for recovery, while the rest of the finds are documented. It is not always that the entire cargo survives. Artefacts can be spread over an area undersea and only a part of the cargo may be found.

[16] Desilo is a small valley in the vicinity of Narona and in antiquity was probably linked Neretva river via the Hutovo Blato lake (at present, the area is waterlogged). Desilo functioned presumably as an Illyrian trading point (some hypothesise a pirate settlement). Just like Narona, it functioned as a meeting point for influences from the sea and inland. Remains of a settlement, port buildings have been found alongside more than 10 small local boats (*lembi*) submerged with z amphorae they were presumably carrying (Lindhagen 2009, p. 90; Zmaić, Mihojlek 2013; http://www.apollon.uio.no/english/articles/2008/illyrer-english.html — date of access: 29.06.2015).

[17] Lindhagen 2009, p. 90.

[18] Zmaić, Mihojlek 2013, p. 180.

[19] Zmaić, Mihojlek 2013, p. 180.

[20] Contemporary Risan lies on the site of ancient Rhizon/Risinium, at the end of the meandering Bay of Kotor in Montenegro. The beginnings of settlement in the area go back to the 6th century BC. The site also contains Hellenistic and Roman occupation layers. Rhizon enjoyed its maximum prosperity in the 3rd century BC. Queen Teuta moved her capital from Shkodra to Rhizon in that period. The settlement extended over a small plateau on the Spila river, overlooked by a rocky acropolis on the Gradine hill. Excavators uncovered living quarters, amphora warehouses, city walls and an ancient ancorage (Dyczek *et alii* 2004; Dyczek *et alii* 2007; Dyczek 2011).

[21] Ancient Narona lied on the site of contemporary Vid near Metković in Croatia. The city was fairly distant from the Adriatic, to which it however enjoyed a connection via the navigable Naron (Neretva) river. Thanks to the link, Naron served as the gateway linking the Illyrian interior with the Hellenised coast. As early as the Hellenistic period, an emporium functioned here with both Greek and Illyrian occupation and Augustus granted the city the status of colony (Lindhagen 2009, p. 94).

[22] Resnik (ancient Siculi) lies on the Bay of Kaštela in Croatia. It is found between the ancient sites of Salona and Tragurium. Founded in the late Republic in the second half of the 2nd century BC, it was abruptly abandoned in the second half of the 1st century AD, as seen from a layer of destruction. Archaeological research has been carried out underwater on the Hellenistic port and within the ancient city (primarily rescue excavations). Remains of houses, roads and fortifications have been found here (Šuta 2011; Šuta 2012–2013).

Over 1,000 ceramic amphora stoppers have been found at Risan over 15 years of excavations, mostly in the context of warehouses,[23] where mostly Greek-Italic MGS VI and Lamboglia 2 types were stored. The most frequent disks were made from a mould (with one or two parts) or on the wheel. There are also infrequent specimens cut from the bodies of amphorae or tiles. Some disks produced from a mould bore decorations and inscriptions in Greek or Latin. Among the decorative motifs, the most frequent are simple linear, geometric and solar patterns or more complex elements, such as floral motifs or anchors.[24] At Narona ceramic stoppers are mostly found in the context of Lamboglia 2 and Dressel 6A amphorae. There are also disks made on the wheel or mould, decorated, inscribed or plain.[25] At Siculi as well as Rhizon ceramic stoppers are among the most frequent finds, numbering over 500. The largest number comes from the rescue excavations of 2007 but many were found in other seasons or during underwater research. They are found in the context of several amphora types: the late Greek-Italic type, Lamboglia 2 and Dressel 6A with Lamboglia 2 and Dressel 6A the most numerous. Just several fragments have been found of the earliest Greek--Italic amphora type. All types of disks are found: impressed in a mould, wheel-formed, cut from amphorae or tiles. Some stoppers bear decorations or inscriptions.[26]

In a few cases stoppers were reused for drainage or as construction material. At Croatian Pula (Pola[27]), in the Sveti Teodor district, a deposit of z 2119 amphorae has been found (98 % of the amphorae are type Lamboglia 2), which were used for the construction of hillside terrace to serve as the site of a church. Some of them (62 specimens) were sealed with a stopper, which was then fixed with a layer of mortar. Some of the containers were also sealed with a mixture of mortar and seaweeds, while three contained remains of a yellow, spongy organic material (these lacked a ceramic stopper). All the amphorae in the deposit were empty, which indicates they were sealed purely for construction purposes.[28] In north Italy, at the site of Concordia Sagittaria (Iulia Concordia[29]), excavations at via San Pietro yielded a find of 1912 stoppers, including 1317 that survived *in toto*. The stoppers, together with amphorae (mainly Dressel 6A) were reused in the Roman period for paving.[30]

Most ceramic stoppers are found in contexts dating to the Roman period. I am aware of just a few sites, where stoppers were found with amphorae dated to the late Hellenistic period, that is the Greek-Italic MGS VI type: Sermin[31] (Slovenia), Pola (finds at the forum), Resnik,

[23] Dyczek 2012, p. 70.
[24] Bajtler 2013.
[25] Abramić 1926–1927; Buljević 1997–1998; Lindhagen 2009, p. 94; Patsch 1908, p. 93, fig. 7; Topić 2004, pls. 101, 102.
[26] Šuta 2012–2013.
[27] Contemporary Pula lies on the site of ancient Pola, rendering regular archaeological work impossible in practice. Pola was located on the southern coast of Istria as the last important site on the peninsula's west. This location led to its development as an important port and stopping point on a maritime trade route, which branched out to Italy from Pola. The earliest occupation goes back to Illyrian times, when a fortification was erected, around which grew the Roman-era Colonia Iulia Pola (Matijašić 1986, p. 15).
[28] Starac 2009, pp. 388, 389.
[29] The Roman colony Iulia Concordia was probably founded in 42 BC at the crossroads of two important roads, Via Postumia and Via Annia. The beginnings of pre-Roman settlement go back to 750 BC. The city rapidly developed into an important centre, thanks in part to its location between such centres as Aquileia and Altinum (http://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.04.0006:entry=iulia-concordia — date of access: 26.06.2015).
[30] Rinaldi, Gobbo, Sandrini 2012–2013, p. 68.
[31] The site of Sermin lies on an isolated hill in the central section of the Bay of Koper (north Istria), close to the mouth of the Rižana in contemporary Slovenia. In this area crisscrossed influences from northern Italy, Istria and south-eastern Alps. The area of Sermin was populated in prehistoric times, which yield numerous finds. Roman--era layers are also found. Rescue excavations of 1987–1991 yielded many amphora and stopper finds. The best represented amphora type is Lamboglia 2. There are also numerous finds of the late Greek-Italic type, intermediate forms between it and Lamboglia 2 and several items of Dressel 6A. Also found are amphorae of the locally produced Dressel 6B type and Dressel 2-4, as well as late Rhodian. In total 64 stoppers have been found, of which 49 specimens (or nearly 80 % of the total) were wheel--made. The rest of the disks were made from mould or cut out of vessel bodies. All the wheel-made disks have a hol-

Salona[32] (intermediary form between the Greek-Italic MGS VI and Lamboglia 2) and Risan. It is at present impossible to say how to date a given type of stopper or its decorations and inscriptions. Several finds from central Dalmatia lead to several conclusions. I. Šuta in his publication of stoppers from Siculi mentions prevalence of stoppers made on the wheel, which correspond to amphorae of the type intermediate between the Greek-Italic and Lamboglia 2 types and of Lamboglia 2. A similar situation is found at Salona and Epetion, where excavations have only yielded wheel-made stoppers.[33] On this basis, it has been concluded that in Dalmatia the first century BC brought an intensification of disks from the mould, which bear decorations and inscriptions. J. Horvat reaches similar conclusions in his publication of the site of Sermin.[34] The finds from Risan, where in analogous Hellenistic contexts the majority of stoppers are made from the mould and bear decorations and inscriptions, have to date failed to confirm this hypothesis.

At the present stage of research on ceramic disks from the eastern shore of the Adriatic, questions continue to outnumber answers. A detailed analysis of geographic distribution of finds and their contexts may yet bring information on the dating of specific disks or their decorations and inscriptions. Ceramic studies may in turn help identify sites of production of the artefacts under consideration.

Bibliography

Abramić 1926–1927 — M. Abramić, "Žigovi na opekama i amforama iz Narone", *Vjesnik za arheologiju i historiju dalmatinsku* 49, pp. 130–138.

Bajtler 2013 — M. Bajtler, "Wstępne studium ceramicznych korków do amfor ze stanowiska Risan w Czarnogórze z lat 2001–2008", *Novensia* 24, pp. 75–89.

Braidotti, Magnani, Rosset 2012–2013 — E. Braidotti, S. Magnani, G. F. Rosset, "Coperchi d'anfora iscritti dagli «scavi delle fognature» di Aquileia (1968–1972)", *Quaderni Friulani di Archeologia* 22–23, pp. 35–48.

Buljević 1997–1998 — Z. Buljević, "Njive-Podstrana: groblje iz vremena seobe naroda u Naroni (Narona II)", *Vjesnik za arheologiju i historiju dalmatinsku* 90–91, pp. 201–294.

Dyczek 2011 — P. Dyczek, "From the history on ancient Rhizon/Risinium: Why the Illyrian King Agron and Queen Teuta came to a bad end and who was Ballaios?", [in:] *Classica Orientalia. Essays Presented to Wiktor Andrzej Daszewski on His 75th Birthday*, ed. H. Meyza, I. Zych, Warsaw, pp. 157–174.

Dyczek 2012 — P. Dyczek, "Gifts of Dionysus in Rhizon, capital of Queen Teuta. On the typology of the so-called Greek-Italic amphorae", *Études et travaux* 25, pp. 65–80.

low in the bottom and a small, irregular handle, sometimes with the potter's finger-marks. Just like wheel-made stoppers from Risan, they are undecorated. Stoppers made from mould have a small round or square handle and several specimens have simple linear decoration. All the disks have the same ceramic mass, described by Horvat as S1 (Horvat 1997, pp. 77–82).

[32] Ancient Salona lied on the outskirts of contemporary Split, near today's Solin (Croatia). The city lied directly on the sea and had a natural port. In the 4th century the area was conquered by the Dalmatians. Soon afterwards Salona was colonised by Greek settlers from Issa (Vis). The Romans showed up as early as the 2nd century BC, using Salona as the base for military operations in the region. In 47–44 BC Caesar gave Salona the status of a colony (Colonia Martia Iulia Valeria), and in AD 9 it became the capital of the newly created province of Dalmatia. The context of 1st century BC and 1st century AD stoppers has yielded finds of wheel- and mould-made ceramic discs (Šuta 2012–2013, p. 83; Horvat 1997, p. 81).

[33] Šuta 2012–2013, p. 113.

[34] Horvat 1997, p. 81.

Dyczek *et alii* 2004 — P. Dyczek, V. Kovačević, P. Lutovac, J. Martinović, J. Recław, A. Stanković, "Rhizon, 2001–2003. Preliminary report on the excavations of the Center for Archaeological Research — Novae, Warsaw University", *Archeologia* (Warsaw) 55, s. 101–118.

Dyczek *et alii* 2007 — P. Dyczek, V. Kovačević, M. Lemke, P. Lutovac, J. Recław, "Rhizon, 2004–2007. Preliminary report on the excavations of the Center for Research on the Antiquity of Southeastern Europe, University of Warsaw", *Archeologia* (Warsaw) 58, pp. 121–139.

Horvat 1997 — J. Horvat, *Sermin. A Prehistoric and Early Roman Settlement in Northwestern Istria*, Ljubljana.

Koncani Uhač 2008 — I. Koncani Uhač, "Underwater archaeology of southern Istria in Roman antiquity", [in:] *Poluotok uronjen u more. Podmorska arheologija južne Istre u antici. Izložba* / *Peninsula Immersed in the Sea. Underwater Archaeology of Southern Istria in Roman Antiquity. Exhibition*, ed. I. Koncani Uhač (= *Arheološki muzej Istre. Katalog* 75), Pula, pp. 18–40.

Kovačić *et alii* 2011 — V. Kovačić, A. Marchiori, Y. Marion, G. Rosada, C. Rousse, F. Tassaux, "Loron – Lorun, Parenzo – Poreč, Istria. Una villa maritima nell'agro parentino: la campagna di ricerca 2010", *Histria Antiqua* 20, pp. 515–526.

Lete 2005 — N. Lete, *Pločasti čepovi amfora*, Split.

Lindhagen 2009 — A. Lindhagen, "The transport amphoras Lamboglia 2 and Dressel 6A: A central Dalmatian origin?", *Journal of Roman Archaeology* 22, pp. 83–108.

Matijašić 1986 — R. Matijašić, "Istria and the northern Adriatic commerce and sea routes", [in:] *Brodarstvo i pomorstvo Istre u antici. Izložba* / *Shipping and Seamanship in Istria in Classical Times. Exposition*, ed. V. Girardi-Jurkić (= *Arheološki muzej Istre. Katalog* 23), Pula, pp. 15–17.

Patsch 1908 — K. Patsch "Kleinere Untersuchungen in und um Narona", *Jahrbuch für Altertumskunde* 2, pp. 87–117.

Rinaldi, Gobbo, Sandrini 2012–2013 — F. Rinaldi, V. Gobbo, G. M. Sandrini, "Tappi d'anfora da un intervento apud horrea a Iulia Concordia", *Quaderni Friulani di Archeologia* 22–23, pp. 67–75.

Starac 2009 — A. Starac, "Depozit amfora u četvrti sv. Teodora, Pula", [in:] *Jurišićev zbornik. Zbornik radova u znak sjećanja na Marija Jurišića*, ed. L. Bekić, Zagreb, pp. 379–389.

Šuta 2011 — I. Šuta, "Amfore iz 2. i 1. st. pr. Kr." / "Amphorae (2nd and 1st century BC)", [in:] *Katalog izložbe Antički Sikuli* / *Ancient Siculi. Exhibition Catalogue*, Kaštela, pp. 77–85.

Šuta 2012–2013 — I. Šuta, "Amphora lids from Siculi", *Quaderni Friulani di Archeologia* 22–23, pp. 111–129.

Topić 2004 — M. Topić, "Coase ware, amphorae, terracota and cult vessels from the Augusteum from Narona (Narona VIII)", *Vjesnik za arheologiju i historiju dalmatinsku* 96, pp. 303–516.

Zmaić, Mihojlek 2013 — V. Zmaić, I. Mihojlek, "Podvodno arheološko istraživanje lokaliteta Desilo – Hutovo Blato", *Portal Godišnjak Hrvatskog restauratorskog zavoda* 4, pp. 171–186.

***

Websites

Apollon Research Magazine
http://www.apollon.uio.no/english/articles/2008/illyrer-english.html

Preseus Digital Library
http://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.04.0006:entry=iulia-concordia

RPM Nautical Foundation
www.rpmnautical.org

Streszczenie

Ceramiczne korki do amfor ze wschodniego wybrzeża Adriatyku

W strefie adriatyckiej na stanowiskach lądowych oraz podwodnych licznie odkrywane są bardzo charakterystyczne ceramiczne korki do amfor. Swoim kształtem przypominają ceramiczny dysk z centralnie położonym uchwytem. Stopery te posiadają dosyć zestandaryzowane wymiary, gdyż zamykały kilka typów amfor zbliżonych do siebie morfologicznie (amfora grecko-italska MGS VI, Lamboglia 2, Dressel 6A oraz trochę mniejsza Dressel 6B). Stopery zazwyczaj mają 9–10 cm średnicy i 1–2 cm grubości.

Korek mocowany był wewnątrz szyi amfory uchwytem do góry, poprzez wciśnięcie go aż do momentu zaklinowania. Następnie przerwa, która powstawała pomiędzy stoperem a ścianką amfory, wypełniana była substancją uszczelniającą (niewypalona glina lub inny materiał organiczny).

Opierając się na sposobie produkcji korki można podzielić na trzy podstawowe typy: korki robione w formie (jedno- lub dwuczęściowej), na kole garncarskim oraz wycinane z brzuśców większych naczyń (amfor, czasami z dachówek). Na niektórych dyskach produkowanych z formy pojawiają się dekoracje i inskrypcje w formie wypukłego reliefu. Wśród dekoracji pojawiają się motywy liniowe, solarne oraz geometryczne. Bywają to proste pojedyncze linie oraz guzki nieregularnie rozrzucone po powierzchni dysku, a także bardziej skomplikowane ornamenty przypominające słońce, gwiazdę, rozetę lub motywy roślinne. Pojawiają się także pojedyncze przedstawienia kotwicy lub trójzębu. Inskrypcje zapisywane były w alfabecie greckim i łacińskim. W obydwu alfabetach pojawiają się pojedyncze litery lub grupy liter niełączących się w jeden wyraz. W przypadku obydwu typów inskrypcji można również niekiedy odszyfrować całe imiona. Stemple te prawdopodobnie należały do właściciela oficyny garncarskiej, garncarza bądź producenta wina, który znakował w ten sposób swój wyrób.

Ceramiczne korki najliczniej odkrywane są na stanowiskach położonych wzdłuż szlaków handlowych, morskich oraz lądowych. Ich występowanie potwierdzone jest w północnej Italii (prowincje Friuli i Veneto), wzdłuż zachodniego wybrzeża Adriatyku (prowincje Marche i Puglia) oraz w Austrii, Słowenii, Chorwacji, Bośni i Hercegowinie, Czarnogórze i w Albanii. Pojedyncze znaleziska pochodzą także z Grecji, Cypru, Malty i Egiptu.

Marta Bajtler
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
mbajtler@wp.pl

Julia Mikocka

PRIVATE ARCHITECTURE IN PTOLEMAIS (LIBYA): EXCAVATIONS AND NON-INVASIVE SURVEYS

Abstract: Ptolemais, located in Cyrenaica, is one of the most unique archaeological sites. Despite several archaeological missions to Ptolemais and plethora of published papers, very few research studies have explored private architecture of Ptolemais.

This article will thus discuss peristyle houses from ancient city of Ptolemais in Libya dated between Hellenistic and late Roman period. Data on private architecture, collected during excavations works and non-invasive surveys between 2001–2010 by the Polish Archaeological Mission, the University of Warsaw, will be presented. Formation of residential architecture in the Hellenistic period and the evolution in the Roman and late Roman periods will be presented. Further, typical features of private architecture in Cyrenaica will be discussed in relation to the scientific data from the excavations by British, Italian and American archaeologists conducted in Ptolemais in 1935–1942, 1956–1962, 1971, 1978–1980, and 1988–1989.

This has resulted in many new observations which have enriched our understanding of the developments in the private architecture of Ptolemais.

Key words: Ptolemais, Cyrenaica, private architecture, houses, peristyle, non-invasive surveys

Research on residential architecture at Ptolemais was carried out from the 1930s to the 1980s by Italian, British and American archaeologists.[1] Since then, the research has been taken further by the excavations and non-invasive work performer over 2001–2010 by the Polish Archaeological Mission of the University of Warsaw.[2] Over the Polish Archaeological Mission's ten years of work, the remains of four residential complexes have been uncovered [Figs. 1–2]. The first period of construction in the insula (EXXI) under study dates to the Hellenistic period. The best known period of the functioning of the residences dates to the third to fourth centuries AD. The last remains of occupation in the central and southern part of the EXXI insula date to the fifth century and attest to the existence of a workshop.[3] In the northern part, on the other, an apsidal structure was in use as late as the sixth century.[4]

Analysis the results of both excavations and non-invasive surveys, such as kite photography, topographic survey, geodesic measurements and geophysical studies, has yielded information on private architecture at Ptolemais.[5] The objective of research on the subject is to develop a history of the emergence and evolution of the forms of residential architecture and its characteristic features, as well as gaining information on the plan of the ancient city.

[1] Cf. Mikocki *et alii* 2006, pp. 24–29, 75.
[2] About Polish excavations in Ptolemais, see Żelazowski (ed.) 2012; Mikocki *et alii* 2006, pp. 78–79.
[3] Cf. Żelazowski *et alii* 2011, pp. 9–33.
[4] Żelazowski 2008, pp. 22–23.
[5] Bogacki 2012, pp. 77–91; Misiewicz 2012, pp. 57–75; Misiewicz, Małkowski, Muszyńska 2010, pp. 197–204; Małkowski 2009, pp. 125–132; Małkowski, Żelazowski 2012, p. 35.

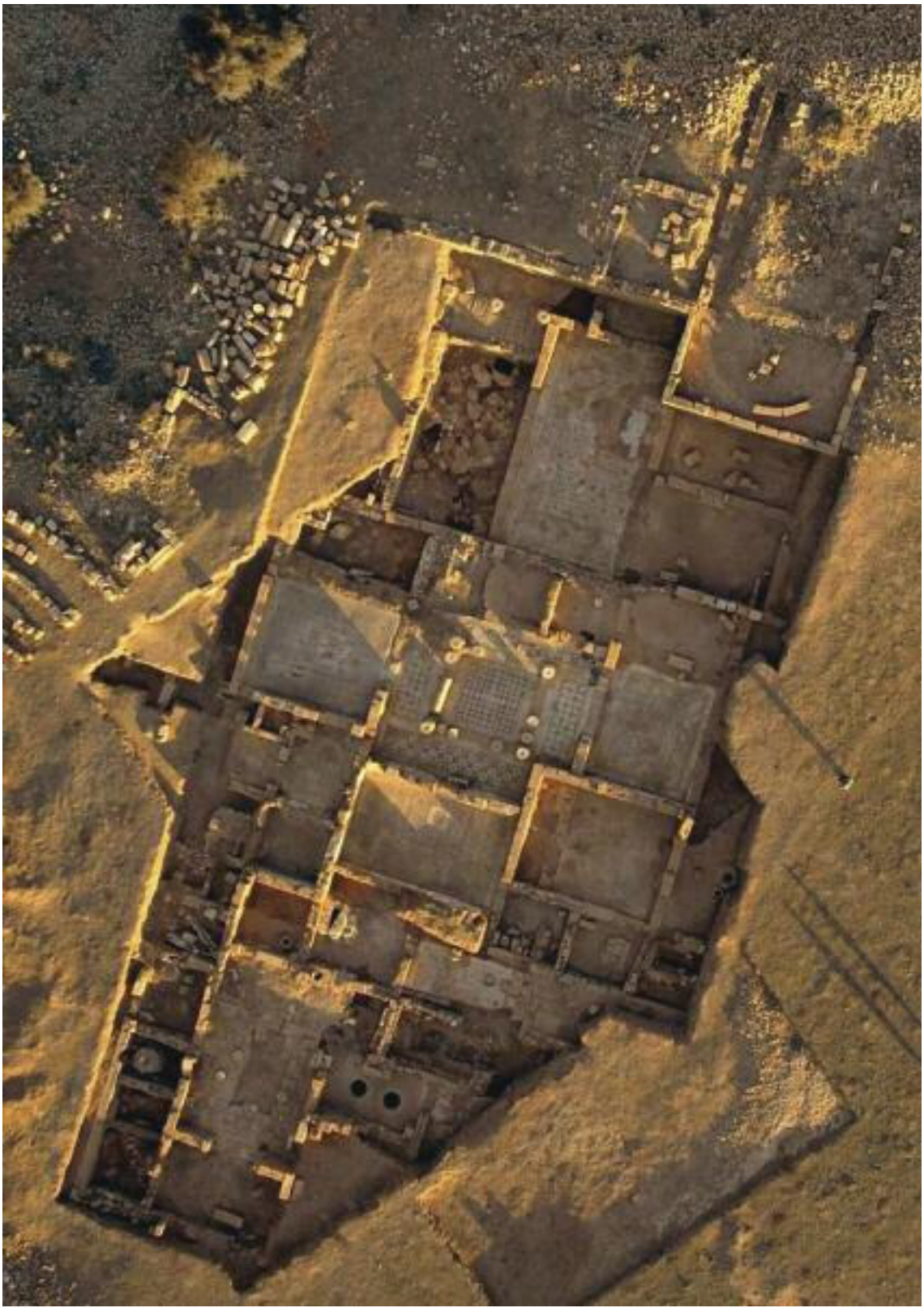

Fig. 1. Insula EXXI (photo M. Bogacki)

Fig. 2. Plan of the insula EXXI (elaborated by W. Małkowski and J. Żelazowski)

The study's chronological scope extends from the city's beginnings in the third century BC[6] to the spatial reorganisation of the city in the sixth century. In the mid-fifth century Ptolemais lost its status as the provincial capital of Libya Superior in favour of Apollonia.[7] The city was in decline, increasingly falling victim to attacks from local tribes.[8] At the time new architectural forms emerged, typical for late Roman Ptolemais, where the population sought refuge. These were fortified strongholds and forts with economic infrastructure and access to water. As of the sixth century residential structures of the old type were no longer built, replaced by so-called blockhouses. The street grid changed with new buildings erected on what were previously streets amid change in transport routes.

As of the Hellenistic period houses in Cyrenaica were built around a peristyle, following the Greek *a pastas* pattern.[9] Initially rooms were probably located on just two sides of the peristyle and with time evolved to take up three or four sides.[10] The evolution is confirmed by analysis of houses from Berenike, Kyrene and Apollonia.[11]

[6] Müller 2004, pp. 1–10; Marquaille 2003, pp. 25–42; Kraeling 1962, pp. 6–7.
[7] Cf. Kraeling 1962, p. 20.
[8] Cf. Wipszycka 2009, pp. 202–214.
[9] Stucchi 1975, p. 142; Bejor 1998, pp. 35–42.
[10] On typology of Cyrenaican houses, cf. Bejor 1998, pp. 35–42; Spinola 1996, pp. 281–292; Lauter 1971, pp. 149–178; Stucchi 1975.
[11] Stucchi 1975, pp. 142–149.

At Ptolemais, the earliest buildings in the insula EXXI [Figs. 1–2] in the east of the city near Palazzo delle Colonne [Fig. 3] date to the Hellenistic period. The remains of Hellenistic architecture in the east-central part of the EXXI insula under study by the Polish Mission demonstrate that even in this early period the entire width of the insula may have been built over — to date, it was thought that structures around the courtyard covered only a fragment of the insula with the rest taken by gardens.[12] The remains of Hellenistic structures are also visible in the south-western corner of the house to the south of the House of Leukaktios by the western street. The remains of an early, possibly Hellenistic structure were also found at the house by the eastern street.[13]

We have more information on private architecture in Ptolemais dated to the end of the Hellenistic period and the first century AD. The Palazzo delle Colonne [Fig. 3],[14] the most monumental residential structure in Ptolemais is dated to that period. The building lies in the east-central part of the city, by the eastern *cardo* south of the city's main *decumanus*.[15] The residential complex was reconstructed in later periods. Analysis of the Palazzo delle Colonne ground plan shows that the prestige of the southern part of the peristyle was emphasised in houses of that period. the southern colonnade was higher, referencing the Rhodian peristyles found in later periods.[16] Porticoes were erected in a mixed order with Ionian columns and cornice, but Doric architrave and frieze.

Fig. 3. Palazzo delle Colonne (photo M. Bogacki)

[12] Żelazowski 2012a, pp. 154–155; Stucchi 1975, pp. 142–149, 215–227.
[13] Żelazowski 2012a, p. 147.
[14] Cf. Bonacasa 2009, pp. 85–109.
[15] Pesce 1950, p. 7.
[16] Stucchi 1975, p. 142.

The main chamber of the residence was the *oecus*, located usually in the southern or eastern part of the peristyle.[17] The location of the Palazzo delle Colonne in the city centre, its use from the Hellenistic to late Roman period, its architecture and rich ornamentation are all so exceptional as to lead the scholars to suggest that a person of authority lived here, perhaps the representative of the Ptolemaic and later the Roman imperial administration.[18]

In the first century AD the house plan with a central peristyle, analogous to that observed at the Palazzo delle Colonne, continued to develop. Phase I of House G [Fig. 4], the late House of Paulus[19] [Fig. 5], the House of Triapsidal Hall[20] [Fig. 6] and the first structures of the Roman Villa[21] [Fig. 7] all date to that period.

At House G the rooms were located on three sides of the peristyle and the colonnades were executed in a mixed order. Ionian columns have been unearthed with a smooth lower part and a striated upper part, while the frieze and architrave were both Doric.[22]

Fig. 4. House G, the earliest phase of the building
(photo M. Bogacki, elaborated by J. Mikocka, source MapGuide)

[17] Pesce 1950, pp. 92–94; Stucchi 1975, pp. 147, 216–219.
[18] Pesce 1950, pp. 92–94.
[19] According to S. Stucchi House of the Columned Hall and House of Pilaster Courtyard, cf. Stucchi 1975, pp. 220–221; determined by Kraeling as public bulding, cf. Kraeling 1962, pp. 140–160.
[20] House of the Triapsidal Hall is dated to 4th century AD, cf. Gasparini 2009, pp. 159–167, 173–174; Ward-Perkins *et alii* 1986, pp. 126–143; Stucchi 1975, pp. 450–451, 555.
[21] Called also House of Kraeling and House of the Four Seasons, cf. Stucchi 1975, pp. 305–307, 498–499; Kraeling 1962, pp. 119–139.
[22] Called also Casa del Peristilo Ionico, cf. Ward-Perkins *et alii* 1986, pp. 111–126; Stucchi 1975, pp. 147, 219.

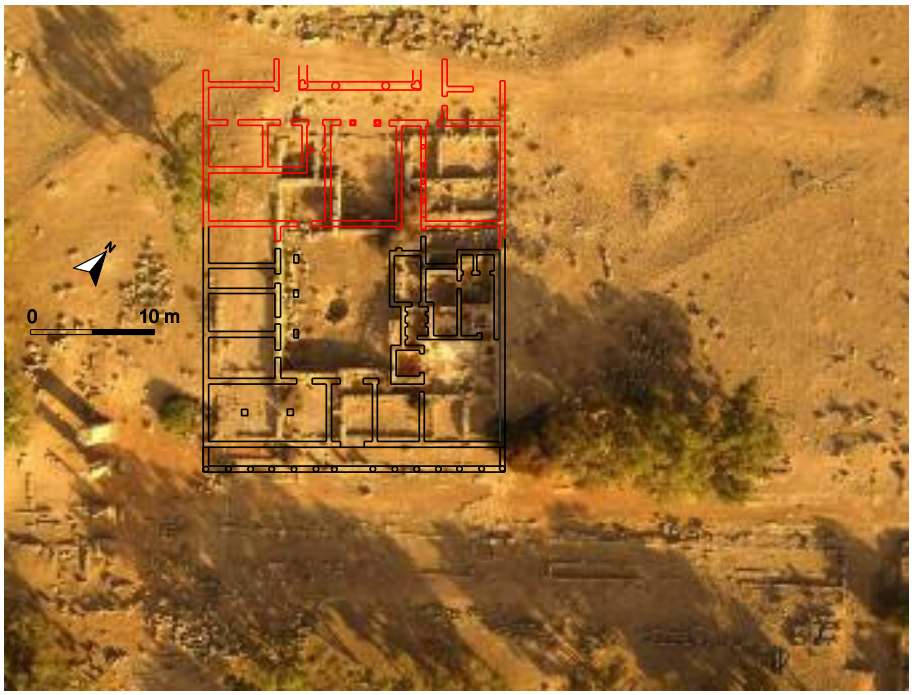

Fig. 5. House of Paulus, the earliest phase of the building
(photo M. Bogacki, elaborated by J. Mikocka, source MapGuide)

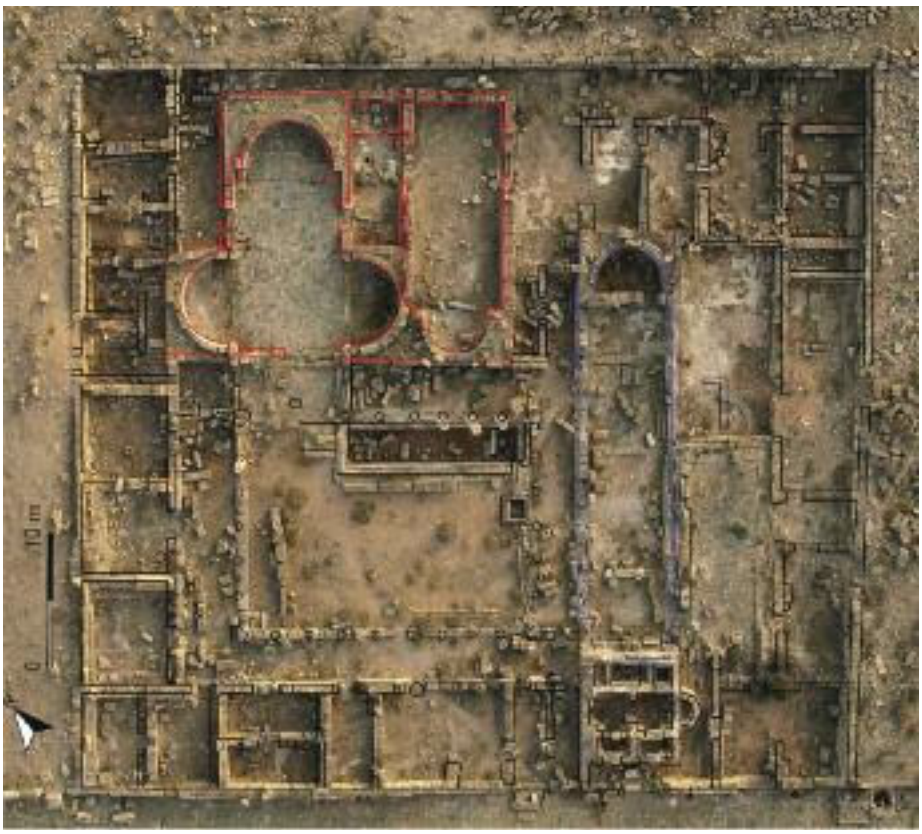

Fig. 6. House of the Triapsidal Hall, phases of the building
(photo M. Bogacki, elaborated by J. Mikocka, source MapGuide)

Fig. 7. Roman Villa, phases of the building
(photo M. Bogacki, elaborated by J. Mikocka, source MapGuide)

The area of the late House of Paulus has been only partially excavated. The southern part of the residential complex has been uncovered with the greater part of the peristyle and rooms that may have stood on the northern side left underground. At the north end of the excavated area, a large peristyle house is found with a ground plan that partly recreates the late Hellenistic Palazzo delle Colonne. At the house, as with the Palazzo delle Colonne, the southern *ambulacrum* was larger than the other three. We also see similar differences in the intercolumniation, which again points to special importance of the southern side. The *oecus*, flanked by side rooms, lied to the south of the peristyle. At the south end of the uncovered area, another residence has been identified with a pilaster-lined peristyle. The *oecus* seems to lie to the east.

The earliest structures of the late House of Triapsidal Hall had much in common with the other peristyle houses of the first century AD. The *oecus* and two neighbouring rooms lied to the east of the peristyle. The house was entered from the eastern *cardo*, the so-called East Avenue. Some elements of the house were refashioned in the second century AD. The peristyle reveals the traces of a mixed, Ionian and Doric style. The house was significantly altered in later centuries.[23]

In the area of the Roman Villa two residential complexes are discernable in the first century AD.[24] Each was erected around a courtyard with the *oecus* as the main room. Here also the remains of a mixed order, with smooth Ionian columns and Doric architrave and frieze are found. The entrance, as at the Palazzo delle Colonne, was from the street via a small room, a vestibule of a kind, to the peristyle.

[23] Ward-Perkins *et alii* 1986, pp. 126–132; Stucchi 1975, p. 222.
[24] According to S. Stucchi House of the Four Seasons and House of the Four Columned Peristyle, cf. Stucchi 1975, pp. 222–224.

At the turn of the second and third centuries AD, a number of residential complexes were reconstructed, while maintaining the type of the Hellenistic peristyle house. Residential complexes at Ptolemais reached a large size and were richly decorated. Building took place on top of earlier structures and neighbouring residential complexes were linked.

Palazzo delle Colonne, built over pre-existing residences, took up half an insula[25] [Fig. 8]. It also contains a unique element, uncommon elsewhere at Ptolemais — a monumental *oecus* on the northern side of the peristyle. This clearly draws on Alexandrian architecture, whose influence is visible at Ptolemais from the Hellenistic period.[26]

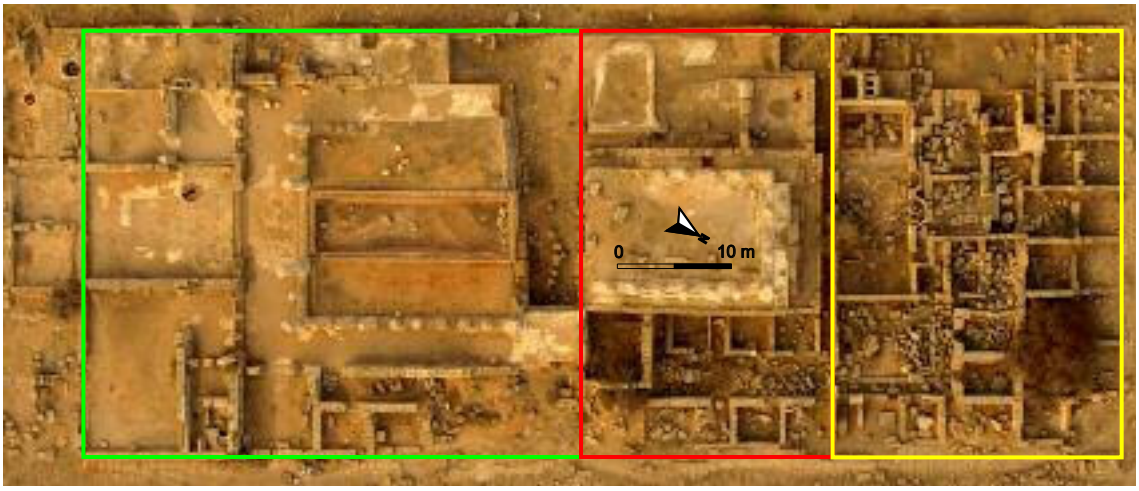

Fig. 8. Palazzo delle Colonne, built on top of existing structures
(photo M. Bogacki, elaborated by J. Mikocka, source MapGuide)

A similar situation, as far as linking previously separate residences into a single unit, is found at the House of Paulus and the structures preceding it [Fig. 9]. Two houses were combined into a single residence. An analogous combination of two houses into a single residence is found at the Roman Villa[27] [Fig. 10].

In this period Ptolemais residences gained secondary peristyles, seasonal *triclinia* and thermae. The changes visible in residential architecture may have been connected to the new political situation[28] and climate changes.[29] At Palazzo delle Colonne in addition to the main part, there were also smaller, independent complexes of a private character, clustered around an atrium, a small peristyle and two courtyards.[30] In the northern part of the complex thermae were erected.[31] A similar situation is seen at the Roman Villa, where the south-western corner of the residence hosted a group of rooms around a small courtyard.[32] The thermae also recur, for example in the buildings underneath the later House of Paulus. They were found in the eastern part of the house.[33] The remains of thermae are also found at the House of House of Triapsidal Hall.[34]

[25] Stucchi 1975, pp. 300–304.
[26] Bonacasa 2009, pp. 85–109.
[27] Stucchi 1975, pp. 220–221, 304–307.
[28] During the reign of Diocletian, in 297, Ptolemais became the capital of the province Libya Superior. In the mid-5th century AD Ptolemais lost the status of the provincial capital of Libya Superior, which was moved to Apollonia. Cf. Goodchild 1976, pp. 225–234; Kraeling 1962, p. 20.
[29] Stucchi 1975, p. 357; cf. Rufus Festus Avienus, *Descriptio orbis terrae*, 303–307.
[30] Bonacasa 2009, pp. 93–94; Pesce 1950, pp. 47–48, 54–55, 57–58, 60–62.
[31] Stucchi 1975, p. 302; Pesce 1950, pp. 49–52.
[32] Kraeling 1962, p. 128.
[33] Stucchi 1975, pp. 304–305.
[34] Ward-Perkins *et alii* 1986, p. 134; Stucchi 1975, p. 450, n. 4.

Fig. 9. House of Paulus (photo M. Bogacki, elaborated by J. Mikocka, source MapGuide)

Fig. 10. Roman Villa (photo M. Bogacki, elaborated by J. Mikocka, source MapGuide)

Also to the second and third centuries AD are dated the houses in the insula excavated by the Polish Archaeological Mission.[35] In the central part of the uncovered area lies the House of Leukaktios [Figs. 11–12]. The largest room in the house lied to the south of the peristyle. Around the peristyle, seasonal *triclinia* are found, richly decorated with mosaics and paintings.[36] Room R9 in the western part of the house may also have played the role of the *oecus*.[37] At the eastern and northern side lie rooms with much more modest decoration.[38] At the House of Leukaktios, in its eastern part there functioned a complex of rooms erected around a large courtyard.[39] The house was reconstructed, its ownership changed,[40] and it was finally in all likelihood abandoned and destroyed.[41]

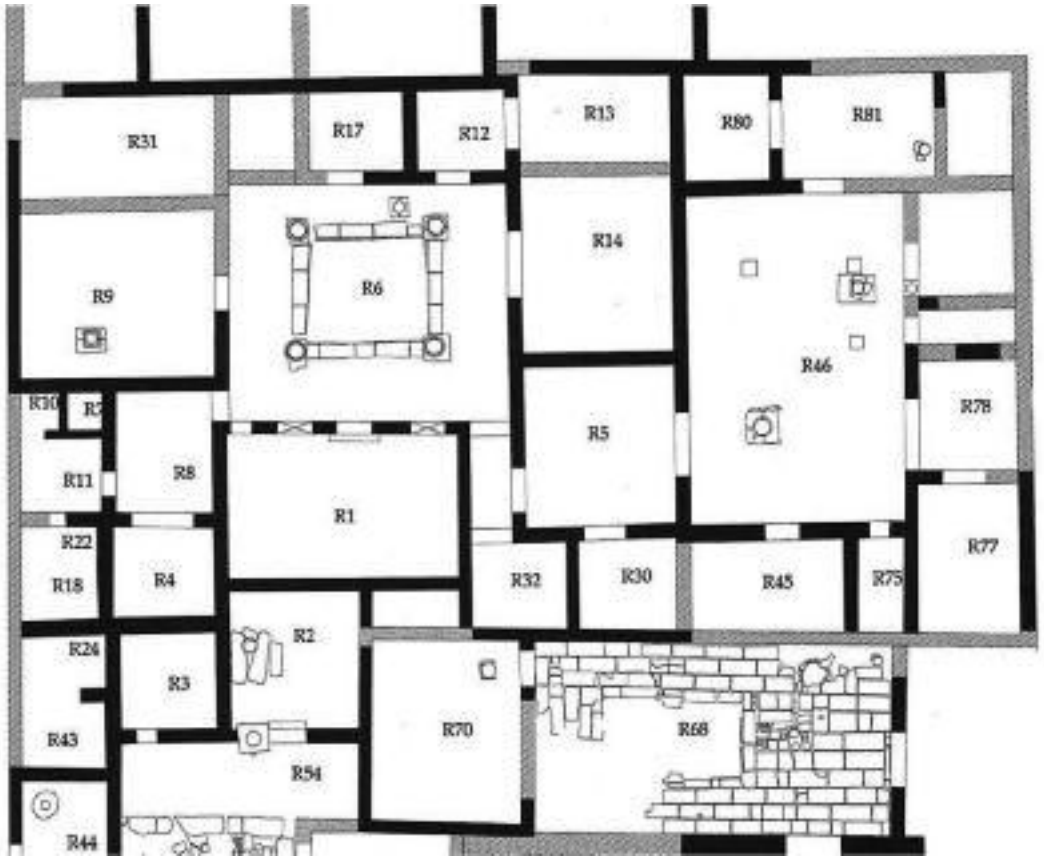

Fig. 11. Plan of the House of Leukaktios (elaborated by M. Małkowski and J. Żelazowski)

[35] About the houses in insula EXXI, cf. Żelazowski 2012a, pp. 121–156; Żelazowski 2012b, pp. 67–80; Żelazowski 2008, pp. 11–24.
[36] Żelazowski 2012a, p. 129; Olszewski 2007, pp. 92–95.
[37] Rekowska 2012, p. 176, n. 77; Olszewski 2010, pp. 315–322.
[38] Żelazowski 2012a, p. 129.
[39] Żelazowski 2012a, pp. 147–155.
[40] This is evidenced by mosaics repairs and placing new owner's name in one of the mosaics, cf. Żelazowski 2012a, p. 122.
[41] Żelazowski 2012a, p. 121.

Fig. 12. House of Leukaktios (photo M. Bogacki)

To the south of the House of Leukaktios another house built around a courtyard has been uncovered [Fig. 13]. It was much smaller and more modest than the residential complexes discussed above, but its layout was functional with a latrine next to the exit to the western street. On the axis of the courtyard, to its south, there lied the *oecus*, while in the eastern part of the house a large room has been uncovered, presumably the *triclinium*.[42] Both houses were destroyed, presumably in earthquakes.

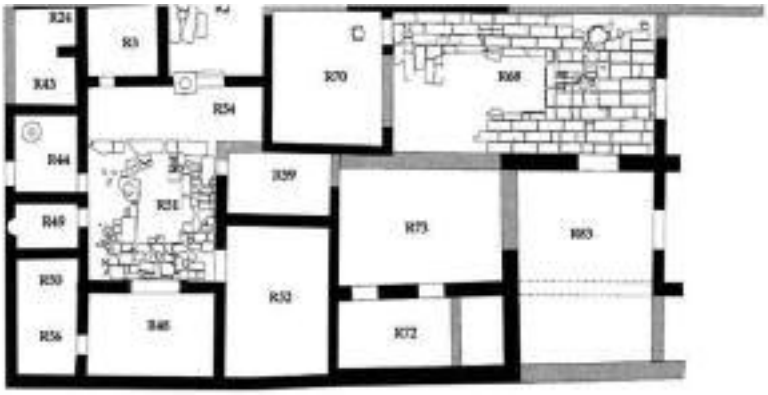

Fig. 13. Plan of the southern part of insula EXXI
(elaborated by W. Małkowski and J. Żelazowski)

[42] Żelazowski 2012a, pp. 138–139.

Alongside the eastern street further rooms have been uncovered, belonging to yet another house.[43]

Changes in the private architecture of Ptolemais are particularly visible starting in the fourth century AD. In this period we see restoration and reconstruction of houses destroyed previously, as well as monumentalisation of residential complexes. Institutional, social and economic changes of the late Roman period are visible in the private architecture of Ptolemais.[44] A more hierarchical character of the late ancient society can be detected with houses of the local elites imitating palatial architecture. Hence ostentatious features, such as courtyards and porticoes, large entranceways, rooms with antithetical apsides, receptional halls with apsides, *triclinia* with apsides, thermae.[45] Houses that underwent reconstruction in this period frequently used a pre-existing peristyle, while a room with one or three apsides was added. The rooms were often fronted by a vestibule with a tripartite entranceway. Decorated with mosaics and marble, they were used for receptions and banquets.[46]

At the House of Triapsidal Hall, for all the changes and reconstructions, the peristyle remained intact [Fig. 6]. A long, narrow hall with an apsis was erected at its southern end. The entrance to this room led though a vestibule with a tripartite entranceway, elements of a monumental tripartite doorway have been found there. Fresh reconstructions took place in the fourth century AD, at the eastern end of the peristyle, two large halls were erected with one or three apsides. One of these, the triapsidal hall gave name to the house. It was decorated with a mosaic, while a part was covered with stone slabs. Fragments of *opus sectile* have been uncovered in the hall with one apsis. Both halls were open to opposite sides. The triapsidal hall may be seen as a banquet room, while the hall with one apsis may be conceived of as a smaller, more modest banquet room. The room with one apsis at the eastern end was probably a reception room of public character, where the owner would greet clients as an administrator, judge or in some other official capacity. The House of Triapsidal Hall was decorated in marble and even porphyry, an uncommon occurrence in Cyrenaica, which lacks locally quarried marble. The size of the house, the character of the rooms and decorations all point to an important, public function of the occupier, perhaps the provincial governor.[47]

In the northern part of the insula uncovered by the Polish Archaeological Mission, a house was probably in occupation during the fourth century. A large hall has been identified here, leading to other rooms [Fig. 14]. The hall, decorated with a mosaic, lied near the western street and the presumed entrance to the house. It may have been a large vestibule. The house in question was destroyed and a new residence with a large apsidal room was built over its northern part [Fig. 15]. Artefacts finds suggest that a large part of the insula may have been in use as late as the sixth century.[48]

A ceremonial apsidal hall is also seen in the northern room of the Roman Villa.[49]

The House of Paulus is dated to the fifth century [Fig. 9]. The excavated part of the structure was built around a courtyard. The south-western side was the ceremonial part. The thermae, found alongside the eastern side, were reconstructed and opened to the street. The entrance to the ceremonial part of the house lied at its southern end. Next, west of the vestibule was the reception room with a tripartite entranceway between them. The reception room was covered with stone slabs, one of which bears an inscription concerning Paulus.[50]

[43] Żelazowski 2012a, p. 143.
[44] Bejor 1998, p. 40.
[45] Gasparini 2009, pp. 157–186.
[46] Gasparini 2009, pp. 157–186; Ward-Perkins *et alii* 1986, pp. 142–143; Stucchi 1975, p. 451.
[47] Gasparini 2009, p. 173; Ward-Perkins *et alii* 1986, pp. 126–143; Stucchi 1975, p. 451.
[48] Żelazowski 2012a, pp. 130–131.
[49] Stucchi 1975, pp. 498–499; this hall was identified by C. H. Kraeling as *caldarium*, cf. Kraeling 1962, p. 133.
[50] Stucchi 1975, p. 493; determined by C. H. Kraeling as public bulding, cf. Kraeling 1962, pp. 140–160, 211–212, figs. 51, 53, 55, pl. XVI.

Fig. 14. Room with the mosaic in the northern part of the insula EXXI
(photo M. Bogacki)

Fig. 15. Room with the apse in the northern part of the insula EXXI
(photo M. Bogacki)

In the late stage of urban development, houses may have appeared at Ptolemais with water containers built on the surface.[51] Little, however, survives of these structures. At the end of occupation of many houses in Ptolemais it was common to reconstruct and divide existing rooms into smaller ones.[52] Houses no longer in use were turned into workshops, as attested by the remains of pottery kilns and lamps, olive presses or liquid containers.[53]

Research on private architecture of Ptolemais from the Hellenistic to late Roman period allows for an identification of typical features of residential structures, found also in other towns in Cyrenaica.[54] Houses were built around a peristyle, sometimes a Rhodian peristyle. If a residence contained an atrium, it was secondary in importance. Cyrenaica's private architecture shows an even greater attachment to the Greek tradition than is found in other parts of Africa. There appear, however, elements of axial alignment and symmetry, as well as arches, all characteristic of Roman architecture. There are also clear analogies to the architecture of Alexandria. It was common to merge Greek and Roman traditions of architecture and ornament, as well as reuse of Hellenistic and Roman architectural elements in the late Roman period. The *oecus* was a ceremonial space and could be flanked with other rooms. Sometimes the *ambulacrum*, onto which the most important rooms in the house would open, was wider than the other ones, while intercolumniation is wider on the southern side of the peristyle. Motifs and forms characteristic of the so-called Roman baroque were popular, as was mixing architectural orders on two levels of a colonnade or using chiaroscuro in architecture. Typical for private architecture were heart-shaped semicolumns and the mixing of orders by using Doric entablature with Ionic colonnades. At the end of the first century AD smooth Doric columns come to be used at Ptolemais.[55] It is common to find two residences combined into a single house. House entrances were on the side, far from the main rooms. With time, in order to enter a house from the street, it came to be necessary to cross a small room, a vestibule of a kind, towards the peristyle and the main rooms. In order to enter other parts of the house, an invitation was necessary since passageways were under control.[56] It was also common to place shops alongside the streets, in insulae, whose primary use was residential. As of the second century AD Corinthian columns won popularity. A common architectural element starting in the latter half of the second century AD was the monumental tripartite doorway with articulated entablature[57] in private architecture. From the second century AD onwards the installation of barriers between columns in the colonnades of peristyles became widespread. This increased the amount of shadow and led to the creation of a *porticus fenestrata*.[58] Traces of such barriers can be seen in the peristyle of the House of Leukaktios.[59] Pools were placed in peristyles of houses to serve as air fresheners and containers of water,[60] which was channelled to cisterns. The pools in the peristyles of the Palazzo delle Colonne and the House of Triapsidal Hall may also have served for aquiculture.[61] In the late Roman period there appear apsidal rooms connected to the peristyle or

[51] Stucchi 1975, p. 500.

[52] Cf. Gasparini 2010, pp. 681–701.

[53] Żelazowski 2012a, pp. 141–144; pottery kilns and other artisanal installations are studied by S. Lenarczyk, cf. Żelazowski *et alii* 2011, pp. 9–33; Gasparini 2010, p. 685; Ward-Perkins *et alii* 1986, pp. 124–126.

[54] Cf. Rekowska 2012, pp. 157–181; Gasparini 2010, pp. 681–702; Bonacasa 2009, pp. 85–109; Gasparini 2009, pp. 157–186; Bejor 1998, pp. 35–42; Ward-Perkins *et alii* 1986, p. 113; Stucchi 1975, pp. 321–322; Lauter 1971, pp. 149–178.

[55] This part was called by the S. Stucchi the House of the Minor Peristyle, cf. Stucchi 1975, pp. 219–220, 300.

[56] Cf. Żelazowski 2012a, pp. 137–138.

[57] The earliest examples of such a structure are dated from the 1st century BC and came from Syria. In classical publications it was called 'the Syrian arch'. Such tripartite doorway occurred in monumental public architecture but also in private architecture. This solution appeared also in Italy and in the provinces. It was a common architectural element also in Cyrenaica, cf. i.a. Stucchi 1975, pp. 321–322. Such tripartite entrance gained popularity in the Antonine period, cf. Thomas 2007, pp. 40–45, 63–65. About the terminology, cf. Ginouves *et alii* 1992, p. 128; Butcher 2003, p. 290; MacKenzie 2007, pp. 92–94, figs. 145–146; Parada López de Corselas 2013, pp. 479–486.

[58] Bejor 1998, p. 41; Stucchi 1975, p. 315.

[59] Cf. reconstruction of the central part of the peristyle and entrances to adjacent rooms (elaborated by J. Kaniszewski); cf. Rekowska 2012, p. 164.

[60] Stucchi 1975, pp. 310–311.

[61] Ward-Perkins *et alii* 1986, p. 134.

the *triclinium*. Rooms with a single or three apsides served presumably as reception halls. In the late Roman and Byzantine periods rooms were reconstructed, divided and reduced in size, while many were converted to workshops.

Since 2002[62] in addition to the excavation works in Ptolemais, the Polish Archaeological Mission has conducted research with the use of non-destructive methods such as topographical survey, analysis of satellite images, geodetic measurements, kite aerial photographs and geophysical prospection.[63] The main goal of this works has been to map out the detailed city plan, which would include as much data as possible.[64] Thanks to non-invasive methods it has been possible to test 90 % of the city. The non-invasive surveys carried out in Ptolemais have led to the creation of a new city plan using MapGuide software, which incorporates all the data collected to date.

In 2005 members of the Polish Archaeological Mission in Ptolemais started geophysical measurements using two methods, magnetic and electrical resistivity. These methods provide data about the location of archaeological features, their plan, possible dimensions, depth, state of preservation and the archaeological context. With the interpretation of the collected material it will be possible to locate remains of residential structures underground and to obtain information on their plans, size and the archaeological context. The collected information can be used to determine the presence and location of residential areas of the city, as well as the changes that have occurred in the location of these areas with the development of the city in a given period of time. These data allow for the completion of work related to the reconstruction of the original plan of the city. Taking into account the characteristics of residential architecture in pod Ptolemais, determined in the course of excavations, an analysis was carried out of anomalies visible from geophysical maps developed by Krzysztof Misiewicz.[65]

This has allowed for many previously unknown underground structures to be located. At the present stage of research it seems possible to identify those parts of the city where residential architecture was located.[66] This may apply to southern insulae, especially in the eastern side of the city [Fig. 16], in the west by the Tocra gate [Fig. 17] and in the vicinity of the Western Basilica,

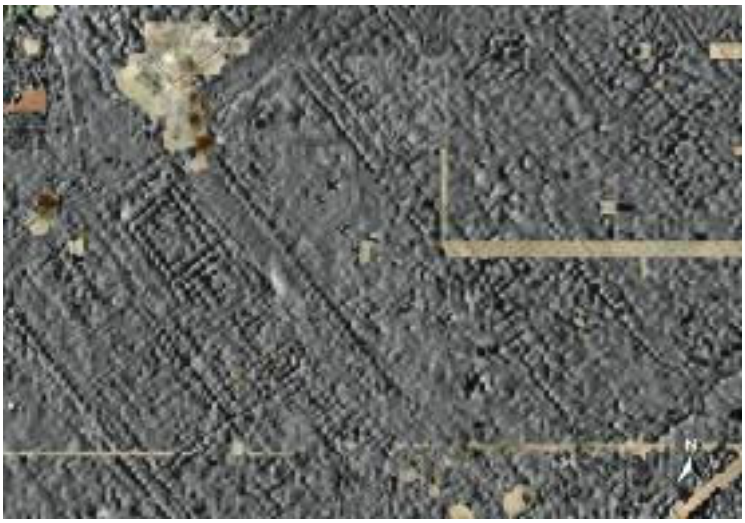

Fig. 16. Geophysical anomalies in the southern eastern part of the city
(K. Misiewicz, source MapGuide)

[62] Małkowski, Żelazowski 2012, p. 35.
[63] Bogacki 2012, pp. 77–91; Misiewicz 2012, pp. 57–75; Misiewicz, Małkowski, Muszyńska 2010, pp. 197–204; Małkowski 2009, pp. 125–132.
[64] Małkowski, Żelazowski 2012, p. 35.
[65] Misiewicz 2012, pp. 57–75.
[66] The full description of anomalies visible on the geophysical maps, cf. Mikocka, Misiewicz (in press).

as well as in the north-west of Ptolemais, including near the Villa with a View identified by the Polish Archaeological Mission [Fig. 18]. Analysis of anomalies that may indicate the presence of residential remains underground shows that they had 18 to 30 metres width and some seem to reached as much as 40 metres. Most anomalies described indicate that underlying buildings took up the entire width of insulae, justifying conjecture that houses in the city belonged to the upper and middle classes. Research on the anomalies that were clear on geophysical maps and possible to interpret shows that insulae with residential construction accounted for 34 % of the total.

Fig. 17. Geophysical anomalies in the western part of the city
(K. Misiewicz, source MapGuide)

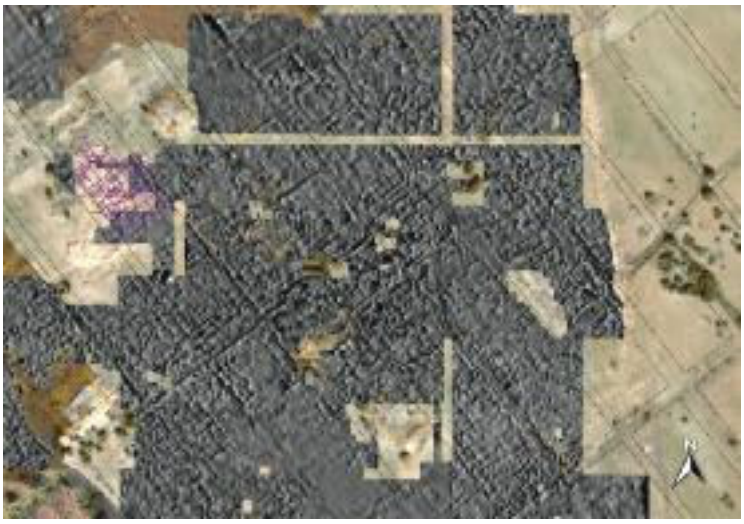

Fig. 18. Geophysical anomalies in the eastern part of the city
(K. Misiewicz, source MapGuide)

Excavations played the main role in research of private architecture at Ptolemais. Non-invasive surveys contribute significantly to our knowledge of residential structures at Ptolemais. The need for coexistence of both types of research should be emphasises. Non-invasive surveys define research objectives and areas to excavate, but their results require verification by excavation.

Bibliography

Bejor 1998 — G. Bejor, "Contributi cirenaici alla storia della casa greca in età romana", [in:] *La Cirenaica in età antica. Atti del Convegno Internazionale di Studi, Macerata 18–20.05.1995*, ed. E. Catani, S. M. Marengo, Macerata, pp. 35–42.

Bogacki 2012 — M. Bogacki, "Archaeological kite aerial photography in Ptolemais in years 2006–2008", [in:] *Ptolemais I: Ptolemais in Cyrenaica. Studies in Memory of Tomasz Mikocki*, ed. J. Żelazowski, Warsaw, pp. 77–91.

Bonacasa 2009 — N. Bonacasa, "Ancora su Tolemaide e Alessandria: riflessioni sul Palazzo delle Colonne", [in:] *Archeologia a Tolmaide. Giornate di studio in occasione del primo anniversario della morte di Tomasz Mikocki, 27–28 maggio 2008*, ed. E. Jastrzębowska, M. Niewójt, Rome, pp. 85–109.

Butcher 2003 — K. Butcher, *Roman Syria and the Near East*, London.

Gasparini 2009 — E. Gasparini, "Edilizia domestica e autorappresentazione a Tolemaide nel periodo tardoantico", [in:] *Archeologia a Tolmaide. Giornate di studio in occasione del primo anniversario della morte di Tomasz Mikocki, 27–28 maggio 2008*, ed. E. Jastrzębowska, M. Niewójt, Rome, pp. 157–186.

Gasparini 2010 — E. Gasparini, "Impianti produttivi nelle domus tardoantiche di Tolemaide", [in:] *L'Africa Romana. Atti del 18 convegno di studio, Olbia, 11–14 Dicembre 2008*, Rome, pp. 681–701.

Ginouves *et alii* 1992 — R. Ginouves *et alii*, *Dictionnaire méthodique de l'architecture grecque et romaine*, II: *Eléments constructifs: supports, couvertures, aménagements intérieurs* (= *Publications de l'École française de Rome* 84), Athens – Rome.

Goodchild 1976 — R. G. Goodchild, "The decline of Cirene and rise of Ptolemais: Two new inscriptions", [in:] *Libyan Studies. Select Papers of the late R. G. Goodchild*, ed. J. Reynolds, London, pp. 225–234.

Kraeling 1962 — C. H. Kraeling, *Ptolemais. City of the Libyan Pentapolis*, Chicago.

Lauter 1971 — H. Lauter, "Ptolemais in Libyen. Ein Beitrag zur Baukunst Alexandrias", *Jahrbuch des Deutschen Archäologischen Instituts* 86, pp. 149–178.

MacKenzie 2007 — J. MacKenzie, *The Architecture of Alexandria and Egypt, c. 300 B.C. to A.D. 700*, New Haven – London.

Małkowski 2009 — W. Małkowski, "The city plan of Ptolemais", [in:] *Archeologia a Tolemaide. Giornate di studio in occasione del primo anniversario della morte di Tomasz Mikocki, 27–28.05.2008*, ed. E. Jastrzębowska, M. Niewójt, Rome, pp. 125–132.

Małkowski, Żelazowski 2012 — W. Małkowski, J. Żelazowski, "Some remarks on the history and topography of Ptolemais in the light of Polish research", [in:] *Ptolemais I: Ptolemais in Cyrenaica. Studies in Memory of Tomasz Mikocki*, ed. J. Żelazowski, Warsaw, pp. 35–56.

Marquaille 2003 — C. Marquaille, "Ptolemaic royal cult in Cyrenaica", *Libyan Studies* 34, pp. 25–42.

Mikocka, Misiewicz (in press) — J. Mikocka, K. Misiewicz, "Domestic architecture in Ptolemais in light of non-invasive surveys", [in:] *Ptolemais II: Ptolemais in Cyrenaica. Results of Non-Invasive Surveys*, Warsaw.

Mikocki *et alii* 2006 — T. Mikocki *et alii*, *Ptolemais. Archaeological Tourist Guide*, Warsaw.

Misiewicz 2012 — K. Misiewicz, "Geophysical prospection in Ptolemais — interim report", [in:] *Ptolemais I: Ptolemais in Cyrenaica. Studies in Memory of Tomasz Mikocki*, ed. J. Żelazowski, Warsaw, pp. 57–75.

Misiewicz, Małkowski, Muszyńska 2010 — K. Misiewicz, W. Małkowski, M. Muszyńska, "The topography of Ptolemais. Results of non-destructive survey campaigns (2002–2005)", [in:] *Cirene e la Cirenaica nell'antichità*, ed. M. Luni (= *Monografie di Archeologia Libica* 30), Rome, pp. 197–204.

Müller 2004 — K. Müller, "Dating the Ptolemaic city foundations in Cyrenaica. A brief note", *Libyan Studies* 35, pp. 1–10.

Olszewski 2007 — M. T. Olszewski, "Mosaïques de pavement de la « Maison de Leukaktios » à Ptolémaïs en Cyrénaïque (Libye). Essai d'identification des pieces", *Archeologia* (Warsaw) 58, pp. 89–96.

Olszewski 2010 — M. T. Olszewski, "Images allusives : Dionysos et Ariane dans l'espace resérvé aux femmes (gynécée) ? Le cas de Ptolémaïs et Cyrène en Cyrénaïque", [in:] *Atti del X Congresso Internazionale dell'AIPMA, Napoli 17–21 settembre 2007*, ed. I. Bragantini (= *Annali di Archeologia e Storia Antica* 18/1), Naples, pp. 315–322.

Parada López de Corselas 2013 — M. Parada López de Corselas, "The arcuated lintel and the 'Serlian Motif'. Imperial identity, architectural and symbolic interactions in ancient Rome", [in:] *Identity and Connectivity. Papers from the 16th Symposium on Mediterranean Archaeology, Florence 2012* (= *BAR International Series* 2581 [I]), Oxford, pp. 479–486.

Pesce 1950 — G. Pesce, *Il "Palazzo delle Colonne" in Tolemaide di Cirenaica* (= *Monografie di Archeologia Libica* 2), Rome.

Rekowska 2012 — M. Rekowska, "Architectural decoration of the House of Leukaktios: preliminary remarks", [in:] *Ptolemais I: Ptolemais in Cyrenaica. Studies in Memory of Tomasz Mikocki*, ed. J. Żelazowski, Warsaw, pp. 157–181.

Spinola 1996 — G. Spinola, "Note sull'evoluzione planimetrica delle *domus* della Cirenaica", [in:] *Scritti di antichità in memoria di Sandro Stucchi*, I, ed. L. Bacchielli, M. B. Aravantinos, Rome, pp. 281–292.

Stucchi 1975 — S. Stucchi, *Architettura Cirenaica* (= *Monografie di Archeologia Libica* 9), Rome.

Thomas 2007 — E. Thomas, *Monumentality and the Roman Empire. Architecture in the Antonine Age*, Oxford.

Ward-Perkins *et alii* 1986 — J. B. Ward-Perkins *et alli*, "Town houses at Ptolemais, Cyrenaica: A summary report of survey and excavations work in 1971, 1978–79", *Libyan Studies* 17, pp. 109–153.

Wipszycka 2009 — E. Wipszycka, "Le incursioni dei Mazikes in Cirenaica viste in una prospettiva egiziana", [in:] *Archeologia a Tolmaide. Giornate di studio in occasione del primo anniversario della morte di Tomasz Mikocki, 27–28 maggio 2008*, ed. E. Jastrzębowska, M. Niewójt, Rome, pp. 202–214.

Żelazowski 2008 — J. Żelazowski, "Ptolemais w Cyrenajce i polskie badania archeologiczne", [in:] *Skarb z Ptolemais. Katalog wystawy, Zamek*

Królewski w Warszawie, 15 grudnia 2008 – 15 stycznia 2009, ed. P. Jaworski, Warszawa, pp. 11–24.

Żelazowski 2012a — J. Żelazowski, "General remarks on Polish excavations in Ptolemais", [in:] *Ptolemais I: Ptolemais in Cyrenaica. Studies in Memory of Tomasz Mikocki*, ed. J. Żelazowski, Warsaw, pp. 121–156.

Żelazowski 2012b — J. Żelazowski, "La fondazione di Ptolemais in Cirenaica tra storia e archeologia", *Palamedes. A Journal of Ancient History* 7, pp. 67–80.

Żelazowski (ed.) 2012 — J. Żelazowski (ed.), *Ptolemais I: Ptolemais in Cyrenaica. Studies in Memory of Tomasz Mikocki*, Warsaw.

Żelazowski *et alii* 2011 — J. Żelazowski *et alii*, "Polish archaeological research in Ptolemais (Libya) in 2010: a preliminary report", *Światowit* 9 (50), fasc. A, pp. 9–33.

Streszczenie

Architektura mieszkalna z Ptolemais w świetle badań wykopaliskowych i nieinwazyjnych

Badania nad architekturą mieszkalną w Ptolemais były prowadzone od lat trzydziestych do końca lat osiemdziesiątych XX wieku przez misje włoskie, brytyjskie i amerykańskie. Kolejny etap to prace archeologiczne prowadzone przez Polską Misję Archeologiczną Instytutu Archeologii UW w latach 2001–2010.

Opracowanie informacji na temat architektury prywatnej w Ptolemais polegało na analizie wyników badań wykopaliskowych oraz nieinwazyjnych, takich jak zdjęcia latawcowe, badania topograficzne, pomiary geodezyjne oraz badania geofizyczne.

Celem badań nad architekturą prywatną w Ptolemais jest opracowanie historii powstawania i ewolucji form architektury mieszkalnej, ustalenie charakterystycznych cech architektury rezydencjonalnej oraz uzyskanie informacji na temat rozplanowania przestrzennego miasta.

Od okresu hellenistycznego domy w Cyrenajce budowane były wokół perystylu, wywodziły się z greckiego typu *a pastas*. Na przełomie II i III wieku n.e. wiele kompleksów mieszkalnych zostało przebudowanych, jednak pozostały one w typie hellenistycznych domów perystylowych. Rezydencje mieszkalne osiągały duże rozmiary i były bardzo bogato dekorowane. Zmiany w architekturze prywatnej Ptolemais są szczególnie widoczne od IV wieku n.e. Zauważalny jest charakter hierarchiczny społeczeństwa późnoantycznego — domy lokalnych elit nawiązywały do architektury pałacowej. Z tym związane są niektóre pomieszczenia o charakterze reprezentacyjnym, takie jak dziedzińce i portyki, duże pomieszczenia wejściowe, sale recepcyjne z przeciwstawnymi apsydami, *triclinia* z apsydami, termy. Używano także marmuru jako elementu dekoracji architektonicznej oraz jako pokrycia ścian i podłóg. W ostatnim etapie użytkowania niektórych rezydencji mieszkalnych w Ptolemais powszechne były przebudowy i podziały istniejących już pomieszczeń, tak aby uzyskać nowe o mniejszych rozmiarach. Na obszarach domów, które nie były już użytkowane, rozwijała się działalność warsztatowa.

Badania nieinwazyjne pozwoliły na stworzenie w programie MapGuide nowego planu Ptolemais. Na podstawie analiz map geofizycznych udało się zlokalizować przypuszczalne dzielnice z zabudową rezydencjonalną. Zabudowania mieszkalne mogły znajdować się w insulach południowych, głównie we wschodniej części miasta, w zachodniej części na wysokości bramy Tokry oraz w okolicach Bazyliki Zachodniej, a także na północnym wschodzie Ptolemais, m. in. w sąsiedz-

twie odkrytej przez Polską Misję Archeologiczną Willi z Widokiem. Analiza anomalii widocznych na mapach geofizycznych pozwala wnioskować o obecności pod ziemią zabudowań mieszkalnych, wcześniej nieznanych. Analizy wskazują, że mogły one mieć od 18 do ponad 30 m długości, a wydaje się, że niektóre mogły osiągać nawet ponad 40 m długości. Większość omawianych anomalii wskazuje, że pozostałości budynków, które je wywołują, mogły zajmować całą szerokość insul. Na tej podstawie można przypuszczać, że na terenie miasta znajdowały się domy bogate oraz średniej klasy. Badania nad anomaliami wydają się wskazywać, że insule z zabudową mieszkalną nie stanowiły więcej niż 1/3 zabudowy Ptolemais.

Główną rolę w badaniach nad architekturą prywatną w Ptolemais pełniły prace wykopaliskowe. Badania nieinwazyjne stanowią niezwykle istotne uzupełnienie wiedzy na temat rezydencji mieszkalnych w tym mieście. Należy podkreślić konieczność współistnienia tych dwóch rodzajów badań. Badania nieinwazyjne wskazują cele badawcze oraz tereny, które należy przebadać, jednak do ich weryfikacji niezbędne jest przeprowadzenie badań wykopaliskowych lub sondaży.

Julia Mikocka
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
jmikocka@wp.pl

Małgorzata Sołek

ORIGO CASTRIS AND THE LOCAL RECRUITMENT POLICY OF THE ROMAN ARMY*

Abstract: The present paper concerns epigraphic and papyrological evidence for natural sons of soldiers in the Roman Empire who were accorded a fictitious *origo castris*. Analysis concerns primarily the so-called *laterculi*, or Latin and Greek inscriptions and papyri containing lists of soldiers and veterans discharged that year from military service. The paper's chronological scope is from the first to the third century AD. The presentation and analysis of the source material gives grounds for a theory to be advanced that the distribution of inscriptions and papyri attesting to *origo castris* was closely linked to changes in the recruitment policy of the Roman army over the first three centuries AD and especially with the spreading in the second century of the local recruitment model.

Key words: illegitimate children, Roman army, social origins of soldiers, Latin inscriptions, papyri

Roman army soldiers had no legal capacity for marriage. They maintained, however, long-term relationships with Roman or peregrine women resulting in children who lacked official recognition.[1] The sons born out of relationships with peregrine women did not have Roman citizenship, which made service in the legions a much harder proposition. Born usually to women living in *canabae*, or settlements by the camp, they lacked an *origo*.[2] It is, however, likely that soldier sons constituted an attractive source of recruits for the Roman army. The problem could be solved by granting them Roman citizenship at the time of recruitment and assigning them a fictitious *origo castris* and thus *tribus Pollia*.

The issue of *origo castris*, attested by inscriptions and papyri from around the Roman Empire in the context of children from informal marriages by soldiers, has been the subject of numerous studies, starting with Th. Mommsen and a student of his, G. Wilmanns.[3] Scholarly views put forward to date on the meaning of *origo castris* require, however, re-examination in view of primary evidence.[4]

* I wish to thank my promoter Professor Adam Łajtar for consulting the first version of the paper and participants of the doctoral seminar "Epigraphic and Papyrological Studies" for their valuable insights they generously shared during our meetings. Finally I wish to thank the organisers of the conference of doctoral studies at the Center for Research on the Antiquity of Southeastern Europe of the University of Warsaw under the title "Research on Historical Heritage" (Program UE Tempus IV) for the opportunity to present the paper and publish it in the present volume.

[1] Some of the scholars believe there may have been a formal ban on such marriages by the soldiers, in force around 13 BC – AD 197. It is presumed it took the form of written instruction to provincial governors, binding for all inhabitants and known as *mandatum*. See Erman 1901, p. 238; Mitteis 1912, p. 281; Campbell 1978, pp. 153–166; Wells 1998, pp. 180–189; Phang 2001, pp. 2–4, 115.

[2] See Th. Mommsen's commentary to *CIL* III 6627, p. 1212; Mirković 1980, p. 266.

[3] *CIL* III 6627, p. 1212; Mócsy 1965, pp. 425–431; Vittinghoff 1971, pp. 299–318; Mirković 1980, pp. 266–268; Le Bohec 1989b, pp. 520–521; Alston 1995, pp. 42–44; Phang 2001, pp. 326–343.

[4] An attempt to collect all testimonies to *origo castris* in

The largest numbers of testimonies to *origo castris* come from Lambaesis in the province of Numidia, where the *legio III Augusta* had its camp, with far fewer from Egypt and the regions of the middle and lower Danube. It is worth paying attention first of all to the texts containing soldiers lists and the issue of the origins of the other recruits in particular. Before, however, moving on to the issue at hand, I wish to briefly characterise the nature of the sources. In order to treat the material under analysis systematically, the data I have gathered is presented in an appendix in the form of two tables.

The *origo castris* appears in 58 inscriptions and three papyri dated to the first to third centuries AD (cf. Appendix, tabs. 1–2). Most of them are official lists of soldiers and veterans discharged that year from service, although there are also epitaphs concerning individual soldiers. Where the term identifying a soldier's origins is usually found, Latin texts have the word (*ex*) *castris* ("out of the camp"), abbreviated to CAS, CAST or CASTR, or in an unabbreviated form, typically accompanied by *tribus Pollia.* Much less frequent is *tribus Collina*, characteristic for illegitimate children, termed in Latin inscriptions *spurii* or *filii naturales*.[5] The term is not found in Greek inscriptions and papyri. It is interesting that it only applies to people directly connected to the army, never to civilians.

It is interesting that the name Castrensis (or Καστρῆσις in Greek) crops up in inscriptions and papyri.[6] A Greek inscription found at Ancyra and dated to the third century, mentions a certain Niketes, veteran of the *legio I Parthica*, who together with the child's mother sets up a tombstone to his 13-year-old son named Καστρῆσις, which may suggest illegitimacy, especially given the mother's name (Καλή) suggests peregrine origins.[7]

In addition to the Ancyra case, there are several other epigraphic and papyrological documents that attest to people named Castrensis, Καστρῆσις or Καστρησίος.[8] Apart from *P. Strasb*. V 340, however, their contents fail to provide enough clues to determine that we are dealing with a soldier or a soldier's child. We are forced to conclude that Castrensis functioned also as a normal name with no military connotations.

At the end of the 1980s Yann Le Bohec in his book on *legio III Augusta* analysed the origins of soldiers known from inscriptions on that legion.[9] His calculations show that over AD 117–161 more than half of soldiers whose *origo* is known were recruits from North Africa, including 14 % "out of camp". In 161–192 North Africans make up 95 % of the legion's man force with the share of *castrenses* up to 21 %. The number of soldier sons attested in the inscriptions rose in 193–238 as well, when they made up 36 % of all recruits. In 161–238 there was a dramatic decline in the number of recruits from outside North Africa.

The example of *legio III Augusta*, stationed at Lambaesis, shows that as of the second century AD we see a significant increase in the numbers of soldiers of local origins. The practice of recruiting men who lived in the immediate vicinity of the camp, including a large proportion of the sons of soldiers, for legionnaire service became widespread only under Hadrian, according to Le Bohec.[10] Among the soldiers mentioned by the Lambaesis inscriptions there are, however,

inscriptions and papyri from the Roman Empire was first undertaken by M. Mirković (Mirković 1980, p. 266), and subsequently by S. E. Phang (Phang 2001, p. 326). The collections presented by both scholars are, however, incomplete.

[5] Cicero in his defence speech for Titus Annius Milo suggests that membership of *tribus Collina* was in the republican period linked to inferior status and for that reason children born outside *matrimonium iustum* were included in the category, cf. Cicero, *Pro Milone* 9, 25. See also Ferraro, Gorla 2010, pp. 344–345.

[6] I wish to thank my colleague, Paweł Nowakowski, for drawing my attention to that issue.

[7] *SEG* XXVII 863.

[8] Papyri: *P. Strasb*. V 340 (Egypt, Arsinoite nome), *P. Mich*. IV 223 (Karanis, Egypt), *P. Mich*. IV 224 (Karanis, Egypt), *P. Mich*. IV 171 R (Karanis, Egypt), *P. Cairo Mich.* 359 (Karanis, Egypt), *BGU* III 775 (provenance unknown), *P. Oxy*. XII 1471 (Oxyrhynchos, Egypt), *P. Mich*. VIII 504 (provenance unknown); inscriptions: *IScM* II 289 (Tomis, Moesia Inferior).

[9] Le Bohec 1989b, pp. 495–503.

[10] Le Bohec 1989b, p. 495.

also recruits from outside the province in a likely echo of the continuation of a tradition going back to the period of civil wars.

The data collected by Le Bohec reflect changes in the recruitment policy of the *legio III Augusta* from the beginnings of the second century to the end of the Severan dynasty.[11] The model of local recruitment from all over the provinces of North Africa evolved gradually towards recruitment from the region around Lambaesis and finally from the camp itself. That would explain a significant increase in the numbers of testimonies to *origo castris* in the period between 161 and 192 and then over 193 to 238.

The situation is quite different in the Hellenophone East, where recruitment in the first century was already primarily from the eastern part of the Mediterranean basin.[12] The local recruitment model must have functioned in the eastern provinces of the empire already in the age of Augustus. Evidence for this is found in an inscription from Koptos in Egypt that contains the list of 36 legionnaires involved in construction works in the Eastern Desert.[13] Nearly a half of the soldiers listed come from Asia Minor, primarily from the cities of Galatia, Pont, Paphlagonia and Bithynia. Only three come from the West (Gallia and Italia), while as many as seven are from Egypt, including six from Alexandria and one from Paraetonium. Two are the sons of soldiers who, as may be presumed, had also served in Egypt. The number of recruits from this province was thus relatively high. J. C. Mann has rightly pointed out that the local recruitment model, similarly to the recruitment of soldiers' illegitimate children, appears in Egypt much earlier than in the Empire's other provinces.[14]

Each legionnaire listed carries the *praenomen* after his father, which is unlikely to be a coincidence. It is presumed that they initially lacked Roman citizenship and their origins were masked after a manner by a grant of a new name and fictitious filiation at the time of recruitment.[15] Generally speaking only Romans could be admitted to service in the legions, but a shortage of Roman citizen recruits in the eastern provinces led to the recruitment of *peregrini*.[16]

It is probably a similar situation that we find with the *recto* of the papyrus *P. Gen. Lat.* 1, containing a small fragment of a Latin list of soldiers or veterans dated to AD 90.[17] The exact place of its provenance is unknown. It may be supposed that the document comes from the archives of the *legio III Cyrenaica* stationed at Nikopolis near Alexandria in 10–106 since the *verso* of the papyrus contains documents relating to soldiers of that legion.[18] All of the four soldiers mentioned have a *praenomen* inherited from the father. The *origo castris* appears in the third and fourth lines, after the names of Quintus Iulius Ponticus and Gaius Valerius Bassus. The first belongs to the *tribus Collina*, as is typical for illegitimate children, while the other to the *tribus Pollia*. The same *tribus* is assigned to the man in the second line, Gaius Aemilius Proculus, which suggests that his *cognomen* may also have been followed by the *origo castris*.

The largest number of testimonies to the *origo castris* comes from an inscription found at Alexandria listing veterans of the *legio II Traiana*, dismissed in 194 and thus recruited presumably around 169.[19] Eight of the 41 soldiers come from Egypt and 24 "out of camp" (*ex castris*). If we assume that their fathers also served in legions stationed in Egypt, that would indicate a very high percentage of locally born soldiers.[20] On the other hand, however, we have a dedication from Alexandria from AD 157, which shows 65 % of soldiers from the same legion, recruited presum-

[11] Le Bohec 1989b, pp. 507–508; 2000, pp. 81–82.
[12] Le Bohec 2000, p. 80.
[13] *CIL* III 6627 = *CIL* III 14147 = *ILS* 2483 (see Appendix, tab. 1, no. 1). Dating of the inscription remains controversial. For more on the issue, see Alston 1995, pp. 29–30, and Cuvigny 2003, pp. 267–268.
[14] Mann 1983, pp. 44–45.
[15] See Th. Mommsen's commentary to this inscription in *CIL* III 6627. See also Alston 1995, p. 30.
[16] Mann 1983, p. 45; Pollard 2010, p. 453.
[17] See Appendix, tab. 2, no. 1. See also Fink 1971, p. 167, no. 37.
[18] Fink 1971, pp. 106–114, no. 9, and pp. 210–212, no. 58.
[19] *CIL* III 6580 = *CIL* III 12045 = *ILS* 2304 = *AE* 1947, 112 (see Appendix, tab. 1, no. 2). See also Kayser 1994, p. 105.
[20] Pollard 2010, p. 453.

ably in the early 130s, as having North African origins.[21] Moreover, among the soldiers mentioned in the inscription from AD 157, not one is said to come "out of camp". J. C. Mann believes, however, that a sudden upsurge in North African recruits in this period is directly linked to the Bar-Kochba uprising, which called for extra military reinforcements.[22]

A papyrus dated to 193–197 with a probable list of *principales* of the auxiliary troops stationed in the province provides evidence that locals were also recruited to such troops.[23] Six of the soldiers are assigned *origo castris*. Four came from Lycopolis in the Nile delta and one each from Syene, Koptos, Antinoopolis and the Prosopite nome.

It is also auxiliary troops that we find in papyri *P. Berol* 6866 and *P. Aberd.* 133,[24] concerning military wages. The document itself comes probably from the Arsinoe nome and is dated by consular names to 192. The *origo* of nine among the soldiers mentioned is given as *castris*.

From the Danube basin we have relatively few inscriptions attesting to *origo castris*. These are just two epitaphs, three military diplomas, one votive inscription and one *laterculus* found at the legionnaire camp at Viminacium.[25] The most interesting of the inscriptions is the last one.[26] It contains a list dated to 195 of the veterans of the *legio VII Claudia*, who were presumably recruited about AD 169. M. Mirković presumes the list originally contained 270 names, but in only 175 of the cases can the *origines* be determined.[27] Among these the lion's share came from the province of Moesia Superior. The other veterans came mainly from the neighbouring Balkan provinces. What is surprising, however, is the small number of recruits from Asia Minor, which M. Mirković ascribes to the devastation wreaked by the plague brought by soldiers from a war in the East in the latter half of the 160s.[28] The inscription names eight or nine soldier sons who were assigned *origo castris*.

The number of soldiers discharged in 195 was more than double the average number of recruits.[29] The example of the Viminacium inscription shows that the approaching war with barbarians forced the Roman army to take extraordinary steps. The names of the soldiers listed in the inscription, with a majority of imperial *nomina*[30] and relatively numerous Thracian and Illyrian *cognomina*,[31] suggest that most of the recruit class of 169 either came from families with only recent Roman citizenship or received it only at the time of recruitment. What is more, Thracian and Illyrian names of soldiers are rarely found in the province, apart from this inscription.[32] Such large-scale local recruitment must have been linked to the Marcomannic Wars and the devastations caused by the aforementioned plague. In such cases the army relied primarily on recruits of local origins, who were granted Roman citizenship as they entered military service. These included sons of the soldiers who had presumably served in the same unit or at least one of the troops stationed on the middle and lower Danube.

[21] *AE* 1955, 238 = *AE* 1969, 633.
[22] Mann 1983, pp. 46–47.
[23] *P. Mich.* III 162 R (see Appendix, tab. 2, no. 4). See also Fink 1971, pp. 169–171, no. 39.
[24] See Appendix, tab. 2, no. 3, and Fink 1971, pp. 254–265, no. 70.
[25] See Appendix, tab. 1, nos. 52–58.
[26] *CIL* III 14507 = *IMS* II 53 (see Appendix, tab. 1, no. 55).
[27] Mirković 2004, p. 213.
[28] Recruits from Asia Minor made up a large proportion of soldiers listed in inscriptions as serving in the Danube provinces, see *IMS* II 53 (p. 98). On the other hand, drawing on J. F. Gilliam's work (Gilliam 1961, pp. 225–251), M. Mirković claims that a larger-than-usual number of soldiers discharged in 195 shows that the plague that reached the Balkans that year failed to make much of a dent in the army, see Mirković 2004, p. 214. On the consequences of the plague, see: Littman, Littman 1973; Wiseman 1973; Duncan-Jones 1996; Bagnall 2002; Scheidel 2002; Brunn 2003; Greenberg 2003; Brunn 2007.
[29] Kovács 2009, p. 219.
[30] Dominant among them are *Aurelii*, who show up in the text as many as 65 times. Less numerous are the *Iulii* (17), *Claudii* (3), *Flavii* (6), *Cocceii* (2) and *Ulpii* (15). Data on onomastics of the legionnaires presented by M. Mirković have been complemented by me on the basis of a transcription of a new fragment of the inscription published by Mirković in 2004; see Mirković 2004, pp. 216–220.
[31] The *cognomina* found in the text that indicate peregrine origins for the soldiers include for example the Thracian Auluzon, Bithus, Daizo, Dines, Dolens, Drigissa, Mestula, Mucatra, Mucco, Rescuporis, Sinna, Tara( ) and Thithi and Illyrian Andio, Catandio, Dassius and Mestrius, see *IMS* II 53 (p. 98). On Thracian and Illyrian names in the inscription, see also Mócsy 1974, p. 65.
[32] Mócsy 1974, p. 249.

Apart from the Viminacium inscription *castrenses* feature in epigraphic material from the Danube provinces on an exceptional basis. Research by S. E. Phang[33] and M. Sołek[34] indicates, however, that both legionnaires and auxiliaries stationed in the area entered into long-term relationships with women carrying *duo nomina*, frequently their own freedwomen, more often than with peregrine women. That must have stemmed from the fact that the middle- and lower-Danube provinces were in the second and third centuries AD among the most Romanised in the Empire. Such unions produced children with Roman citizenship. There was thus no need for recruitment to the legions of the sons of soldiers with peregrine women, who would lack Roman citizenship. Such recruits must have been rare and must have served primarily as auxiliaries.[35]

A particular, if rare category of documents includes praetorian lists from the Castra Praetoria in Rome. Testimonies of *origo castris* appear in just four such documents.[36] In two cases we have exact dates, which allow for a conjecture that *castrenses* only came to serve in the praetorian guard as of the reign of Septimius Severus. Originally praetorians were recruited from Italy. Cassius Dio writes that some of them came also from Hispania, Macedonia and Noricum.[37] After taking Rome in 193 Septimius Severus ordered, however, a disbanding and disarmament of the guard and set up a new formation of diverse ethnic origins.[38] Among the new praetorians were troops from the border regions, who had supported his bid for imperial power. The new guard was thus made up primarily of soldiers from Thrace, Pannonia, Noricum and Moesia, which finds reflection also in the inscriptions discussed above.

What still calls for an explanation is the presence in the *laterculi* of people whose *origo* is defined with the term *castris*. We know that praetorian guards were also banned from marriage during service.[39] The analysis of funerary inscriptions of praetorians carried out by S. Panciera demonstrates, however, that they were much less likely to have close relationships with women than legionnaires or auxiliaries,[40] probably due to their unit's elite character.[41] We thus have reason to believe that the aforementioned *castrenses* were soldiers from the Danube provinces transferred to Rome before the end of military service. They came from the immediate vicinity of the camps and were most likely fathered by the locally stationed soldiers.

The analysis of source material indicates that an important influence on the distribution of inscriptions and papyri testifying to *origo castris* was the change in the Roman army's recruitment policy over the first three centuries AD and the widespread adoption of the local recruitment model in the second century in particular. The term first appears in Egypt, one of the Roman Empire's eastern provinces, where a shortage of Roman citizens led to recruitment of legionnaires from the local population. For reasons difficult to determine the largest number of *origo castris* testimonies comes from Lambaesis, the headquarters of the *legio III Augusta*. There are numerous indications that local recruitment became common at the end of the second and beginning of the third century AD. In contrast, however, to the other provinces of the empire, Numidia relied primarily on the sons of soldiers stationed at Lambaesis. On the middle and lower Danube the need to conduct an extra recruitment — unique, as it seems, in this region — among the local population came directly from the need for reinforcements amid the Marcomannic Wars. An echo of the aforementioned conscription may be found in the presence of *castrenses* among the soldiers of Septimius Severus's reformed praetorian guard.

[33] Phang 2001, pp. 190–196.
[34] Sołek 2014, p. 33.
[35] See Appendix, tab. 1, nos. 53, 54, 57, 58.
[36] See Appendix, tab. 1, nos. 48–51.
[37] Cassius Dio, *Historia Romana*, LXXIV 2, 4. This information is confirmed by epigraphic material collected by A. Passerini (Passerini 1939, pp. 146–159) and recently complemented by I. Łuć (Łuć 2004, pp. 155–169, annexes 1–2).
[38] On this see Passerini 1939, pp. 171–180; Durry 1968, pp. 247–249; Kennedy 1978, pp. 288–296; Topalilov 2013, pp. 287–300.
[39] Phang 2001, pp. 159–164.
[40] Panciera 1993, pp. 261–176.
[41] Phang 2001, p. 160.

Appendix

Table 1. Epigraphic testimonies

	Bibliography	Provenance	Attestations	Date (AD)	Type of inscription
1.	*CIL* III 6627; *CIL* III 14147; *ILS* 2483; *AE* 2001, 2048; CUVIGNY 2003, pp. 267–268	Egypt, Koptos	2	1–100	building inscription with a list of legionaries
2.	*CIL* III 6580; *CIL* III 12045; *ILS* 2304; KAYSER 1994, p. 105; *AE* 1947, 112	Egypt, Alexandria	24	194	list of veterans of *legio II Traiana Fortis*
3.	*CIL* VIII 2994; LE BOHEC 1989b, p. 204	Numidia, Lambaesis	1	101–200	epitaph
4.	*CIL* VIII 2950; *CIL* VIII 18303; LE BOHEC 1989b, p. 199	Numidia, Lambaesis	1	101–300	epitaph
5.	LE BOHEC 1989a, p. 213, no. 19; *AE* 1989, 879	Numidia, Lambaesis	3	101–300	military list
6.	LE BOHEC 1989a, p. 214, no. 20; *AE* 1989, 880a	Numidia, Lambaesis	2	101–300	military list
7.	LE BOHEC 1989a, p. 215, no. 21; *AE* 1989, 881a	Numidia, Lambaesis	1	101–300	military list
8.	LE BOHEC 1989a, p. 221, no. 23; *AE* 1989, 883a	Numidia, Lambaesis	1	101–300	military list?
9.	LE BOHEC 1989a, p. 221, no. 23; *AE* 1989, 883b	Numidia, Lambaesis	4	101–300	military list
10.	LE BOHEC 1989a, p. 222, no. 24; *AE* 1989, 884	Numidia, Lambaesis	3	101–300	military list
11.	*CIL* VIII 18084; *AE* 1985, 985; LE BOHEC 1989b, pp. 75, 304	Numidia, Lambaesis	4	117–138	military list
12.	*IDRE* II 448; LE BOHEC 1989a, p. 207, no. 15; *AE* 1989, 875; *AE* 1992, 1873	Numidia, Lambaesis	1 or 2	117–138	military list
13.	*CIL* VIII 18085; *IDRE* II 447; LE BOHEC 1989b, pp. 75, 217; *AE* 1995, 1779; *AE* 2006, 76	Numidia, Lambaesis	21	117–161	military list

14.	Le Bohec 1989b, pp. 75, 304	Numidia, Lambaesis	1	117–211	military list
15.	*CIL* VIII 18087; Le Bohec 1989b, pp. 76, 304	Numidia, Lambaesis	2	138–180	military list
16.	*CIL* VIII 3151; Le Bohec 1989b, pp. 96–97, 277	Numidia, Lambaesis	1	ca. 150	epitaph
17.	*AE* 1987, 1063; Le Bohec 1989a, p. 216, no. 22; *AE* 1989, 882; *AE* 1991, 1690; *AE* 1992, 1867a	Numidia, Lambaesis	4	150–175	military list
18.	*CIL* VIII 3101; *ILS* 2565	Numidia, Lambaesis	1	150–200	epitaph
19.	*CIL* VIII 2566; Le Bohec 1989b, pp. 75, 304	Numidia, Lambaesis	3	150–211	military list
20.	*CIL* VIII 3247; Le Bohec 1989b, p. 278	Numidia, Lambaesis	1	150–250	epitaph
21.	*CIL* VIII 18067; *ILS* 2303; Le Bohec 1989b, pp. 76, 386	Numidia, Lambaesis	10	166	list of centurions and veterans of *legio III Augusta*
22.	*AE* 1917/18, 29; Le Bohec 1989b, pp. 76, 314; *AE* 1992, 1872	Numidia, Lambaesis	3	193–211	military list
23.	Le Bohec 1989a, pp. 223–224, nos. 25–26; *AE* 1989, 885; *AE* 1989, 886; *AE* 1992, 1874	Numidia, Lambaesis	7	193–211	military list
24.	Le Bohec 1989a, p. 225, no. 27; *AE* 1989, 887	Numidia, Lambaesis	2	193–211	military list
25.	*CIL* VIII 2565a–b; *CIL* VIII 18053; *AE* 1979, 674; Le Bohec 1989b, pp. 75, 77, 304	Numidia, Lambaesis	7	193–217	military list
26.	*CIL* VIII 2569a; *CIL* VIII 2568; *CIL* VIII 18055; *CIL* VIII 18056; Le Bohec 1989b, pp. 77, 314; *AE* 2005, 65; *AE* 2007, 1745	Numidia, Lambaesis	65	193–217	military list
27.	*CIL* VIII 2567; *CIL* VIII 18054; *AE* 1895, 204; *AE* 1979, 673; Le Bohec 1989b, pp. 77, 314; *AE* 2010, 1828	Numidia Lambaesis	23	193–217	military list

28.	Le Bohec 1989b, pp. 77, 314	Numidia, Lambaesis	8	193–217	military list
29.	*AE* 1899, 91; *AE* 1899, 195; Le Bohec 1989b, pp.76, 314; *AE* 2011, 421	Numidia, Lambaesis	6	193–235	military list
30.	*AE* 1899, 92; *AE* 1899, 195; Le Bohec 1989b, pp.76, 314	Numidia, Lambaesis	1	193–235	military list
31.	*AE* 1917/18, 57; Le Bohec 1989b, p. 77; *AE* 1992, 1871; *AE* 2010, 1828	Numidia, Lambaesis	1	193–235	military list
32.	*CIL* VIII 18068; *AE* 1890, 107; *AE* 1891, 149; *AE* 1992, 1875	Numidia, Lambaesis	25	198	list of veterans of *legio III Augusta*
33.	*AE* 1967, 580; Le Bohec 1989b, pp. 78, 314	Numidia, Lambaesis	2	199	list of veterans of *legio III Augusta*
34.	*CIL* VIII 2618; *CIL* VIII 18096; Le Bohec 1989b, pp. 79, 403	Numidia, Lambaesis	5	211–212	list of veterans of *legio III Augusta*
35.	*CIL* VIII 18086; Le Bohec 1989b, pp. 78, 314	Numidia, Lambaesis	15	212–222	military list
36.	*CIL* VIII 2586; *ILS* 2381; *IDRE* II 446; *AE* 1917/18, 57; Le Bohec 1989b, pp. 79, 552; *AE* 2010, 1828	Numidia, Lambaesis	5	218–235	list of soldiers of *legio III Augusta*
37.	*AE* 1987, 1068; *AE* 1989, 893; *AE* 1992, 1867b; *AE* 2003, 1890	Numidia, Thamugadi	3	117–211	military list
38.	D'Escurac-Doisy 1956, p. 118, no. 28	Numidia, Thamugadi	1	193–238	epitaph
39.	*CastDim* 32	Numidia, Castellum Dimmidi	3	201–300	military list
40.	*CastDim* 37	Numidia, Castellum Dimmidi	1	201–300	military list
41.	*CastDim* 41	Numidia, Castellum Dimmidi	1	201–300	military list?

42.	*CIL* VIII 8800; *CIL* VIII 18023; *IDRE* II 467; *CastDim* 30; *AE* 1940, 154; *AE* 1948, 220	Numidia, Castellum Dimmidi	1	212–222	military list
43.	*AE* 1929, 183; *AE* 1940, 152; *CastDim* 22; *AE* 1948, 218	Numidia, Castellum Dimmidi	1	222–235	votive inscription
44.	*AE* 1906, 124; *AE* 1940, 145; *AE* 1940, 153; *CastDim* 1; *AE* 1948, 208	Numidia, Castellum Dimmidi	5	225	votive inscription
45.	*CastDim* 20	Numidia, Castellum Dimmidi	2	226	list of soldiers of a *vexillatio legionis III Augustae*?
46.	*AE* 1940, 153; *CastDim* 4; *AE* 1948, 210; *AE* 1949, 13	Numidia, Castellum Dimmidi	3	236–238	votive inscription
47.	*RMD* III 157; *AE* 1985, 991; *AE* 1990, 1042; *AE* 1991, 1752; *AE* 1996, 1804	Mauretania Tingitana, Volubilis	1	119	military diploma
48.	*CIL* VI 32627	Italia, Rome	1	193–300	list of praetorians
49.	*CIL* VI 32623	Italia, Rome	4	201–300	list of praetorians
50.	*CIL* VI 32523; *CIL* VI 37184; *IDRE* I 34; *AE* 1909, 210; *AE* 1911, 1	Italia, Rome	1	204	list of praetorians
51.	*CIL* VI 32640(1); *IDRE* I 43	Italia, Rome	1	209–210	list of praetorians
52.	*CIL* III 11218; *ILS* 2359	Pannonia Superior, Carnuntum	1	100–114	epitaph
53.	*AE* 2006, 1013; *AE* 2010, 1167	Dalmatia, Salona	1	117–150	epitaph
54.	*AE* 1957, 199; *IDR* I 18; *RMD* I 64	Dacia Superior, Gilău	1	21 July 164	military diploma
55.	*CIL* III 14507; *AE* 1901, 12; *AE* 1901, 13; *AE* 1901, 126; *IDRE* II 308; *AE* 1969/70, 500c; *IMS* II 53; *AE* 2004, 1223; *AE* 2007, 121	Moesia Superior, Viminacium	8 or 9	195	list of veterans of *legio VII Claudia*

56.	*CIL* III 7505; *AE* 1888, 11; *ILS* 2311; *IDRE* II 340; *IScM* V 160	Moesia Inferior, Troesmis	1	after 170	votive inscription
57.	*CIL* XVI 128; *AE* 2007, 1484	Moesia Inferior, Bozveliysko	1	178	military diploma
58.	*AE* 2005, 1721	Thracia?	1	180–192?	military diploma

Table 2. Papyrological sources

	Siglum	**Provenance**	**Attestations**	**Date (AD)**	**Type of document**
1.	*P. Gen. Lat.* 1 R, part III	unknown	2 or 3	90	list of legionaries
2.	*P. Berol* 6866 and *P. Aberd.* 133	Egypt, Arsinoites	9	May 192	pay account of auxiliaries
3.	*P. Mich.* III 162 R	unknown	6	193–197	list of principales of an auxiliary corps?

Bibliography

Alston 1995	R. Alston, *Soldier and Society in Roman Egypt. A Social History*, London – New York.
Bagnall 2002	R. S. Bagnall, "The effects of plague. Model and evidence", *The Journal of Roman Archaeology* 15, pp. 114–120.
Brunn 2003	C. Brunn, "The Antonine plague in Rome and Ostia", *The Journal of Roman Archaeology* 16, pp. 426–434.
Brunn 2007	C. Brunn, "The Antonine plague and the third-century crisis", [in:] *Crises and the Roman Empire. Proceedings of the Seventh Workshop of the International Network Impact of Empire, Nijmegen, June 20–24, 2006*, ed. O. Hekster, G. De Kleijn, D. Slootjes (= *Impact of Empire* 7), Leiden – Boston, pp. 201–218.
Campbell 1978	B. Campbell, "The marriage of soldiers under the Empire", *The Journal of Roman Studies* 68, pp. 153–166.
Cuvigny 2003	H. Cuvigny, "Les documents écrits de la route de Myos Hormos à l'époque gréco-romaine (inscriptions, graffiti, papyrus, ostraca)", [in:] *La route de Myos Hormos: l'armée romaine dans le désert Oriental d'Égypte*, II, ed. H. Cuvigny (= *Fouilles de l'Institut français d'archéologie orientale* 48/2), Cairo, pp. 265–294.
D'Escurac-Doisy 1956	H. D'Escurac-Doisy, "Inscriptions funéraires de Timgad", *Libyca* 4, pp. 101–132.
Duncan-Jones 1996	R. P. Duncan-Jones, "The impact of the Antonine plague", *The Journal of Roman Archaeology* 9, pp. 108–136.
Durry 1968	M. Durry, *Les cohortes prétoriennes* (= *Bibliothèque des Écoles françaises d'Athènes et de Rome* 146), Paris.
Erman 1901	H. Erman, "Review of Tassistro", *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte. Romanistische Abteilung* 22, pp. 234–241.
Ferraro, Gorla 2010	A. Ferraro, V. Gorla, "Le tribù urbane. Verifica della loro composizione sociale sulla base della documentazione epigrafica", [in:] *Le tribù romane. Actes des XVI^e Rencontre sur l'épigraphie, Bari, 8–10 ottobre 2009*, ed. M. Silvestrini, Bari, pp. 341–347.
Fink 1971	R. O. Fink, *Roman Military Records on Papyrus* (= *The American Philological Association Monograph* 26), Cleveland.
Gilliam 1961	J. F. Gilliam, "The plague under Marcus Aurelius", *American Journal of Philology* 73, pp. 225–251.
Greenberg 2003	J. Greenberg, "Plagued by doubt. Reconsidering the impact of a mortality crisis in the 2nd c. A.D.", *The Journal of Roman Archaeology* 16, pp. 413–425.
Kayser 1994	F. Kayser, *Recueil des inscriptions grecques et latines (non funéraires) d'Alexandrie impériale (I^er–III^e s. apr. J.-C.)*, Cairo.
Kennedy 1978	D. L. Kennedy, "Some observations on the Praetorian Guard", *Ancient Society* 9, pp. 275–301.
Kovács 2009	P. Kovács, *Marcus Aurelius' Rain Miracle and the Marcomannic Wars*, Leiden.
Le Bohec 1989a	Y. Le Bohec, "Inscriptions inédites ou corrigées concernant l'armée romaine d'Afrique", *Antiquités africaines* 25, pp. 191–226.
Le Bohec 1989b	Y. Le Bohec, *La Troisième Légion Auguste*, Paris.
Le Bohec 2000	Y. Le Bohec, *The Imperial Roman Army*, London.
Littman, Littman 1973	R. J. Littman, M. L. Littman, "Galen and the Antonine plague", *The American Journal of Philology* 94/3, pp. 243–255.
Łuć 2004	I. Łuć, *Oddziały pretorianów w starożytnym Rzymie. Rekrutacja, struktura, organizacja*, Lublin.

Mann 1983 — J. C. Mann, *Legionary Recruitment and Veteran Settlement During the Principate*, London.

Mirković 1980 — M. Mirković, "Die römische Soldatenehe und der Soldatenstand", *Zeitschrift für Papyrologie und Epigraphik* 40, pp. 259–271.

Mirković 2004 — M. Mirković, "The roster of the VII Claudia Legion", *Zeitschrift für Papyrologie und Epigraphik* 146, pp. 211–220.

Mitteis 1912 — L. Mitteis, *Grundzüge und Chrestomathie der Papyruskunde*, II/1, Leipzig.

Mócsy 1965 — A. Mócsy, "Die *origo castris* und die Canabae", *Acta Archaeologica Academiae Scientiarum Hungaricae* 13, pp. 425–431.

Mócsy 1974 — A. Mócsy, *Pannonia and Upper Moesia. A History of the Middle Danube Provinces of the Roman Empire*, London – Boston.

Panciera 1993 — S. Panciera, "Soldati e civili a Roma nei primi tre secoli dell'impero", [in:] *Prosopographie und Sozialgeschichte. Studien zur Methodik und Erkenntnismöglichkeit der kaiserzeitlichen Prosopographie*, ed. W. Eck, Cologne, pp. 261–276.

Passerini 1939 — A. Passerini, *Le coorti pretorie* (= *Studi pubblicati dal R. Istituto Italiano per la Storia Antica* 1), Rome.

Phang 2001 — S. E. Phang, *The Marriage of Roman Soldiers (13 B.C.–A.D. 235): Law and Family in the Imperial Army* (= *Columbia Studies in the Classical Tradition* 24), Leiden – Boston – Cologne.

Pollard 2010 — N. Pollard, "Military institutions and warfare: Graeco-Roman", [in:] *A Companion to Ancient Egypt*, I, ed. A. B. Lloyd, Chichester, pp. 446–466.

Scheidel 2002 — W. Scheidel, "A model of demographic and economic change in Roman Egypt after the Antonine plague", *The Journal of Roman Archaeology* 15, pp. 97–114.

Sołek 2014 — M. Sołek, "Związki żołnierzy rzymskich z kobietami w świetle inskrypcji z terenu Dacji (II–III w. n.e.)", [in:] *Roma, Romae, Romae... Materiały z III Międzyuczelnianej Konferencji Studenckich Kół Naukowych skupionych wokół starożytnego Rzymu, Warszawa, 18 maja 2012 roku oraz IV Międzyuczelnianej Konferencji Studenckich Kół Naukowych skupionych wokół starożytnego Rzymu, Warszawa, 22–23 marca 2013 roku*, ed. T. Dziurdzik, Warsaw, pp. 27–36.

Topalilov 2013 — I. Topalilov, "The *origo* of the Thracian praetorians in the time of Severans", [in:] *The Roman Empire during the Severan Dynasty. Case Studies in History, Art, Architecture, Economy and Literature*, ed. E. C. De Sena (= *American Journal of Ancient History* 6–8), Piscataway, pp. 287–300.

Vittinghoff 1971 — F. Vittinghoff, "Die rechtliche und soziale Stellung der *canabae legionis* und die Herkunftangabe *castris*", *Chiron* 1, pp. 301–308.

Wells 1998 — C. M. Wells, "Celibate soldiers. Augustus and the army", *American Journal of Ancient History* 14/2, pp. 180–190.

Wiseman 1973 — J. Wiseman, "Gods, war and plague in the time of the Antonines", [in:] *Studies in the Antiquities of Stobi*, I, ed. D. Mano-Zissi, J. Wiseman, Belgrade, pp. 152–183.

Abbreviations

AE	*L'Année épigraphique*, Paris.
CastDim	G. C. Picard, *Castellum Dimmidi*, Paris 1948.
CIL	*Corpus Inscriptionum Latinarum*, ed. Th. Mommsen *et alii*, Berlin 1863–.

IDR I — *Inscripţiile Daciei Romane = Inscriptiones Daciae Romanae*, I: *Introducere istorică şi epigrafică. Diplomele militare. Tăbliţele cerate*, ed. I. I. Russu, Bucharest 1975.
IDRE — *Inscriptiones Daciae Romanae. Inscriptiones extra fines Daciae repertae*, ed. C. C. Petolescu, Bucharest 1996.
ILS — *Inscriptiones Latinae Selectae*, I–III, ed. H. Dessau, Berlin 1892–1916.
IMS II — *Inscriptions de la Mésie Supérieure*, II: *Viminacium et Margum*, ed. M. Mirković, Belgrade 1986.
IScM — *Inscripţiile din Scythia Minor*, I–V, Bucharest 1983–2000.
RMD — M. M. Roxan, *Roman Military Diplomas*, I–III, London 1954–1977.
SEG — *Supplementum Epigraphicum Graecum*, Leiden – Amsterdam.

Streszczenie

Origo castris a lokalna polityka rekrutacyjna armii rzymskiej

Artykuł omawia nierozstrzygniętą dotychczas kwestię rozmieszczenia znalezisk inskrypcji i papirusów zawierających poświadczenia fikcyjnej *origo castris*, przypisywanej nieślubnym synom żołnierzy rzymskich. Materiał źródłowy został zebrany i zaprezentowany w postaci dwóch tabel zawartych w załączonym do tekstu aneksie. Analiza tekstów zawierających w głównej mierze listy żołnierzy i weteranów zwolnionych w danym roku ze służby wojskowej pokazała, że rozmieszczenie znalezisk inskrypcji i papirusów poświadczających żołnierzy, którym przypisano fikcyjną *origo castris*, ma związek z upowszechnieniem się w pierwszych trzech wiekach istnienia cesarstwa modelu rekrutacji o charakterze lokalnym.

Małgorzata Sołek
Centre for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
malgorzata.so@gmail.com

Dominik Chudzik

EARLY MEDIEVAL SETTLEMENT OF SIEDLECKA PLATEAU AND ŁUKOWSKA PLAIN IN THE LIGHT OF ARCHAEOLOGICAL RESEARCH

Abstract: The mesoregions of Siedlecka Plateau and Łukowska Plain comprise the macroregion of South Podlasie Lowland. They lie in the centre-east of Poland (mostly in the upper and centre basin of Bug) and take up some 5,000 square kilometres. More than 1,270 early medieval archaeological sites have been identified in the region, of which 57 % lie in Siedlecka Plateau and 43 % in Łukowska Plain. Of these, 31 are dated to the sixth–seventh centuries, 267 to the eighth–tenth and 726 to the eleventh–thirteenth centuries. The chronology of the other sites is given in general terms as "early medieval". 57 % of settlement sites are classified as traces of settlement. Open settlements account for 40 % of the total. The share of cemeteries stands at 3 % and for hillforts it amounts to 1 %. The early medieval settlement pattern in the area under discussion was shaped by both natural factors (e.g. the hydrographic network, physical landscape features, fertility of soil) and cultural or economic ones (e.g. long-distance trade routes). Historical-political circumstances must also be borne in mind, as they determined possession of given parts of the area by Poland or Kievan Rus'.

Key words: Siedlecka Plateau, Łukowska Plain, early Middle Ages, hillforts, non-invasive archaeological surveys

The physicogeographic mesoregions of Siedlecka Plateau and Łukowska Plain lie in the east-central part of Poland and belong to the macroregion of South Podlasie Lowland [Fig. 1]. The units lie next to each other and are of roughly identical size (around 2,500 km^2 each). They lie almost entirely in the lower and middle Bug basin. The south-western part of Siedlecka Plateau forms part of the basin of the upper and middle Liwiec, whose largest tributaries include the Stara Rzeka, the Muchawka with the Zbuczynka, the Czerwonka and the Miedzanka. In its northern and eastern part, surface waters flow out by small, primary tributaries of the Bug: the Toczna, the Kołodziejka, the Myśla, the Turna, the Cetynia and the Buczynka. The greater part of the Równina Łukowska is found in the Krzna basin, whose valley marks the south-eastern boundary of the mesoregion. The most important of its left tributaries are the Klukówka and the Złota Krzywula. Through the western part of the plain flow the affluents of the Tyśmienica: the Bystrzyca with the Mała Bystrzyca and the Czarna. The mesoregions under consideration differ significantly in landscape and soil composition. The hilly Siedlecka Plateau rises to 190–200 m above sea level and is found in the terminal moraine region of the Wolstonian glacial stage. The clays and sands of the glacial till have turned into the relatively fertile brown earths. Łukowska Plain lies at around 140–170 m above sea level and is a flat, sandy area of the fluvioglacial landforms of the Wolstonian stage. It is dominated by agriculturally poor podzols and wetlands.[1]

[1] Kondracki 1994, pp. 143–145; 2009, pp. 201–206.

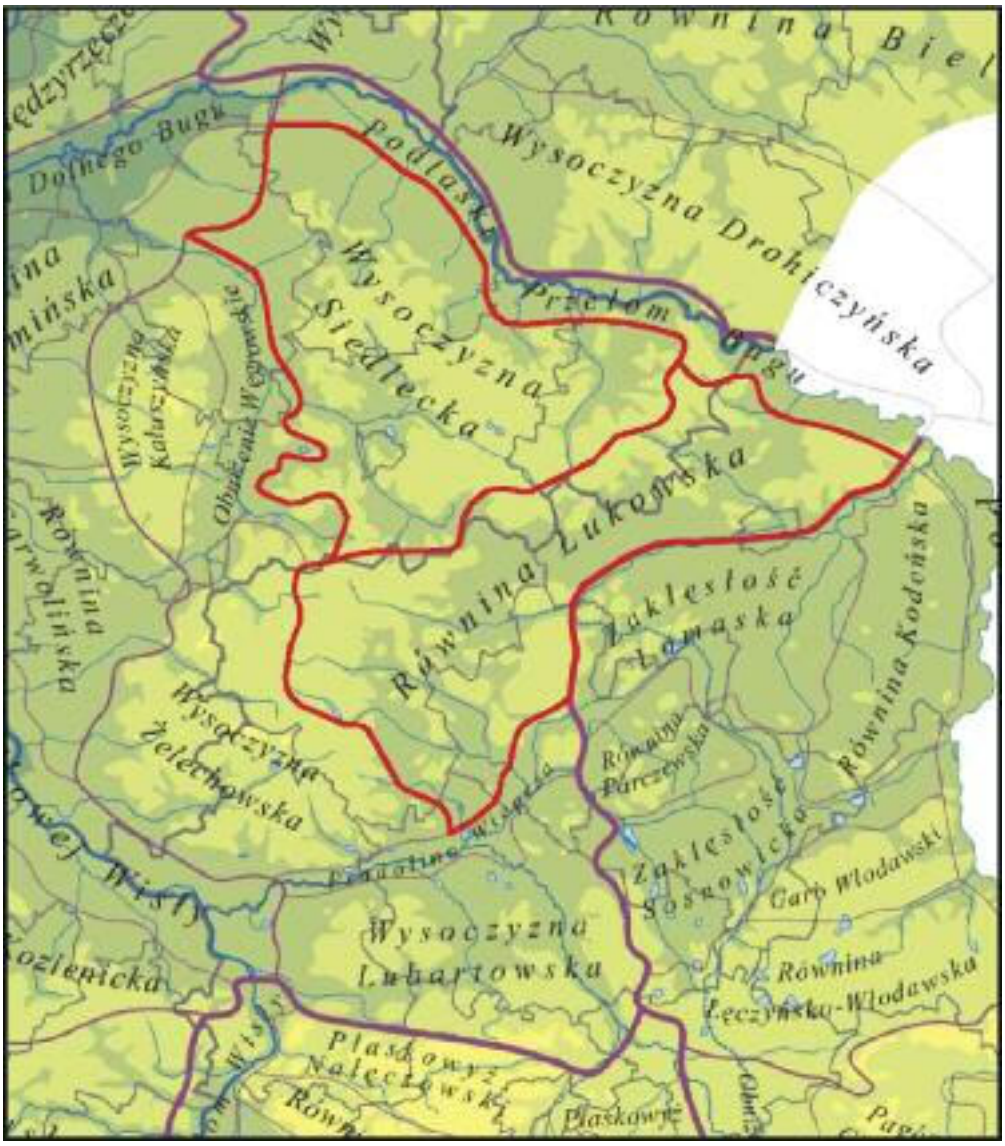

Fig. 1. Siedlecka Plateau and Łukowska Plain on the map of east-central Poland (source: https://pl.wikipedia.org/wiki/Regionalizacja_fizycznogeograficzna_Polski#/media/File:Regiony_Kondrackiego-hipsometria.png, author: Aotearoa, licence: CC-BY-SA 3.0 [http://creativecommons.org/licenses/by-sa/3.0/], accessed: 04.05.2015 r.)

Although the sources of the Krzna, the Liwiec and the Toczna are strongly dominated by wetlands and the greater part of the area under consideration offers merely average or poor soils, early medieval settlement developed mostly undeterred. The forbidding wetlands, found mostly in the southern and eastern part of the area, served presumably as protection for the fledgling settlement structures. One may also suppose that the light podzols and brown earths did not constitute a major barrier to development. In areas with particularly poor sandy soils dominated, food production moved to animal husbandry and to hunting and gathering. The only natural barrier to settlement is found in the form of the watershed between the Liwiec and Turna, Cedynia and Buczynka drainage basins, which significantly hindered access to water.

Based on surface surveys carried out in the course of the Archaeological Picture of Poland (AZP) programme of a complete archaeological mapping of the country, it may be concluded that the communities found in the area in the early Middle Ages favoured settlement in the immediate vicinity of minor watercourses. As many as 85 % of the sites were found within minor river valleys [Fig. 2]. The upper and middle sections of rivers and streams were in particular favour. The localisation of settlements in close proximity to watercourses allowed for easy access to clean water or to water only slightly contaminated with materials carried by the stream. A small watercourse was little of an obstacle in transport, which allowed for exploitation of an entire valley and human occupation of both banks.[2] As many as 73 % of settlements found within small valleys, were placed on their slopes with 15 % at the edges, 7 % both on the slopes and the edges, 4 % at the valley bottom and a mere 1 % both on the slopes and the bottom. Placing the habitat and areas used for farming on the valley slopes and thus at a small distance from the stream provided at least partial protection from flooding from spring snowmelt or summer rain, while not hindering access to water. A mere 11 % of the sites identified by surface surveys were found in large river valleys.

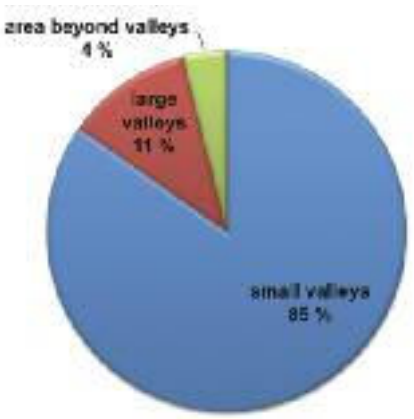

Fig. 2. Location of early medieval sites within physicogeographic units
(percentage share)

This stems from the fact that an overwhelming majority of rivers in the Siedlecka Plateau and Łukowska Plain are small streams with little flow and valleys without clearly marked fluvial terraces. Only some sections of the Krzna, Liwiec and Toczna occupy larger valleys. It is also likely that the immediate vicinity of these large watercourses was harder to manage than the slopes of small river valleys, gently descending to moderately sized rivers and streams. The most attractive from this point of view were the fluvial terraces just above the flood zone, which contain as many as 73 % of the total number of sites found within the large valleys. Clearly less attractive were the higher terraces (16 %) and the valley edges (9 %) due to their distance from the water. It is also unsurprising to find only a small percentage of the settlements on the current bottom terraces (a mere 2 % of the sites found in large valleys) due to the dangerously small distance from the water and to waterlogging. The areas beyond the valleys contained a mere 4 % of the sites registered for the early medieval period. It is worth pointing out that an overwhelming majority of these are just settlement traces, containing at most a few scraps of pottery. This confirms that the areas beyond immediate reach of groundwater were chosen for settlement only reluctantly and were beyond the sphere of intensive economic exploitation. The fact that a large proportion of sites found at a distance from watercourses were cemeteries indicates that such areas were frequently selected for sepulchral activities.

[2] Hoczyk-Siwkowa 1999, pp. 32–34.

The earliest stage of Slavic settlement in the Siedlecka Plateau and Łukowska Plain is represented by a relatively small number of archaeological sites [Fig. 3]. In the sixth–seventh centuries a mere 31 settlements were present here with 16 recorded for the Siedlecka Plateau and 15 for the Łukowska Plain. It must be, however, that chronology of sites, explored through field survey alone, for the early Slavic period should be approached extremely cautiously. The only artefacts discovered in the course of such surveys are ceramic fragments, which renders precise dating difficult. In such circumstances particular attention must be paid to excavated sites. Worth mentioning among them are two sepulchral objects found in the Siedlce district, namely a pit burial with cremated remains in an urn at Izdebki-Błażeje (dated to the second half of the sixth century) and a kurgan (tumulus) with a cremation but no urn at Izdebki-Wąsy (dated end-sixth to mid-seventh century).[3] Also very early is the open settlement at Łukowisko (Biała Podlaska district), which goes back to the sixth–seventh century.[4] The cremation burial tumulus ("kurgan") at Izdebki-Błażejki, found in close proximity to the aforementioned barrow at Izdebki-Wąsy, may also perhaps belong to the early Slavic period, although it has to date been linked to the Zarubintsy culture or the post-Zarubintsy horizon. This cultural attribution of the object may be justified on the grounds that a vessel with a handle, which is uncharacteristic of the earliest stages of the Slavic settlement of the Polish lands. It should, however, be pointed out that the remaining fragments of handmade ceramic vessels found inside the tumulus correspond to the pottery of the Prague culture.[5] The early Slavic character of the burial is also implied by its form of a tumulus ("kurgan"), quite atypical for the Zarubintsy culture and the little-known sepulchral traditions of the post-Zarubintsy horizon with cremated remains deposited in flat cemeteries.[6] Moreover, the early medieval dating for the tumulus is supported by direct proximity of another object, very similar in dimensions and construction, which is undoubtedly connected to the beginnings of Slavic settlement in the area.

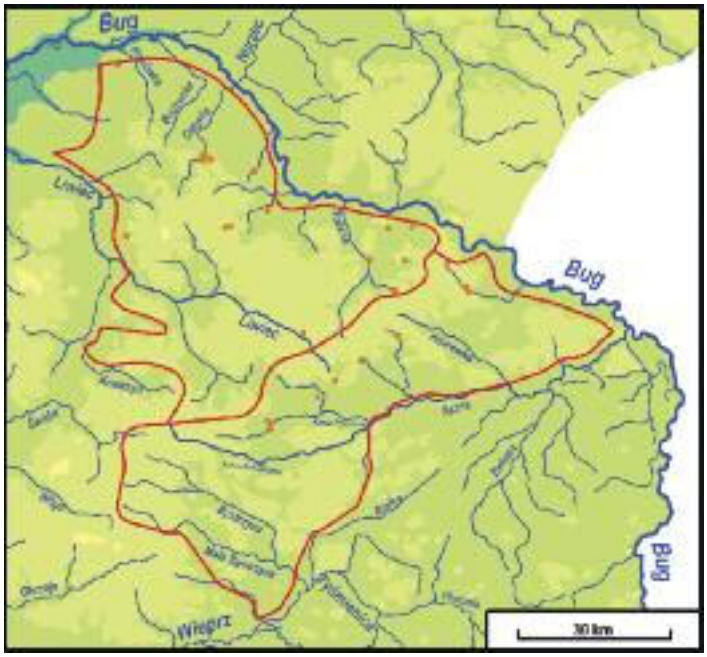

Fig. 3. Map of archaeological sites from the sixth–seventh centuries — orange dots (drawn by D. Chudzik)

[3] Kalaga 2006, pp. 50–53.
[4] Miśkiewiczowa 2003, pp. 76–78; Sobczak 2003, p. 7.
[5] Parczewski 1988, pp. 13–36, figs. 3–17; Kalaga 2004, pp. 194–204; 2006, p. 299, fig. 27.II.
[6] Terpilovskij 2004, pp. 39–40; Pačkova 2006, pp. 51–71.

It is likely that the grave's cultural attribution could have been definitively resolved with a technological analysis of the handmade pottery found during excavations, but this is impossible due to the loss of the ceramic fragments.[7] At present it thus seems likely that the Izdebki-Błażeje tumulus is of a similar date to the Izdebki-Wąsy barrow and is connected to the very beginnings of the early Middle Ages.

According to Maria Miśkiewiczowa, the settlement of Niewiadoma, Sokołów district belongs to the earliest stage of Slavic settlement in the South Podlasie Lowland. The monumental hillfort that forms part of this complex first came into use at the turn of the sixth and seventh century, she says. In the second half of the sixth century a nearby open settlement was also supposedly in operation with a further five cropping up at the beginning of the seventh century.[8] It should, however, be noted that in most cases such an early chronology for the sites making up the Niewiadoma settlement complex is doubtful given the current state of knowledge and requires robust verification. It is also worth noting that the attempts have already been made to re-evaluate the chronology of Niewiadoma. According to the latest research, the beginnings of the hillfort date to the ninth century, as indicated by a re-examination of the ceramic vessels found at the site[9] and the single C_{14} date gained from the material at the base of rampart I.[10] The earliest signs of early medieval settlement at Niewiadoma, presumably connected to an open settlement preceding the defensive structure, can be dated at the earliest to the beginnings of the tribal period. This is confirmed by, among others, the find of a spur with hook-shaped, inward-bent yokes, considered by Jan Żak and Lidia Maćkowiak-Kotowska to belong to type III: 2, subtype A, dated to the turn of the seventh and eighth century.[11]

A clear change in the settlement dynamics of the area under consideration took place over the eighth to tenth centuries [Fig. 4]. Besides settling almost exclusively in the upper reaches of watercourses, as was the case in the early Slavic period, habitats in the middle and lower parts of

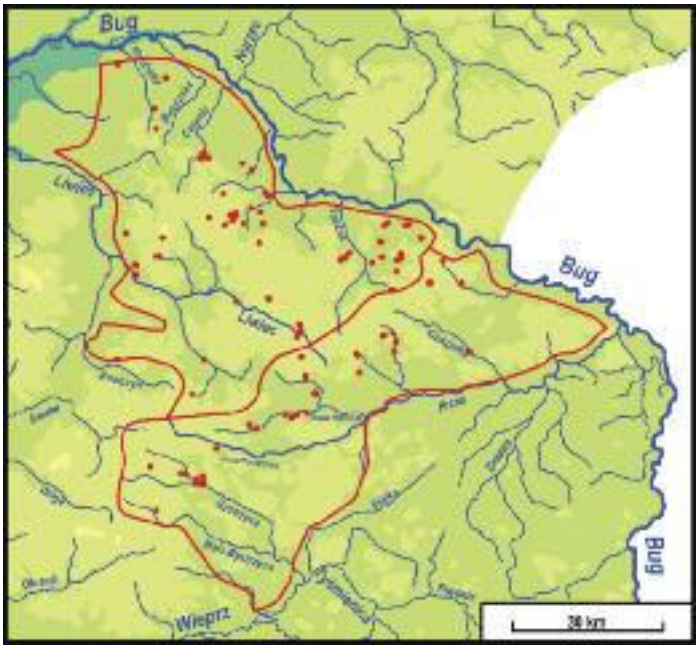

Fig. 4. Map of archaeological sites from the eighth–tenth centuries — red dots (drawn by D. Chudzik)

[7] Kalaga 2004, pp. 194–195, 201.
[8] Miśkiewiczowa 1996, pp. 39–59.
[9] Skrzyńska-Jankowska 2013, pp. 349–353.
[10] Miśkiewiczowa 1996, p. 40.
[11] Żak, Maćkowiak-Kotowska 1988, p. 330.

small river valleys are increasingly taken, while medium-sized rivers also begin to attract settlement. The first clusters of settlements show up in the record and can be interpreted as so-called settlement micro-regions. Surface area of such structures in the tribal period is relatively small at no more than 10 km^2. A particularly dense network of settlements in the eighth–tenth centuries is seen on the Liwiec, the north of the Krzna, the upper and middle Bystrzyca, Złota Krzywula, Leniwka, Myśla, middle Cetynia, Czyżówka, Kosówka, Oczka, Kałuża and Toczna. At some places, and in the basins of the Toczna, Myśla, Krzna Północna and Bystrzyca in particular, settlement microregions observed in the archaeological record cluster into larger structures of a mesoregional scale.

In general there are 267 settlement sites from the tribal period, including 167 in the Siedlecka Plateau and 100 in the Łukowska Plain. Among all the archaeological sites from the tribal period located in the two mesoregions, as many as 170 are considered open settlements. Although the results of field surveys must be approached with due caution, such a clear increase in the number of sites compared to the earlier period, points to significant demographic growth in the area. The settlement dynamics index, which illustrates the phenomenon by presenting the number of tribal-period sites as a multiple of early Slavic sites, amounts in this case to as much as 8.6 (860 %). Such a significant intensification of settlement was presumably the result of a number of factors. One was certainly biological growth in population, whose expansion into the area met with fairly favourable conditions. It is also likely that the South Podlasie Lowland received new waves of settlers from the area between the rivers of the Bug, Pripyat and Dnieper. The phenomenon seems to find confirmation in the archaeological record for the sites of the tribal period contain ceramic material morphologically similar to the "Luka-Raykovetska" pottery, which brings the area into close association with the territories then under East Slavic occupation.[12]

With rising population the tribal period also witnessed an expansion of defensive construction. Among the hillforts built at the time — besides the aforementioned Niewiadoma structure — there are those at Dołhołęka (Biała Podlaska district), Klimy (Łosice district) and Krzesk-Królowa Niwa (Siedlce district).[13] The hillfort at Huszlew in the Łosice district was probably built around the turn of the ninth and tenth centuries.[14] Four of the aforementioned hillforts (the Niewiadoma one aside) are characterised by very similar location in physicogeographic terms. They are typical plains structures, each located on a small eminence and surrounded by extensive, low-lying and partially waterlogged plains. Their characteristic feature is an almost perfectly circular shape, while the Klimy, Krzesk and Huszlew hillforts have double rings of concentric ramparts. The Klimy hillfort initially had a single line of fortifications. A second rampart, on the outside of the first, was built at a later date, perhaps near the turn of the ninth and tenth centuries.[15] In the case of the Krzesk-Królowa Niwa [Fig. 5] hillfort, both lines of fortifications were probably built at the same time,[16] while the chronological relationship between the inside and outside ramparts at the Huszlew hillfort is yet to be established.[17] The Dołhołęka hillfort [Fig. 6] is for structures with a single ring of fortifications.[18] The defensive establishment at Niewiadoma is located on an expansive promontory over the Cetynia valley with deep ravines immediately to the north and south. It was initially surrounded by a single line of fortifications along the edge of the promontory cut off from the plateau by a ditch and a wooden fence, which were subsequently replaced with a transverse, arch-shaped rampart. A second, crescent-shaped rampart was built probably around the turn of the tenth and eleventh centuries. Due to the adjustment of the hillfort to the local terrain, it was probably irregular in shape, slightly reminiscent of a triangle.[19]

[12] Miśkiewiczowa 1996, p. 27; 2003, pp. 78–98; Wróblewski 1994, p. 92.
[13] Jastrzębski 1988, pp. 276–289; Kalaga 1989a, pp. 50–137; Bienia 1998, pp. 12–15, 25–27; Żukowski 2006, pp. 85–90; 2008, pp. 159–167.
[14] Dulinicz, Żukowski 2004, pp. 273–274.
[15] Żukowski 2006, p. 86; 2008, p. 167.
[16] Kalaga 1989b, p. 116.
[17] Dulinicz, Żukowski 2004, pp. 265–270, 273–274.
[18] Jastrzębski 1988, p. 276; Bienia 1998, p. 12.
[19] Miśkiewiczowa 1996, pp. 42–48, 81–82, 84, fig. 2.

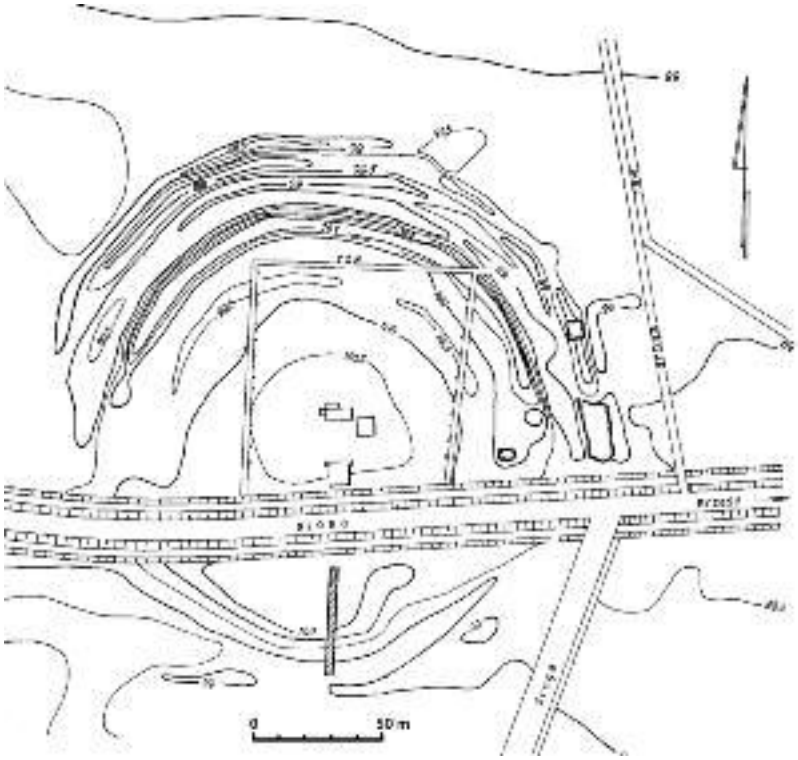

Fig. 5. Digital elevation model of hillfort at Krzesk-Królowa Niwa (Górska *et alii* 1976, pl. IX)

Fig. 6. Digital elevation model of hillfort at Dołhołęka (Bienia 1998, p. 13)

Hillfort ramparts of the tribal period were built with a variety of earth and timber construction techniques. At Niewiadoma, for example, the remains of a wooden sandwich construction, attached on the outside to the earthen barrow of rampart I, were recorded.[20] In the first stage of its use, the internal rampart of the Krzesk-Królowa Niwa hillfort was topped off with a fence made of laths, while the external one with a timber structure similar to the box-framed construction. The fortifications, following a fire at the turn of the ninth and tenth centuries, were covered with a layer of earth stabilised with clay and rocks.[21] Timber bulwarks filled with compact clay made up, perhaps, the core of the fortifications at Dołhołęka.[22] The external rampart of the Klimy hillfort probably had a timber palisade at the front, stabilised by horizontal beams.[23] The external rampart of the Huszlew hillfort was reinforced from the front with stakes and its foreground had construction similar to the sandwich construction.[24] Also used in the construction of fortification were boulders, which served to reinforce the foundations and tops of the ramparts.[25]

In the later stages of the early Middle Ages the area under consideration found itself in the borderlands two early states — Poland and Kievan Rus'.[26] Although in the early historical era it was the scene of permanent confrontation between the Piast and the Rurik dynasties, such events failed to halt the development of settlement. For the eleventh–thirteenth centuries we have 726 archaeological sites, of which 407 were recorded on the Siedlecka Plateau and 319 on the Łukowska Plain [Fig. 7]. As many as 356 of these are open settlements (including presumed ones). The index of the settlement dynamics for the early state period is around 2.7 (270 %). It thus stands at nearly one-third of its level for the tribal period, but is still fairly high. That means that the leap in settlement density in the pre-state formation era, the eleventh, twelfth and thirteenth centuries were a period of stabilisation of settlement and slower demographic growth.

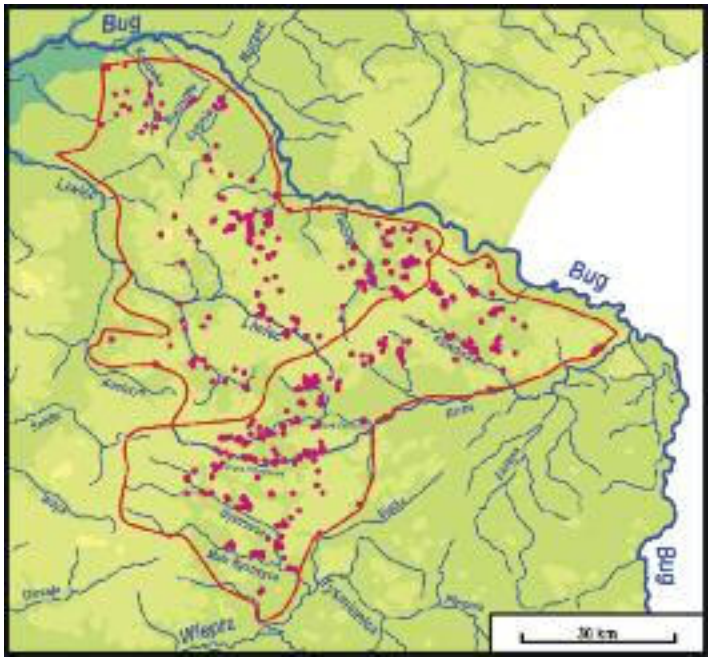

Fig. 7. Fig. 4. Map of archaeological sites from the eleventh–thirteenth centuries — red dots (drawn by D. Chudzik)

[20] Miśkiewiczowa 1996, pp. 45–48, 81–91.
[21] Kalaga 1989b, pp. 105–121.
[22] Jastrzębski 1988, pp. 276, 278, fig. 5; Bienia 1998, p. 12.
[23] Żukowski 2008, p. 166.
[24] Dulinicz, Żukowski 2004, pp. 267–270.
[25] Jastrzębski 1988, pp. 276–280; Kalaga 1989b, pp. 111, 114; Dulinicz, Żukowski 2004, p. 270; Żukowski 2006, pp. 86–87.
[26] Skrzyńska-Jankowska 2006, pp. 52–53, figs. 1, 2.

Despite all this, the later stages of the early Middle Ages are a period of continued development of the existing settlement structures. Systematic field surveys, undertaken as part of the AZP programme, found several large clusters of archaeological sites in the region. One of the clusters is found in the eastern part of the area under discussion, that is an area that in the later stages of our period belonged, theoretically at least, to Kievan Rus'. The cluster lies in the middle section of the Toczna basin. It is an area where several tributaries, including the Oczka and the Kałuża, flow into the Toczna, creating modestly sized valleys that facilitated movement between settlements. The cluster, covering an area of some 300 km^2, grew out of settlement patterns from the earlier stages of the early Middle Ages and undoubtedly deserves the name of a settlement mesoregion. It includes around 100 sites (hillforts, open settlements, traces of settlement and cemeteries), including 60 from the earlier phases of the early Middle Ages. Settlements cluster into several (at least seven) microregions of surface area ranging from 3 km^2 to over 10 km^2, interspersed with areas of low settlement density. The mesoregion's central point is the monumental defensive structure at Dzięcioły (Łosice district) [Fig. 8], dated to the twelfth century.[27] The structure lies in the Toczna valley and is surrounded by waterlogged meadows, difficult to traverse even today. Its ground plan is oval and it is protected by three lines of well-preserved ramparts. Its surface area does not exceed 8 ha and the ramparts rise to 3–4 m.[28] It must be counted among the hillforts of multiple concentric fortification lines, well known from the tribal period. As the structure at

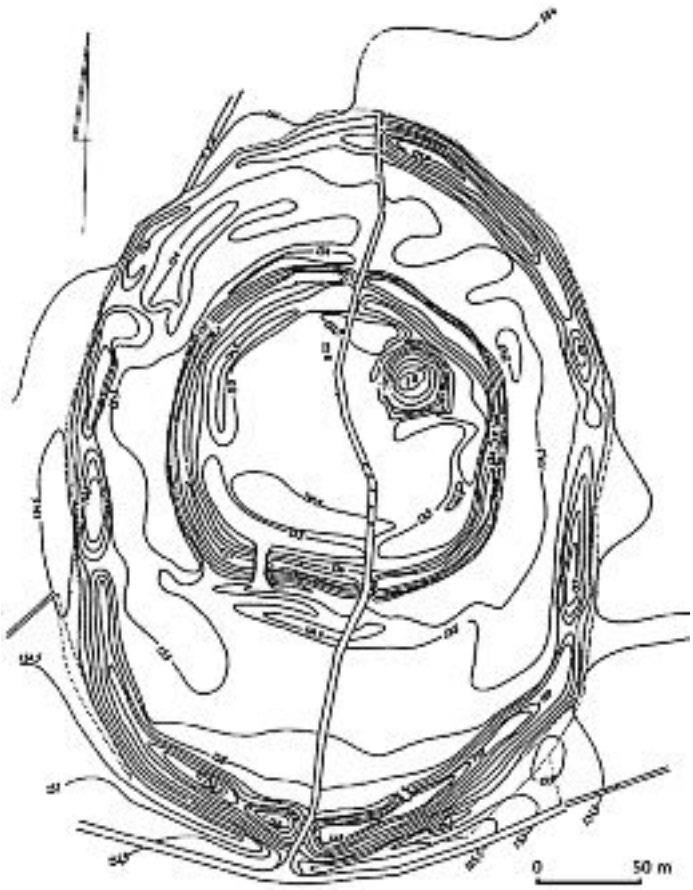

Fig. 8. Digital elevation model of hillfort at Dzięcioły (Bienia 1998, p. 16)

[27] Górska *et alii* 1976, pp. 44–45.
[28] Komorowski 1953, p. 91; Górska *et alii* 1976, pp. 44–45; Bienia 1998, pp. 15–17.

Dzięcioły has been only partially excavated, it may not be ruled out that, just as at Niewiadoma, it had many stages of functioning. This is indicated both by its large scale and ground plan, especially the annular inside fort in the north-eastern part of the structure. It should be noted that the Dzięcioły hillfort is not the only defensive stronghold within the early medieval settlement mesoregion in the Toczna basin. A small hillfort lies in the present-day village of Chłopki (Łosice district). The structure was unfortunately almost completely erased at the end of the nineteenth century, rendering its interpretation much harder.[29]

Another compact cluster of archaeological sites has been located in the upper and middle basin of the small Myśla river. It is linked to the hillfort of Włodki (Sokołów district) immediately next to the Polish-Rus' border. The mesoregion covers around 125 km^2 and is made up of several microregions lying in the river valleys of the Myśla affluents. The cluster seems to have been fairly developed already in the tribal period, although its most intensive growth falls in the more recent parts of the early medieval era, when a hillfort, dated to the eleventh–twelfth centuries, is built in the present-day village of Włodki. It is a low-lying oval, annular hillfort of some 2 ha, surrounded with a single fortification line.[30]

The location of settlement mesoregions functioning in the Toczna and Myśla basins indicates that they were part of the Drohiczyn hillfort region and functioned as its southern hinterland. The zone of intensive settlement from the early stages of the early Middle Ages also includes the upper basin of the Krzna and the Bystrzyca basin. Their location suggests they fell within the Piast dynasty's jurisdiction. They are to be linked to the formation of the Łuków castellany mentioned in written sources from the mid-thirteenth century.[31] Two hillforts have survived from this area, the first at the village of Strzyżew,[32] the other at Tuchowicz[33] (both in the Łuków district). In the earlier stages of our period two small settlement clusters can be seen — one on the Krzna Północna, the other in the upper Bystrzyca valley. The rapid development of the clusters took place in the latter stages of the early Middle Ages, when settlements also appear on the Krzna Południowa, Mała Bystrzyca and in the upper Bystrzyca valley.

Nearly all hillforts known from the early state period in this area lie in the plains on slightly elevated terrain and surrounded by extensive wetlands. The exceptions are the aforementioned hillforts of Chłopków and Niewiadoma, both located on high banks of river valleys. Most of the hillforts built in the latter stages of the early medieval period count among circular or oval annular structures with a single line of defences. Among these it is worth mentioning the small (up to 0.5 ha) hillforts at Strzyżew (Łuków district), Turów (Radzyń district) and Wyłazy (Siedlce district) and the much larger (over 2 ha) hillforts at z Włodki and Podnieśno (Siedlce district). A single rampart is also around the irregular hillfort at Czołomyje (Siedlce district) [Fig. 9]. It is characterised by an atypical, 8-shaped form, which may incidate that it was originally a bipartite foundation. Among the hillforts with multiple concentric ramparts, still functional in the latter stages of the early Middle Ages are the aforementioned structures at Krzesk-Królowa Niwa, Huszlew and Dzięcioły. A double line of concentric ramparts is also found at the very well preserved hillfort at Walim in the Łosice district, although excavations carried out at the site have not allowed for date more precise than the early Middle Ages. A double line of crescent-shaped fortifications is characteristic for the latter stages of the Niewiadoma hillfort. It is also worth pointing out that the area of the Siedlecka Plateau and Łukowska Plain yields three known examples of mound hillforts from the very end of the early Middle Ages. They lie in the villages Czaple Górne, Krzymosze (both in the Siedlce district) and Tuchowicz.[34]

[29] Mikulski 1937, p. 104; Górska *et alii* 1976, pp. 30–31; Kalaga 1989a, pp. 1–5; Bienia 1998, pp. 7–8.
[30] Górska *et alii* 1976, pp. 157–158.
[31] Bienia 2003.
[32] Bienia 2002.
[33] Niedźwiedź 2003.
[34] Mikulski 1937, pp. 102–104, fig. 4; Górska *et alii* 1976, pp. 35, 76–77; Bienia 1998, pp. 7–8, 15–17, 22–24, 30–34.

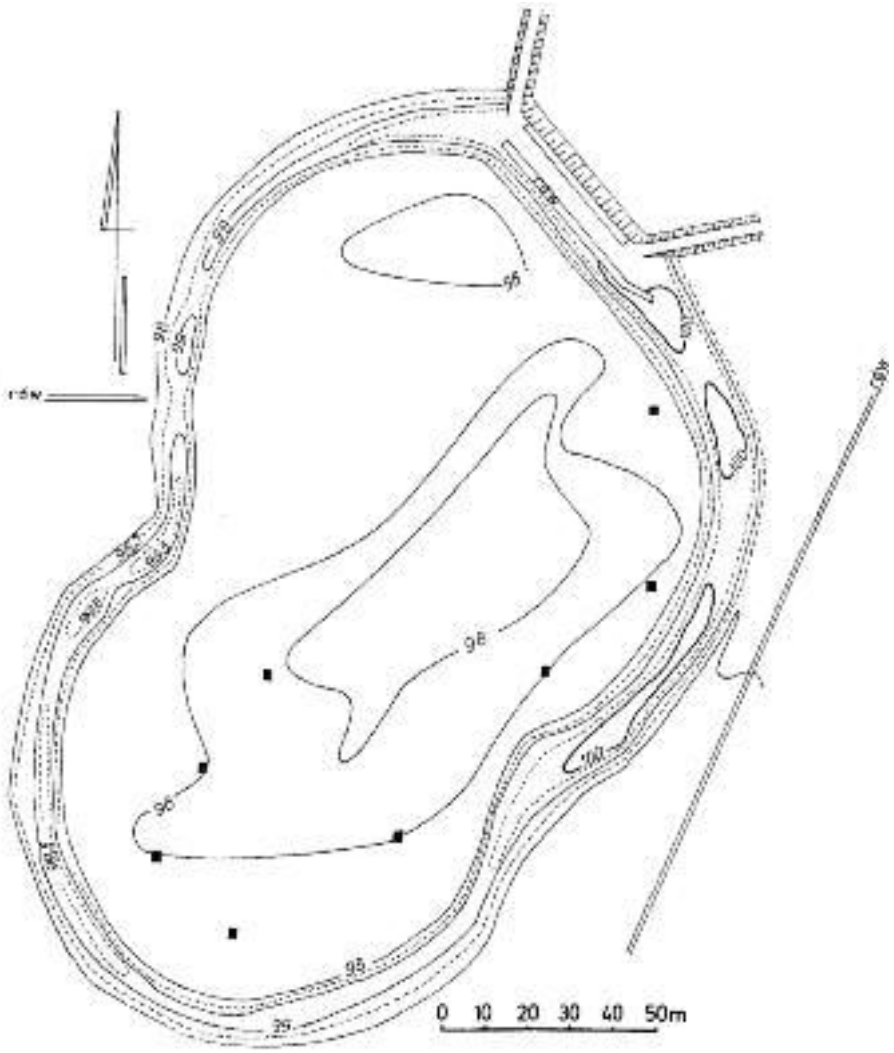

Fig. 9. Digital elevation model of hillfort at Czołomyje
(Górska *et alii* 1976, p. 42, fig. 48)

Not much can be said about the construction of ramparts of the South Podlasie Lowland hillforts from the later part of the early Middle Ages. At Turów for example timber construction similar to the box-framed construction was used.[35] The base of the rampart at Podnieśno was a timber structure derived from a grilled structure. A layer of charcoal found at the hypothetical location of the fortifications of the Wyłazy hillfort indicates that here as well the earth rampart was reinforced with timber. The sides of the Krzymosze mound hillfort were probably faced with timber. A rampart fragment built exclusively with earth and rocks was, on the other hand, excavated at Włodki.[36] The entirely damaged fortifications of the Chłopków hillfort were erected on a layer of compact clay reinforced with rocks.[37] In the more recent stages of the early Middle Ages the fortifications of the Krzesk-Królowa Niwa and Niewiadoma hillforts only had earth-and-stone constructions, erected over earlier timber ramparts destroyed by fire.[38]

[35] Bienia 1998, pp. 30–32.
[36] Górska *et alii* 1976, pp. 157, 161–164.
[37] Kalaga 1989a, p. 3; Bienia 1998, pp. 7–8.
[38] Kalaga 1989b, pp. 111–112, 115–116; Miśkiewiczowa 1996, pp. 42–48, 84–126.

In summary, more than 1,270 archaeological sites from the early Middle Ages are known for the area, of which 57 % are in the Siedlecka Plateau and 43 % in the Łukowska Plain. Nearly all have only undergone field surveys with excavations at a mere 4 % of sites, mainly hillforts and cemeteries. 57 % of the settlement sites are to be counted as mere traces of settlement. Open settlements constitute some 40 % of the total. The share of cemeteries stands at 2 % and hillforts at 1 % [Fig. 10]. 31 settlements functioned in the sixth–seventh centuries, 267 in the eighth–tenth and 726 in the eleventh–thirteenth [Fig. 11]. The remaining sites are dated generally to the early medieval period. The surface area of the open settlements, recorded in the process of the AZP surveys does not exceed a single hectare in 75 % of cases. 42 % have surface area of up to 0.5 ha, 35 % from 0.5 to 1 ha and larger settlements make up 23 % of the total. On that basis it may be presumed that most open settlements were small hamlets with at most a few households.

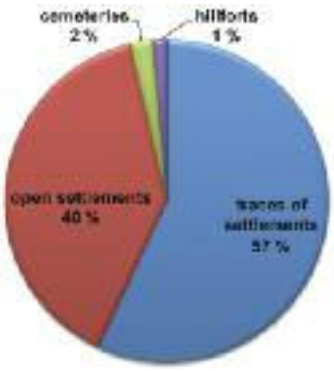

Fig. 10. Percentage share of individual types of early medieval archaeological sites in Siedlecka Plateau and Łukowska Plain

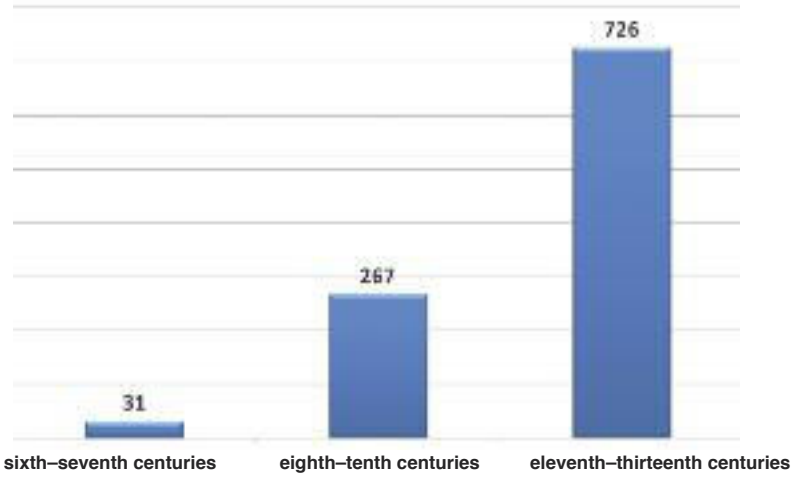

Fig. 11. Number of archaeological sites from individual stages of the early Middle Ages (excluding sites dated generally to the early Middle Ages)

Among the seventeen surviving early-medieval hillforts in the area under consideration, ten lie in the Siedlecka Plateau and seven in the Łukowska Plain. Five have a double or triple line of concentric ramparts. The structure on the promontory at Niewiadoma has an irregular shape, while the hillforts at Tuchowicz, Czaple Górne and Krzymosze are mound constructions, while the form of the poorly preserved Chłopków hillfort is yet to be determined. The remaining defensive structures (to the number of seven) are mostly circular or oval and are surrounded by a single ring of ramparts. Prominent among them is the hillfort at Czołomyje with an atypical, 8-shaped form.

Most of the hillforts with a single line of defences cover a small surface area, in five cases less than a hectare. The largest is the hillfort at Podnieśno (2.8 ha). There is also much variation in dimensions among the hillforts with two or three lines of fortifications. The smallest of them cover a surface area of little more than a hectare. The remaining three are much larger. The hillfort at Krzesk-Królowa Niwa has surface area of 3.5 ha, at Niewiadoma ca. 5 ha and at Dzięcioły slightly over 8 ha.[39] It must, of course, be borne in mind that the size of the hillforts may have changed considerable from one stage of its functioning to another, as can be seen at Klimy[40] and Niewiadoma.[41]

A number of factors shaped the settlement structure of the South Podlasie Lowland. In addition to the obvious natural factors these were cultural and economic, whose importance rose at the twilight of the pre-state formation era. Among the most important were trade routes, especially the Bug route with its many forks.[42]

The political circumstances, determining the possession of the individual parts of the area to Poland or to Kievan Rus', must also be borne in mind.

Bibliography

Bienia 1998 — M. Bienia, *Grodziska wczesnośredniowieczne istniejące i domniemane na terenie dzisiejszego województwa bialskopodlaskiego*, Biała Podlaska.

Bienia 2002 — M. Bienia, *AZP obszaru 63-81* (documentation of AZP surveys at the National Heritage Institute).

Bienia 2003 — M. Bienia, *AZP obszaru 63-79* (documentation of AZP surveys at the National Heritage Institute).

Dulinicz, Żukowski 2004 — M. Dulinicz, R. Żukowski, "Grodzisko w Huszlewie, pow. Łosice", [in:] *Problemy przeszłości Mazowsza i Podlasia*, ed. M. Dulinicz (= *Archeologia Mazowsza i Podlasia* 3), pp. 263–275.

Dunin-Wąsowicz 1982 — T. Dunin-Wąsowicz, "Wczesnośredniowieczna sieć drożna na Podlasiu", [in:] *Dzieje Sokołowa Podlaskiego i jego regionu*, ed. J. Kazimierski, pp. 41–57.

Górska *et alii* 1976 — I. Górska, L. Paderewska, J. Pyrgała, W. Szymański, L. Gajewski, Ł. Okulicz, *Grodziska Mazowsza i Podlasia (w granicach dawnego województwa warszawskiego)*, Wrocław – Warsaw – Cracow – Gdańsk.

Hoczyk-Siwkowa 1999 — S. Hoczyk-Siwkowa, *Małopolska północno-wschodnia w VI–X w., Struktury osadnicze* (= *Lubelskie Materiały Archeologiczne* 12), Lublin.

Jastrzębski 1988 — S. Jastrzębski, "Badania weryfikacyjne na grodziskach w Ewopolu, woj. Lublin, i Dołhołęce, woj. Biała Podlaska", *Sprawozdania Archeologiczne* 40, pp. 272–289.

Kalaga 1989a — J. Kalaga, *Sprawozdanie z badań sondażowych przeprowadzonych na grodzisku w Chłopkowie, gm. Platerów, w terminie od 2.VII. do 17.VII.1989 r.* (unpublished, Archive of Institute of Archaeology, University of Warsaw).

Kalaga 1989b — J. Kalaga, *Wczesnośredniowieczny zespół osadniczy w Krzesku-Królowej Niwie, woj. siedleckie* (unpublished PhD thesis, Institute of Archaeology, University of Warsaw, supervisor: Prof. Maria Miśkiewicz).

Kalaga 2004 — J. Kalaga, "Ciałopalny kurhan ze wsi Izdebki-Błażeje w woj. mazowieckim", [in:] *Hereditatem Cognoscere. Studia i szkice dedykowane Profesor Marii Miśkiewicz*, ed. Z. Kobyliński, Warsaw, pp. 194–204.

Kalaga 2006 — J. Kalaga, *Ciałopalny obrządek pogrzebowy w międzyrzeczu Liwca,*

[39] Górska *et alii* 1976, pp. 44–45, 75–76, 87–88, tabl. IV, IX, XIII; Bienia 1998, pp. 16–17.

[40] Żukowski 2006, pp. 89–90; 2008, p. 166.

[41] Miśkiewiczowa 1996, pp. 47–48.

[42] Dunin-Wąsowicz 1982, pp. 46–56, figs. 8, 9; Miśkiewiczowa 2003, p. 100.

Bugu i Krzny we wczesnym średniowieczu, Warsaw.

Komorowski 1953 — P. Komorowski, "Grodzisko w miejscowości Dzięcioły, pow. Siedlce", *Wiadomości Archeologiczne* 23, p. 91.

Kondracki 1994 — J. Kondracki, *Geografia Polski. Mezoregiony fizycznogeograficzne*, Warsaw.

Kondracki 2009 — J. Kondracki, *Geografia regionalna Polski*, Warsaw.

Mikulski 1937 — J. Mikulski, "Grodziska w powiecie siedleckim", *Przegląd Archeologiczny* 6, pp. 99–105.

Miśkiewiczowa 1996 — M. Miśkiewiczowa, *Wczesnośredniowieczny kompleks osadniczy w Niewiadomej w województwie siedleckim*, Warsaw.

Miśkiewiczowa 2003 — M. Miśkiewiczowa, "W okresie wczesnego średniowiecza", [in:] *Północna Lubelszczyzna od pradziejów po okres nowożytny*, ed. E. Banasiewicz-Szykuła (= *Skarby z Przeszłości* 5), Lublin, pp. 73–118.

Niedźwiedź 2003 — J. Niedźwiedź, *AZP obszaru 63-78* (documentation of survey at AZP Archive at National Heritage Institute).

Pačkova 2006 — S. P. Pačkova, *Zarubineckaja kul'tura i latenizirovannye kul'tury Evropy*, Kiev.

Parczewski 1988 — M. Parczewski, *Najstarsza faza kultury wczesnosłowiańskiej w Polsce*, Cracow.

Skrzyńska-Jankowska 2006 — K. Skrzyńska-Jankowska, "Wczesnośredniowieczne pogranicze polsko-ruskie w dorzeczu środkowego Bugu — główne problemy badawcze", [in:] *Stan badań archeologicznych na pograniczu polsko-białoruskim od wczesnego średniowiecza po czasy nowożytne*, ed. H. Karwowska, A. Andrzejewski, Białystok, pp. 51–62.

Skrzyńska-Jankowska 2013 — K. Skrzyńska-Jankowska, *Dorzecze środkowego Bugu jako pogranicze kulturowe we wcześniejszym średniowieczu* (unpublished PhD thesis, Institute of Archaeology and Ethnology, Polish Academy of Sciences, supervisor: Prof. Przemysław Urbańczyk).

Sobczak 2003 — C. Sobczak, *Materiał ceramiczny z obiektu 57, odkrytego na stanowisku nr V w Łukowisku, gm. Międzyrzec Podlaski, pow. Biała Podlaska, woj. lubelskie* (unpublished BA thesis, Institute of Archaeology, University of Warsaw, supervisor: Prof. Joanna Kalaga).

Terpilovskij 2004 — R. V. Terpilovskij, *Slavjane Podneprov'ja v pervoj polovine I tysjačeletija n.e.* (= *Monumenta Studia Gothica* 3), Lublin.

Wróblewski 1994 — W. Wróblewski, *Wczesnośredniowieczna sieć osadnicza w dorzeczu Liwca w X–XIII w.* (unpublished PhD thesis, Institute of Archaeology, University of Warsaw, supervisor: Prof. Maria Miśkiewicz).

Żak, Maćkowiak-Kotowska 1988 — J. Żak, L. Maćkowiak-Kotowska, *Studia nad uzbrojeniem środkowoeuropejskim VI–X wieku: Zachodniobałtyjskie i słowiańskie ostrogi o zaczepach haczykowato zagiętych do wnętrza*, Poznań.

Żukowski 2006 — R. Żukowski, "Wczesnośredniowieczne założenie grodowe w Klimach, pow. Łosice", [in:] *Stan badań archeologicznych na pograniczu polsko-białoruskim od wczesnego średniowiecza po czasy nowożytne*, ed. H. Karwowska, A. Andrzejewski, Białystok, pp. 85–92.

Żukowski 2008 — R. Żukowski, "Wczesnośredniowieczne grodzisko typu Chodlik-Huszlew i osada przygrodowa w Klimach na Podlasiu — stan. 1 i 1a", [in:] *Przez granice czasu. Księga jubileuszowa poświęcona Profesorowi Jerzemu Gąssowskiemu*, Pułtusk, pp. 159–175.

In developing maps, graphs and statistical calculations used in the paper, use was made of the catalogue of archaeological sites from PhD thesis by Wojciech Wróblewski (Wróblewski 1994) and field survey results — from the National Heritage Institute (NID) — for the following AZP areas: 48-76 (M. Figiel 2000), 48-77 (M. Wielgus, J. Wysocki 1992), 48-78 (M. Wielgus, J. Wysocki 1992), 49-76 (M. Figiel 1999), 49-77 (M. Figiel 1999), 49-78 (J. Kalaga 1987), 49-79 (J. Kalaga 1989), 50-76 (M. Figiel 2000), 50-77

(M. Figiel 1999), 50-80 (W. Wróblewski 1980), 51-76 (M. Wyszkowski 1986), 51-77 (W. Nowakowski, W. Wróblewski 1987), 51-79 (J. Kalaga, D. Górna 1981), 51-80 (J. Kalaga 1980), 52-76 (K. Cwetsch 1984), 52-77 (J. Wysocki, R. Głowacz 2000), 52-78 (J. Wysocki, R. Głowacz 2000), 52-79 (W. Wróblewski 1981), 52-80 (D. Górna 1980), 53-78 (J. Wysocki, R. Głowacz 2000), 53-79 (J. Kalaga 1981), 53-80 (H. Gorczycka 1981), 54-76 (W. Wróblewski 1986), 54-77 (R. Mazurowski 1983), 54-78 (J. Kalaga 1983), 54-79 (M. Bienia 1999), 54-80 (M. Bienia 1999), 54-83 (J. Arciszewska, I. Chrzanowska, W. Zieliński 1982), 54-84 (M. Balcerzak 1996), 55-76 (W. Wróblewski 1991), 54-77 (W. Wróblewski 1988), 55-78 (W. Wróblewski 1983), 55-80 (B. Bryńczak, M. Bienia 2005), 55-82 (M. Bienia 2004), 55-83 (S. Żółkowski 1988), 55-84 (S. Żółkowski 1988), 55-85 (M. Balcerzak 1996), 56-76 (W. Wróblewski 1989), 56-78 (J. Kalaga, E. Kowalczyk 1983), 56-79 (K. Cwetsch 1984), 56-80 (B. Bryńczak, M. Bienia 2006), 56-81 (M. Bienia 2006), 56-82 (S. Żółkowski 1992), 56-83 (S. Żółkowski 1988), 56-84 (S. Żółkowski 1991), 56-85 (S. Żółkowski 1987), 56-86 (U. Perlikowska 1985), 57-76 (R. Olszewska, M. Bienia 2006), 57-77 (K. Cwetsch 1986), 57-79 (B. Bryńczak, A. Bryńczak 2002), 57-80 (W. Wróblewski 1985), 57-81 (K. Cwetsch 1985), 57-82 (S. Żółkowski 1988), 57-83 (S. Żółkowski 1988), 57-84 (S. Żółkowski 1992), 57-85 (S. Żółkowski 1992), 57-86 (S. Żółkowski 1991), 57-87 (S. Żółkowski 1986), 58-76 (W. Wróblewski, J. Kalaga 1990), 58-77 (W. Wróblewski, R. Głowacz 1986), 58-78 (M. Bienia 2002), 58-79 (K. Cwetsch 1985), 58-80 (W. Wróblewski 1984), 58-81 (M. Figiel 1998), 58-82 (S. Żółkowski 1989), 58-83 (S. Żółkowski 1989), 58-84 (S. Żółkowski 1990), 58-85 (D. Mikoś 1984), 58-86 (S. Żółkowski 1992), 58-87 (S. Żółkowski 1991), 58-88 (S. Żółkowski 1986), 59-76 (B. Bryńczak, M. Bienia 2006), 59-77 (M. Bienia 2004), 59-78 (M. Bienia 2003), 59-79 (J. Kalaga 1985), 59-80 (J. Kalaga 1984), 59-81 (A. Olsienkiewicz 1984), 59-82 (S. Żółkowski 1991), 59-83 (S. Żółkowski 1991), 59-84 (S. Żółkowski 1991), 59-85 (S. Żółkowski 1991), 59-86 (S. Żółkowski 1991), 59-87 (S. Żółkowski 1992), 59-88 (S. Żółkowski 1988), 59-89 (S. Żółkowski 1984), 60-77 (M. Gierlach 1988), 60-78 (M. Gierlach, W. Sitkowski 1987), 60-79 (J. Kalaga 1985), 60-80 (J. Kalaga 1984), 60-81 (D. Skowron, J. Kalaga 1984), 60-82 (D. Skowron, J. Kalaga 1984), 60-83 (S. Żółkowski 1985), 60-84 (S. Żółkowski 1985), 60-85 (S. Żółkowski 1985), 60-86 (S. Żółkowski 1984), 60-87 (S. Żółkowski 1984), 61-78 (R. Niedźwiadek 2008), 61-79 (R. Niedźwiadek 2008), 61-80 (J. Niedźwiedź 2008), 61-81 (M. Bienia 2004), 61-82 (S. Żółkowski 1988), 61-83 (S. Żółkowski 1985), 61-84 (S. Żółkowski 1985), 61-85 (S. Żółkowski 1985), 61-86 (S. Żółkowski 1984), 62-77 (J. Borowska, M. Bienia 2006), 62-78 (J. Borowska, M. Bienia 2006), 62-79 (M. Bienia 2003), 62-80 (E. Kłosińska 2001), 62-81 (E. Kłosińska 2001), 62-82 (S. Żółkowski 1986), 62-83 (S. Żółkowski 1986), 63-77 (E. Mitrus 2003), 63-78 (J. Niedźwiedź 2003), 63-79 (M. Bienia 2003), 63-80 (M. Bienia 2002), 63-81 (M. Bienia 2002), 63-82 (S. Żółkowski 1987), 64-76 (E. Niedźwiedź 2006), 64-77 (Ż. Wichrowski 2007), 64-78 (J. Niedźwiedź 2000), 64-79 (M. Gierlach 1986), 64-80 (M. Bienia 2004), 64-81 (M. Bienia 2004), 64-82 (S. Żółkowski 1993), 65-77 (R. Niedźwiadek, A. Rozwałka, M. Bienia 2004), 65-78 (R. Niedźwiadek, M. Bienia 2004), 65-79 (M. Bienia 2002), 65-80 (S. Żółkowski 1990), 65-81 (M. Bienia 2004), 65-82 (S. Żółkowski 1992), 66-78 (J. Niedźwiedź, M. Bienia 2004), 66-79 (M. Gierlach, W. Sitkowski 1985), 66-80 (M. Bienia 2000), 66-81 (S. Żółkowski 1990), 67-78 (H. Zaborowska 1997), 67-79 (J. Niedźwiedź 2008), 67-80 (M. Bienia 2000), 67-81 (M. Bienia 2000), 68-80 (J. Nogaj 1985).

Streszczenie

Wczesnośredniowieczne osadnictwo Wysoczyzny Siedleckiej i Równiny Łukowskiej w świetle badań archeologicznych

Mezoregiony fizycznogeograficzne Wysoczyzny Siedleckiej i Równiny Łukowskiej wchodzą w skład makroregionu Niziny Południowopodlaskiej. Leżą one w Polsce środkowowschodniej (głównie w dorzeczu środkowego i dolnego Bugu) i zajmują łączną powierzchnię około 5 tys. km^2. Zarejestrowano tu ponad 1270 stanowisk archeologicznych z okresu wczesnego średniowiecza, z których 57 % odkryto na terenie Wysoczyzny Siedleckiej a 43 % na Równinie Łukowskiej. 31 z nich datowanych jest na VI–VII w., 267 na VIII–X w., a 726 na XI–XIII w. Chronologię pozostałych

określono ogólnie — na wczesne średniowiecze. 57 % punktów osadniczych zaliczono do kategorii śladów osadnictwa. Osady otwarte stanowią 40 % ogółu. Udział cmentarzysk wynosi 2 %, a grodzisk 1 %. Na kształtowanie się wczesnośredniowiecznej sieci osadniczej na omawianym terenie wpływ miały warunki naturalne (np. układ sieci hydrograficznej, ukształtowanie powierzchni terenu, przydatność rolnicza gleb) oraz czynniki kulturowe i gospodarcze (np. przebieg dróg dalekosiężnej wymiany handlowej). Nie można zapomnieć także o uwarunkowaniach historyczno-politycznych, determinujących przynależność poszczególnych części analizowanego obszaru do Polski lub Rusi Kijowskiej.

Dominik Chudzik
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
dominikchudzik@wp.pl

Dominik Chudzik

OUTLINE OF THE STATE OF RESEARCH ON HISTORY AND FUNCTIONING OF BUILDING WORKSHOPS ON TERRITORY OF KIEVAN RUS'

Abstract: The first groups of artisans associated with monumental architecture appeared in Rus' in the tenth century. Initially, they consisted mainly of skilled workers coming from the area of the Byzantine Empire. Their works are the oldest brick buildings in Kiev, Chernihiv, Veliky Novgorod, Polotsk and Pereiaslav-Khmelnytskyi. In the twelfth century separated building organizations worked in other gords of Rus'. They consisted of local craftsmen and artisans from outside control of the Rurik dynasty. The builders worked mainly for the princes, high-ranking hierarchs of Eastern Orthodox Church, religious orders and nobles. Leading architects sometimes had very high social status. Building organizations of Rus' served various functions in society. Their main task was to build churches, they were thus of great importance to the preservation of Christianity in Eastern Europe. In addition, the magnificent temples and palaces were a manifestation of high social status of their founders.

Key words: building organizations, Kievan Rus', the early Middle Ages

Organisation of early medieval construction trade groups in Europe is poorly known due to paucity of written sources. For the latter half of the first millennium AD all we have is the mention of *magistri comacini* ("master masons") in the edict of the Longobard King Rothari of 643 and in later additions to the document of 668 and 712–734.[1] On the basis of such sparse information scholars have attempted a reconstruction of the organisation and functioning of construction workshops in northern Italy of the seventh and eighth centuries, frequently arriving at opposite conclusions.[2] We basically lack any credible evidence for the functioning of guilds in the Romanesque period. According to J. T. Frazik the weight of monumental construction in Western Europe rested primarily on monastic orders, which in order to maintain a growing web of monastic establishments developed the institution of *conversi* or lay brothers with no clerical duties who instead worked in a variety of trades, including masonry and stonemasonry. That is not to say, however, that the early Middle Ages knew no independent construction crews made up of laymen. The make-up of construction teams in Western Europe and the character of their work is also sometimes inferred from later written sources collated with analysis of the architectural remains themselves.[3]

According to Russian scholars the first masons may have appeared in Kievan Rus' before official adoption of Christianity. The basis for such presupposition is the existence of annalistic testimonies to the presence in mid-tenth century Kiev of a small residential building of stone,

[1] Wyrobisz 1962, p. 751.
[2] Wyrobisz 1962, p. 751; Frazik 1975, pp. 137–138.
[3] Łużyniecka 1998, pp. 22–23; Frazik 1975, pp. 137–138; Wyrobisz 1962, pp. 752–755.

located next to the chief princely residence, still presumably made of timber. According to P. A. Rappoport it may have been raised by Kievan builders for Princess Olga after her return from Constantinople.[4] Rapid development of brick construction in Rus' dates, however, to the years following 988, that is Prince Vladimir I the Great's baptism at Byzantine hands, which brought his state within the sphere of eastern Christianity.[5] The event necessitated construction of sacred architecture to serve the needs of new religious cult. An overwhelming majority of scholars identify the Kievan church of the Dormition of the Virgin, widely known as the church of the Tithes.[6] *The Tale of Bygone Years* — the most important source for the early years of Rus' — says the church was the work of Byzantine artisans (*masteri ot grek*), invited to Kiev by the prince. More or less simultaneously with the construction of the church, a residential complex of brick buildings was erected in its vicinity. It is presumed that the masons left Kiev for their native parts after completing the work. Another wave, or presumably several waves of inflow of Constantinopolitan builders to Rus' began in the 1030s. The construction of several brick monuments of Kiev in the 1040s and 1050s is probably connected to their presence. These include the Saint Sophia Cathedral, the Golden Gate and the churches of St. George and St. Irene. In the period cathedral churches of brick also come to be erected in the centres of Rus' other than Kiev: Chernihiv (the Transfiguration Cathedral of the 1030s), Veliky Novgorod and Polotsk (St. Sophia cathedrals of the mid-eleventh century). As of the 1060s construction in Rus' is again restricted solely to Kiev.[7] The scale and intensive development of monumental architecture in the first half of the eleventh century hints at the beginnings of an emergent homegrown group of masons, whose skills derived from migrant Byzantine masters. Their activities allowed for the formation of an architectural school of Kiev. A second construction workshop, independent of the capital, emerged at the end of the eleventh century at Pereiaslav-Khmelnytskyi. Just as was the case with the most important urban centre of Rus', here also it was the arrival of skilled workers from Byzantium that led to a transfer of masonry skills to the locals.[8]

In the twelfth century, amid the deepening political fragmentation of Rus', the number of new regional construction workshops was rising rapidly. At the turn of the eleventh and twelfth centuries, construction resumes at Chernihiv. At the beginning of the twelfth century, a new chapter opens in the architectural history of the Novgorod region, not without participation of artisans from Kiev.[9] Before the first quarter of the twelfth century is over, the Halych school of architecture begins to emerge. Most scholars link its formation and development to arrival of Romanesque building crews. Around the mid-twelfth century some of the artisans move from there to the Vladimir-Suzdal region.[10] In the 1140s groups of artisans from Chernihiv and Kiev start work in the Polotsk and Smolensk regions. At the beginning of the latter half of the twelfth century the Pereiaslav group of builders moves to Volodymyr-Volynsky. In the last quarter of the twelfth century monumental construction fades away at Polotsk, while an independent architectural centre develops at Grodno.[11] Thus by the beginnings of the thirteenth century Rus' has no fewer than seven independent, if frequently genetically connected building workshops.[12]

As is clear from written evidence, medieval construction crews were known in Rus' as "teams" (*družina*). At the head of each team was the architect, most commonly referred to as "master" (*master*) in the sources. Sometimes he was known as *zdatel'* or *stroitel'* ("builder", "creator"), *arhitekton* ("architect"), *hitrec* or *hudožnik* ("an artful one", "artist"). His most important roles probably included deciding the building's ground plan, overseeing the construction process and

[4] Rappoport 1986, p. 17.
[5] Salamon 2005, pp. 525–529.
[6] Rappoport 1985a, p. 155.
[7] Rappoport 1985a, pp. 155–157.
[8] Rappoport 1986, pp. 23, 44–47.
[9] Rappoport 1986, pp. 67–70; 1994, pp. 84–85.
[10] Rappoport 1968, pp. 460–462; Ioannisjan 1988, pp. 186–190; 1996, pp. 157–161; Chudzik 2014, pp. 137–204.
[11] Rappoport 1986, p. 67; 1994, p. 125.
[12] Rappoport 1985b, p. 85.

coordination of the team of constructors. He may also played the role of the chief mason or stonemason.[13] The master may also have been responsible to some extent for the administration of the construction. It seems, however, more likely that the main administrator and thus the person responsible for the collection, regular inflow and distribution of finance was the sponsor of the construction or an official appointed by him.[14] In case of large architectural endeavours, the master may have had one or several helpers or disciples.[15]

The most important group of construction workers were the masons (*kamen'ici*), who laid the foundations, built the walls and vaults and in the case of stone buildings — also hewed the stones (stonemasons or *kamenosečі*). The group also includes sculptors who made architectural details. It is likely that all the masons were closely connected to the overseeing architect. The number of masons at a construction site is difficult to estimate. It depended presumably on the size of the building and the kind of material used. It is presumed that a group of craftsmen erecting a stone building was more numerous than one working in brick since stone finishing is hard, time-consuming labour. N. N. Voronin's calculations indicate the construction of the church of the Intercession of the Holy Virgin on the Nerl River near Bogolyubovo (in 1165 or 1166) may have required as many as 30 artisans working simultaneously on erecting the walls and hewing the stones. Calculations for the brick cathedral on Protoka in Smolensk (end-twelfth century) the mason group may have numbered 15 people.[16]

According to P. A. Rappoport construction crews working on brick structures included *plinfotvorci*, workers who used wooden frames for *plints* (*plinfy*) or large flat bricks of the Byzantine type, which until the early thirteenth century constituted the most popular construction material in Rus'. The crews also included separate workers responsible for burning the bricks. The latter may also have been engaged in producing lime used by masons as the basis for making mortar. It cannot, of course, be ruled out that some or even most of the brick makers were also engaged in burning them. It must, however, be noted that brick makers were not as closely associated with the groups of constructors as the masons and architects. We know of cases when builders, when moving to another gord, failed to take their brick-maker with them and opted to use local artisans instead. An example of this is found in the construction of the church of St. Paraskeva at Novgorod (early thirteenth century), started by an architect and masons from Smolensk, but using bricks characteristic of the local workshop.[17]

Also present at the construction site were carpenters needed for the making of scaffoldings, centrings, stairs, windows, doors and other wooden details.[18] The specific requirements of carpentry connected to stone and brick architecture allow for a suggestion that some at least of the carpenters working on the construction sites were permanently part of the crews.

The construction of stone or brick churches and residential buildings also required employment of other skilled artisans not connected directly to the construction crews, such as glaziers (for making windows) or smiths (for making nails and repairing tools). Outside of the builders' associations were also makers of mosaics and painters decorating church walls with frescoes. According to Russian scholars, the same artists presumably made the painted decoration of the Smolensk churches on the Protoka and Voskresenskaya Gora, though the churches were erected by different construction crews. A hitherto unsolved problem is the organisation of the production of ceramic plaques used for flooring in sacred and residential architecture. According to P. A. Rappoport they may have been formed and burned by the same artisans who made the bricks, though the production of

[13] Rappoport 1985b, pp. 80–81; Rappoport 1994, pp. 127–128.
[14] Wyrobisz 1963, pp. 109–110.
[15] Rappoport 1985b, p. 81.
[16] Voronin 1961, p. 325; Černyšev 1966, pp. 290–293; Rappoport 1982, pp. 58–59, 91–93; 1985b, pp. 81–83.
[17] Rappoport 1982, p. 69; 1985b, p. 83; 1994, p. 130.
[18] Rappoport 1985b, p. 82.

closely associated enamel was, in his view, performed by the glaziers.[19] It may, however, be thought that the production of plaques, which were occasionally made on a mass scale in the context of church and palace architecture (both in stone and timber) was the domain of specialised artisans, working in the largest urban centres of Kievan Rus' but outside the system of construction crews. There are also grounds for thinking that the simple variants of enamelled plaques were made by potters who also produced glazed ceramics. The hypothesis finds confirmation in the discovery at Przemyśl, which for the greater part of this period belonged to the Rurik dynasty's state,[20] of a ceramic kiln, which contained both tiles and fragments of vessels.[21] Probably the construction crews did not include quarry workers, metalworkers producing lead plates for the roof and elements of church furnishings made of nonferrous metal (candlesticks, gilded fittings for altar partitions etc.) and potters who made large, bulbous ceramic vessels (*golosniki*), walled into ceilings to reduce their weight and to improve church acoustics.[22]

Large numbers of unskilled workers were also employed at building sites, performing simple functions such digging foundation ditches, removing earth, levelling the ground for construction, bringing materials for scaffoldings etc.[23] Also indispensable were transport workers lugging building materials around. Some of them, especially those working in river transport, may have been skilled workers.

The functioning of construction crews in Kievan Rus' was entirely dependent on founders of churches, monasteries and palaces. As is clear from the written sources, over the tenth to thirteenth centuries these buildings were almost always financed by members of the princely dynasty hence artisans worked almost exclusively on the prince's commission and were supported by him. Such strong dependence of builders on the rulers is confirmed by the fact that moving a group of masons from one principality to another was frequently preceded by closer political or dynastic links between them. One such example is the migration of builders from Halych to Vladimir-Suzdal in the mid-twelfth century, which was probably associated with the alliance between Prince Yuri Dolgorukiy of Vladimir-Suzdal and the Galician prince, Volodymyrko Volodarovych. The alliance was reinforced by the marriage of Yuri's daughter Olga to Volodymyrko's son, Yaroslav.[24] Monumental construction's dependence on princely power may also be confirmed by the presence on bricks and hewn stones of signs in the shape of bi- or tridents, closely associated with the Rurik dynasty. They have been found among other places on the bricks in the Dormition Cathedral in Volodymyr-Volynsky, built, as is known from the *Kiev Chronicle* in the 1160s by Prince Mstislav II Izyaslavich.[25]

It occasionally happened that teams of builders worked on commission from high-ranking hierarchs of the Church. Such a situation took place at Pereiaslav-Khmelnytskyi, where brick architecture started to develop at the end of the eleventh century on the initiative of Bishop Ephrem, who brought in artisans from Byzantium.[26] At Veliky Novgorod, towards the end of the first half of the twelfth century, a group of builders that had previously worked for the princes came to Archbishop Niphont and subsequently offered its services to the Novgorod boyars.[27] At the end of the twelfth century stone churches founded by lay potentates presumably made their appearance also in Halych. It has been suggested that the Halych church of St. Elijah erected at the turn of the twelfth and thirteenth centuries was commissioned by the local boyar Ilya (Elijah) Shchepanovich.[28] The construction of boyar-commissioned churches may indicate that the second half of the twelfth century saw (at least in Novgorod and maybe also in Halych) partial emancipation

[19] Rappoport 1985b, p. 82; 1994, p. 128.
[20] Koperski 2004, pp. 150–153.
[21] Wajda 2010, p. 97.
[22] Rappoport 1994, pp. 51–53, 139.
[23] Rappoport 1985b, p. 82.
[24] Rappoport 1985b, pp. 85–86; Ioannisjan 1996, pp. 156–160.
[25] Rappoport 1985b, pp. 86–87; Kubica 1996, pp. 178–179.
[26] Rappoport 1986, pp. 44–47.
[27] Rappoport 1985b, p. 85.
[28] Dyba, Petryk, 1999, pp. 17–18.

of the builders from complete princely control.[29] It is also to be presumed that some of the monasteries had their own construction teams.[30]

Not much is known about the social position of the members of the early medieval construction trade organisations in Rus'. Written sources completely overlook the issue of the social standing of masons, stonemasons and brick-makers. Without a doubt architects enjoyed the highest social standing. For the period preceding the Mongol invasion we know four of them by name: Petr who built the church for the St. John monastery in Veliky Novgorod (1119), Ivan who oversaw the construction of the church of the Transfiguration of the St. Eufrosine monastery at Polotsk (the 1150s), Korov Yakovlevich who designed the St. Cyril monastery at Veliky Novgorod (1196) and Petr-Miloneg, who built the walls of the Vydubychi Monastery in Kiev (1199).[31] According to P. A. Rappoport, the chronicler's mention of Korov Yakovlevich (or Yakovich) not only by name but also the patronymic points to the architect's high social standing. Petr-Miloneg must also have been a personage since the *Kiev Chronicle* mentions that Prince Rurik Rostyslavich "found [him] among his friends". Master Ivan of Polotsk, in his turn, was a clergyman, probably a monk.[32] The position of the architect must indeed have been fairly high if a chronicler could say that Prince Sviatoslav III Vsevolodovich "was himself the master" of the construction of Saint George Cathedral in Yuryev-Polsky in 1230–1234.[33]

Aside from architects, written sources almost never mention the names of other, less important members of construction crews. One of the exceptions is the mention of Avd'ey who worked on the decoration of the portals in the church of St. John Chrysostom at Chełm (present-day Lublin region in Poland), founded by Prince Daniel Romanovich in the 1230s. He must indeed have been a real artist since his work so awed the Chełm populace that, "all those looking were amazed", and his name has been preserved for posterity by the author of description of Chełm at the time of Prince Daniel found in the *Galician-Volhynian Chronicle*.[34]

The chief role of the builders' associations of Rus' was of course to erect churches. They thus made a direct and huge contribution to the propagation and consolidation of Christianity among the Eastern Slavs. Construction crews worked also on the foundation of monasteries, which served not only as the centres of the religious cult, but also hubs of writing, art and theology in Rus'. Spectacular, admirable churches and residential buildings manifested a high social position of the sponsors (princes or top church hierarchs, as well as the wealthiest boyars) and raised the prestige of a given centre. Church domes towering over a sea of wooden residential architecture informed travellers, traders and artisans from afar of the rank and wealth of the gord.

Bibliography

Chudzik 2014 — D. Chudzik, *Chrześcijańska architektura sakralna Rusi Halickiej i Wołyńskiej (do końca panowania Daniela Romanowicza)*, Rzeszów.

Černyšev 1966 — M. B. Černyšev, "O proizvoditel'nosti truda kamenščikov v drevnej Rusi", [in:] *Kul'tura drevnej Rusi*, ed. A. L. Mongajt, Moscow, pp. 289–293.

Dyba, Petryk 1999 — Ju. Dyba, V. Petryk, "Do problemy grafičnoj rekonstrukciji cerkvy Proroka Ilii u knjažomu Halyči", *Visnyk Instytutu "Ukrzahidproektrestavracija"* 10, pp. 15–26.

Frazik 1975 — J. T. Frazik, "Organizacje architektoniczno-budowlane w Europie w okresie średniowiecza", *Teka Komisji Urbanistyki i Architektury. Oddział PAN w Krakowie* 9, pp. 137–151.

[29] Rappoport 1994, p. 133.
[30] Rappoport 1985b, p. 86.
[31] Rappoport 1982, pp. 96–98; 1985b, p. 81.
[32] Sielicki 1987, p. 101; Rappoport 1994, p. 133.
[33] Voronin 1967, p. 264; Rappoport 1985b, p. 86.
[34] *PSRL* 1908, p. 576; Rappoport 1982, p. 107.

Ioannisjan 1988 — O. M. Ioannisjan, "Zodčestvo drevnego Galiča i arhitektura Malopolši", *Acta Archaeologica Carpathica* 27, pp. 185–218.

Ioannisjan 1996 — O. M. Ioannisjan, "Pol'sko-russkaja i vengersko-russkaja granicy v XI–XIII vekah i ih otobraženie v razvitii srednevekovoj arhitektury", [in:] *Początki Sąsiedztwa: Pogranicze etniczne polsko-rusko-słowackie w średniowieczu*, ed. M. Parczewski, Rzeszów, pp. 157–178.

Koperski 2004 — A. Koperski, "Początki osadnictwa słowiańskiego i rozwój wczesnośredniowiecznego Przemyśla", [in:] *Dzieje Przemyśla*, I: 2, ed. A. Koperski, pp. 92–175.

Kubica 1996 — E. Kubica, "Katalog zabytków wczesnośredniowiecznej architektury monumentalnej Małopolski, Rusi Halickiej i Wołynia", *Materiały i Sprawozdania Rzeszowskiego Ośrodka Archeologicznego* 17, pp. 131–189.

Łużyniecka 1998 — E. Łużyniecka, *Architektura klasztorów cysterskich na Śląsku*, Poznań.

PSRL 1908 — *Polnoe Sobranie Ruskich Letopisej: Ipatevskaja letopis'* 2, Moscow.

Rappoport 1968 — P. A. Rappoport, "K voprosu o složenii galickoj arhitekturnoj školy", [in:] *Slovjane i Rus'*, Moscow, pp. 459–462.

Rappoport 1982 — P. A. Rappoport, *Russkaja arhitektura X–XIII vv., Katalog pamjatnikov*, Leningrad.

Rappoport 1985a — P. A. Rappoport, "Arhitektura", [in:] *Drevnjaja Rus': Gorod, zamok, selo*, ed. B. A. Rybakov, Moscow, pp. 154–167.

Rappoport 1985b — P. A. Rappoport, "Stroitel'nye arteli drevnej Rusi i ih zakazčiki", *Sovetskaja arheologija* 4, pp. 80–89.

Rappoport 1986 — P. A. Rappoport, *Zodčestvo Drevnej Rusi*, Leningrad.

Rappoport 1994 — P. A. Rappoport, *Stroitel'noje proizvodstvo Drevnej Rusi (X–XIII vv.)*, Saint Petersburg.

Salamon 2005 — M. Salamon, "Państwa słowiańskie w kręgu kultury bizantyńskiej", [in:] *Wielka Historia Świata*, IV, ed. M. Salamon, Cracow, pp. 481–525.

Sielicki 1987 — F. Sielicki, *Kroniki staroruskie*, Warsaw.

Voronin 1961 — N. N. Voronin, *Zodčestvo severo-vostočnoj Rusi XII–XV vekov*, I, Moscow.

Voronin 1967 — N. N. Voronin, *Vladimir, Bogoljubovo, Jur'ev-Pol'skoj*, Moscow.

Wajda 2010 — S. Wajda, "Średniowieczne ceramiczne płytki posadzkowe z Drohiczyna, Stołpia, Chełma i Przemyśla", *Archeologia Polski* 54.1, pp. 83–119.

Wyrobisz 1962 — A. Wyrobisz, "Czy istniały strzechy budowlane? Z zagadnień organizacji rzemieślników budowlanych w średniowieczu", *Przegląd Historyczny* 53, pp. 745–761.

Wyrobisz 1963 — A. Wyrobisz, *Budownictwo murowane w Małopolsce w XIV i XV wieku*, Wrocław.

Streszczenie

Stan badań nad historią i funkcjonowaniem organizacji budowlanych na terenie Rusi Kijowskiej

Pierwsze grupy rzemieślników związanych z architekturą monumentalną pojawiły się na Rusi w X w. Początkowo tworzyli je głównie wykwalifikowani robotnicy pochodzący z terenu Cesarstwa Bizantyńskiego. Ich dziełem są najstarsze zabytki budownictwa murowanego Kijowa, Czernihowa, Nowogrodu Wielkiego, Połocka i Perejasławia Chmielnickiego. W XII w. oddzielne ugrupowania budowlane działały także w innych grodach Rusi. Składały się one z rzemieślników zarówno miejscowych, jak i pochodzących spoza granic państwa Rurykowiczów. Budowniczowie

pracowali głównie na potrzeby książąt, wysoko postawionych hierarchów cerkiewnych, monastyrów i możnowładców, a główni architekci osiągali niekiedy bardzo wysoką pozycję społeczną. Ruskie strzechy budowlane pełniły różne funkcje dla społeczeństwa, w którym funkcjonowały. Ich głównym zadaniem była budowa cerkwi, dzięki czemu wniosły one ogromny wkład w utrwalanie chrześcijaństwa na terenie Europy Wschodniej. Ponadto okazałe świątynie i pałace manifestowały wysoką pozycję ich fundatorów.

Dominik Chudzik
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
dominikchudzik@wp.pl

Karol Żołędziowski

WAS THERE A BRONZE WORKSHOP AT THE 'TARGOWISKO' (SITE 4) SETTLEMENT AT SZURPIŁY NEAR JELENIEWO?

Abstract: During archaeological excavations on the 'Targowisko' settlement at Szurpiły a number of objects were found that seem to be connected to the activities of a bronze workshop. The finds clustered in particular in the trench made during 2006 located on ares 38-42 and 37-43. In spite of absence of any remains of casting furnaces or crucibles the finds unambiguously point to local metalworking activity, primarily by smithing. Bronze working was presumably seasonal in nature and may have taken place in several places around the settlement, although most of the materials cluster in 38-42 and 37-43. The dominant raw material for the production of ornaments was copper alloys, most likely from waste and reused necklaces. Production was focused on meeting local demand for such items as: brooches, rings, bracelets, necklaces and pendants. Small repairs were also undertaken. Preliminary research leads to conclusion that the workshop or workshops were functional between the eleventh and thirteenth centuries AD.

Key words: Szurpiły, Yotvingia, bronze workshop, archaeometallurgy

In the early middle ages the settlement complex in the village of Szurpiły near Jeleniewo, some 15 km north of Suwałki, was one of the most important centres of Yotvingia. 'Targowisko' (st. 4) is the largest settlement of the complex, centred on the hillfort on the Góra Zamkowa (Castle Hill). The complex is surrounded by three lakes: Szurpiły with the Czarne bay, Jeglówek and Tchliczysko [Fig. 1].

In 1980 an archaeological expedition under Professor Jerzy Okulicz-Kozaryn came to Szurpiły. The first trenches were dug at 'Targowisko' in 1981. In the spring of 1982 surface surveys and detailed mapping were carried out. They allowed for the extent of the settlement to be determined. Archaeological excavations continued all the way to 1990 with the only break in 1989.

The next stage of work at the site started in 2003–2004 when 'Project Szurpiły' was set up by the Department for Archaeology of the Balts of the National Museum of Archaeology and Archaeology Institute of the Warsaw University. The research team's activities aimed to publish a monograph of the Szurpiły settlement complex on the basis both of Professor Jerzy Okulicz-Kozaryn's archival materials and new finds. In 2005 non-invasive surface surveys were carried out using metal detectors and mapping was repeated. In 2006 and 2007 new trenches were dug at 'Targowisko' under the direction of Ludwika Jończyk, MA of the Warsaw University and Dr Marcin Engel of the National Museum of Archaeology. In the spring of 2008 geophysical surveying and prospecting with metal detectors were carried out in cooperation with researchers of the university of Kiel. In the summer of that year verifying excavations were carried out in the settlement's southern part,

where geomagnetic surveys showed strong anomalies. Disposal pits and the remains of an oven of an unclear function were found. In the spring of 2010 as yet another, the last so far, stage of metal-detector prospecting was carried out at the 'Targowisko' settlement.[1]

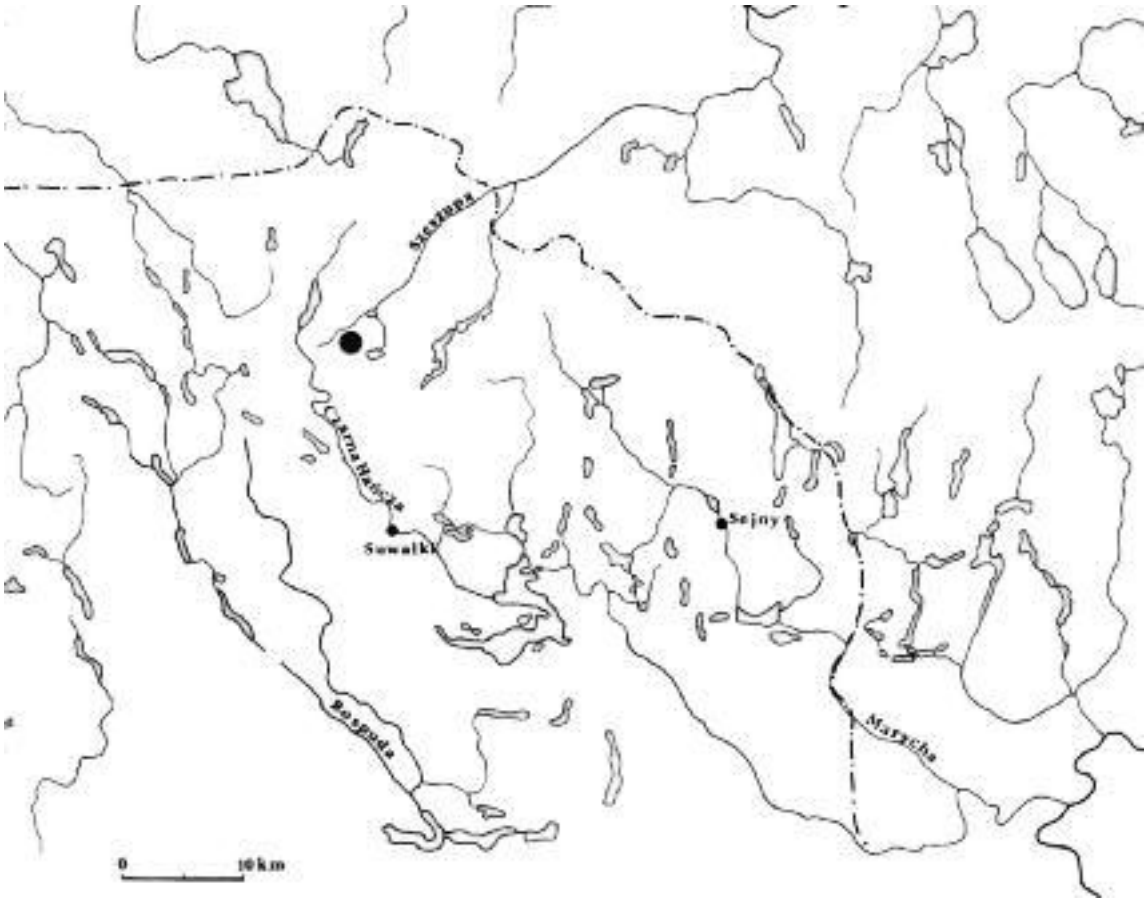

Fig. 1. Location of site (according to L. Jończyk)

In the course of archaeological research a large number of frequently very fragmented objects of copper alloys were found all over the site. Some, such as lumps of melted metal, plate or wire fragments or spoilt products of casting, could be considered waste or intermediate products. In the season of 2006 a particular concentration of finds of this type was found in one trench in the ares 38-42 and 37-43 [Figs. 2 & 3]. In addition to waste products [Fig. 4: 1 & 2] the trench also contained an interesting group of finished finds, primarily jewellery and clothing elements, which shed new light on the functioning of the presumed workshop. The first group includes four penannular brooches with bent endings, made of an unidentified copper alloy. Three of them [Fig. 4: 3–5] are nearly identical in size and made of round wire of identical radius of ca. 3.5 mm. This similarity in both stylistic and technological terms indicates they were most likely made by the same craftsman. The fourth of the booches [Fig. 4: 6] is a standout in technological terms. Its hoop is made of flattened wire and decorated with slanting notches. Brooches of this type are found in large numbers all over the territories of the Prussians and especially Yotvingians. They seem less

[1] Engel 2012, pp. 46–55.

Szurpiły, Jeleniewo municipality
site 4, ‘Targowisko’
results of detailed surface surveys
1982

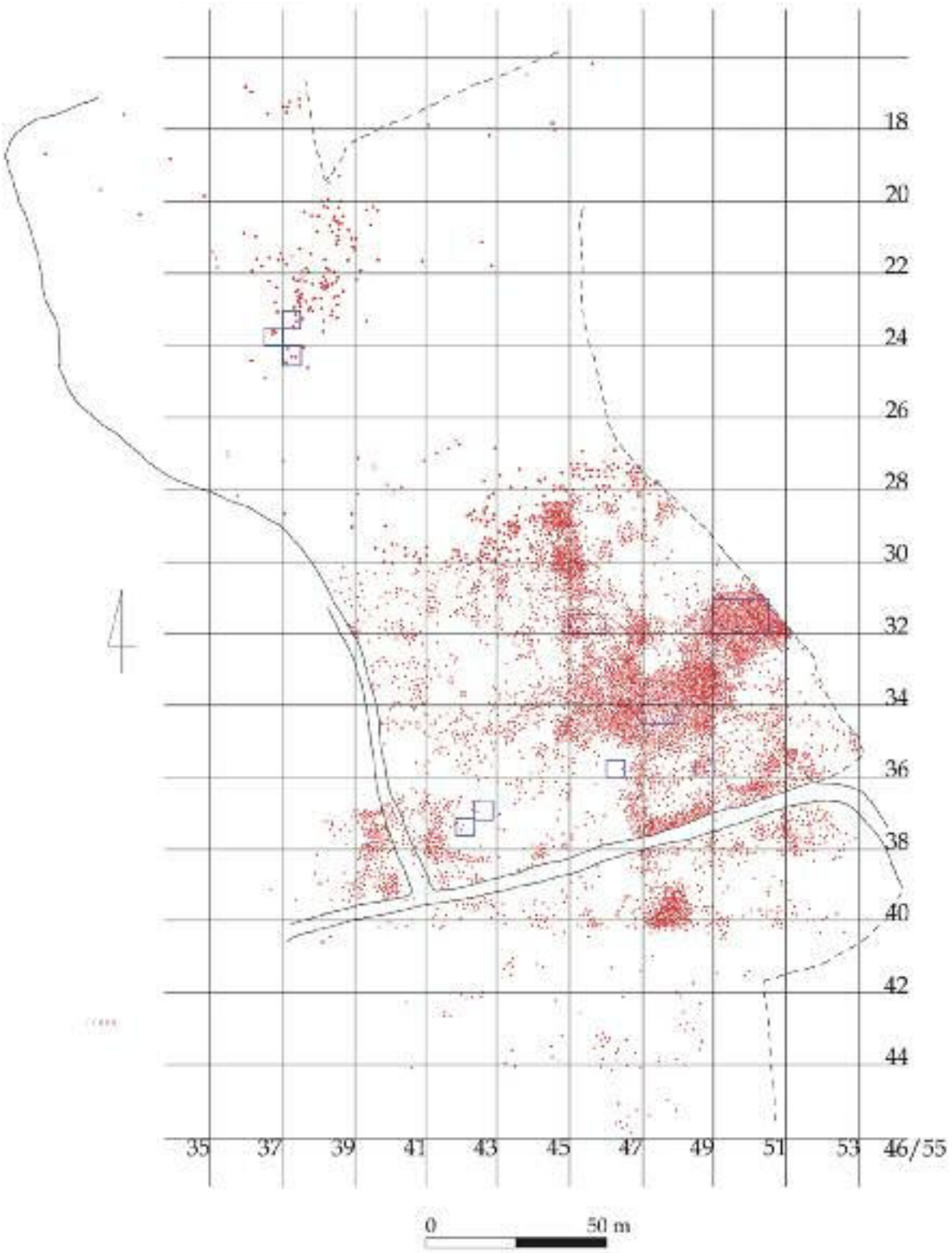

Fig. 2. Map of 1982 with exploratory excavations marked (according to L. Jończyk)

popular in Lithuania and Latvia. They are often seen as a primitive version of brooches with zoomorphic endings. Analogies in the immediate vicinity of the Szurpiły complex include a fibula of Żywa Woda dated to the eleventh–thirteenth centuries.[2] A similar chronology is agreed for brooches of Jegliniec.[3] There are also analogies from the region of Sambia, found by Vladimir Kulakov, also dated mostly to the tenth–thirteenth centuries.[4] The Szurpiły brooches are closest to the examples of Jegliniec and Żywa Woda, arguing for the dating for the eleventh–thirteenth centuries.

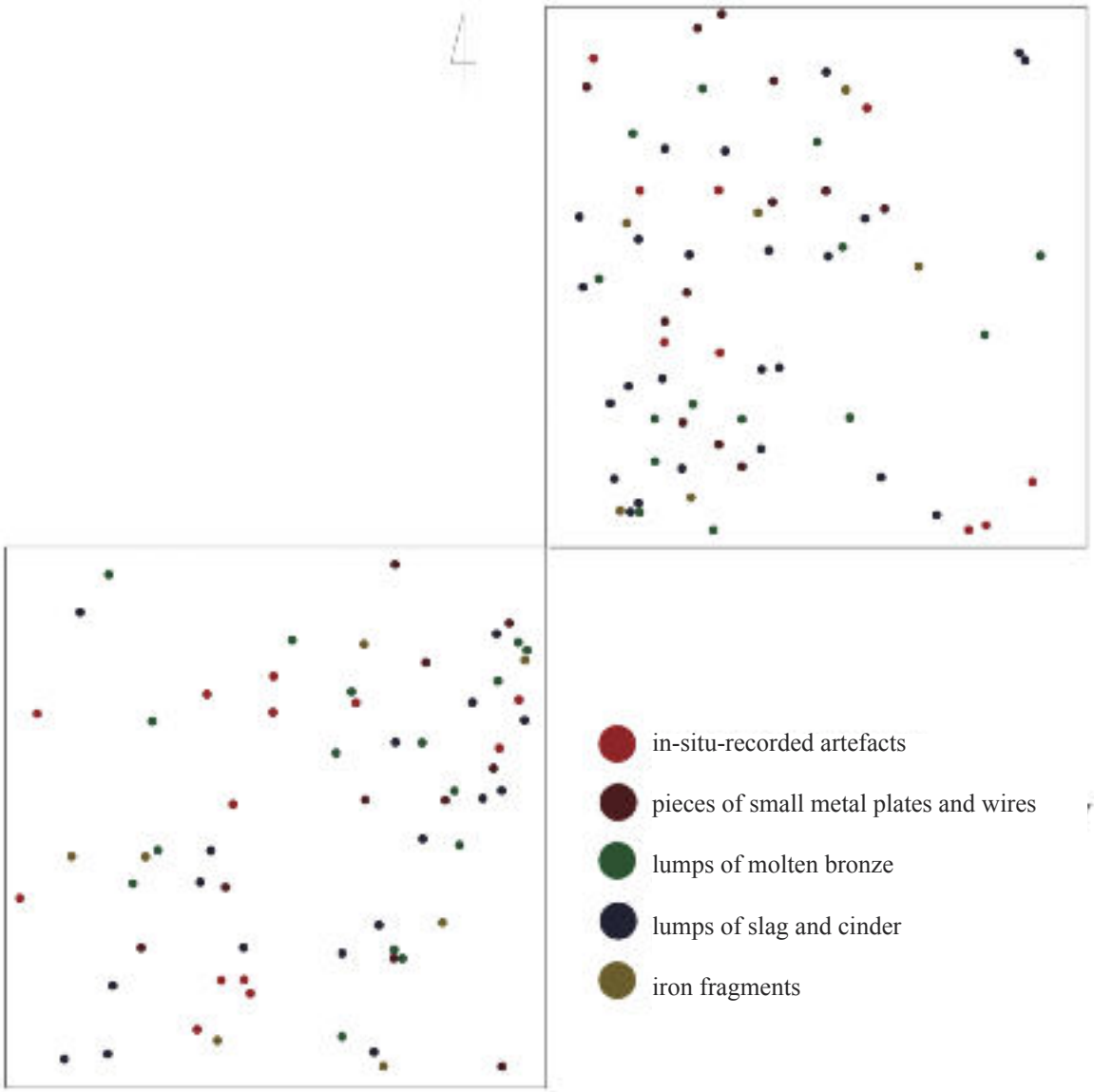

Fig. 3. Map of trench of 2006 on ares 38-42 and 37-43 (according to L. Jończyk)

[2] Kaczyński 1958, p. 153.
[3] Korczak 2005, p. 18.
[4] Kulakov 1990, pp. 72–82.

Another interesting group of finds consists of three rings. Two of them have open circuit with a broadened middle section decorated with a punches. Both bear signs of later modifications. The first [Fig. 4: 7] was broken, but was repaired by repeat coiling, which reduced its perimeter. The second [Fig. 4: 8] shows signs of repeated bending and straightening, which may point to an attempt to break it into pieces. This type of finds is characteristic for the territory of Rus and the eastern Baltic, as well as Mazowsze and southern Poland.[5] A numerous series of such finds is also found at the cemetery of Birka.[6] The rings of this type start to show up at the turn of the ninth and tenth centuries with the youngest examples from the turn of the twelfth and thirteenth centuries. The third of the rings [Fig. 4: 9] shows no signs of modification. In common with the examples discussed above it has an open circuit; in contrast to them, however, it is made of three interwoven wires. The clearest analogies are found at Izborsk and are dated to the eleventh–thirteenth centuries.[7] Rings of a similar kind are found at the cemeteries of Mazowsze and Podlasie, though their endings are usually loopy.[8]

Also from the trench come two fragments of spirally twisted wires, presumably pieces of cut necklaces [Fig. 4: 10 & 11]. The thickness of one wire [Fig. 4: 10] corresponds to the thickness of the loops of the brooches found in the same trench [Fig. 4: 3–5]. This may point to reuse of this type of cuttings in ornament production. A fragment of a crushed ending with wire imprints on the inside may be interpreted as an element of a necklace [Fig. 4: 12]. It probably comes from a necklace of the 'Totenkrone' type. Such finds are characteristic of the Bartia, Sambia and Natangia and are frequent in the Szurpiły settlement complex, especially at sites 4 ('Targowisko') and 8 ('Mosiężysko').[9] They are dated mostly to the thirteenth and fourteenth centuries.[10]

Fittings are the next category of finds with numerous representation in the material under discussion. These include three plate fragments with rivets [Fig. 4: 13–15], as well as a small ending of a knife scabbard with pointy ornament [Fig. 4: 16]. Similar objects are common nearly all over the Baltic. The Szurpiły fitting does not, however, have exact analogies anywhere in the comparative material. Its dating may thus only be set in the broad terms of the tenth–thirteenth centuries.[11] The most interesting find by far in this group is a buckle made of a damaged fitting [Fig. 4: 17]. This can be inferred from the trace of breakage at one end and an exceptionally small frame opening of the buckle. Two upper holes were made in the course of casting the object, while the others were made later in order to fix a wire barb and rivets. Such distribution suggests the buckle was made most likely of a damaged fitting of a belt ending. Along the edge is visible ornament in the shape of short notches, while decoration in the form of points was punched around the triangular hole.

A relatively numerous category of finds from the trench under discussion consists of bracelets. Three objects may be included here. The first is a small fragment of a semi-circular ingot decorated with punched points [Fig. 4: 18]. It is, however, very small and not very characteristic, making detailed chronological-stylistic analysis difficult. The second of the bracelets is a plated item made of metal tape with stamped knobs and a rectangular concave [Fig. 4: 19]. Analogous ornamentation is known from Kernavė, Lithuania, where a plated bracelet was found, decorated with a stamped ribbed pattern and pointy ornament, which is dated to the thirteenth century.[12] Bracelets of similar ornamentation of the eleventh–thirteenth century come from Izborsk.[13] The Szurpiły bracelets should be placed in a similar chronological framework. The last of the finds is a zoomorphic bracelet with a strongly upturned ending [Fig. 4: 20]. This finds analogies at Żytkiejmy and Rostka Konikowa[14] and is dated to the tenth–eleventh centuries.

[5] Kóčka-Krenz 1993, pp. 118–120; Sedov 2007, pp. 389–392; Zariņa 2006, pp. 284–286.
[6] Arbman 1940, pl. 111.
[7] Sedov 2007, p. 391, pl. 385: 8, 13, 14, 15.
[8] Jaskanis 2008, pp. 220–227.
[9] Sawicka 2011, pp. 263–268.
[10] Bogucki 2001, pp. 35–40.
[11] Engel 2000, pp. 42–47.
[12] Bitner-Wróblewska (ed.) 2002, p. 199, cat. no. 537.
[13] Sedov 2007, p. 382.
[14] Engel 2002, p. 328.

Three further finds require discussion. The first is a tin bell [Fig. 4: 21], very similar to bells found at the cemetery of Równina Dolna among others, dated to the thirteenth–fourteenth centuries.[15] The next is a massive tripartite bead of copper alloy with no clear analogies in the collected comparative material [Fig. 4: 22]. The last of the finds is a round tin appliqué with two bolts [Fig. 4: 23]. On the inside, where the bolts are, there is a very worn ornament. Its placement suggests the object was made of reused plate.

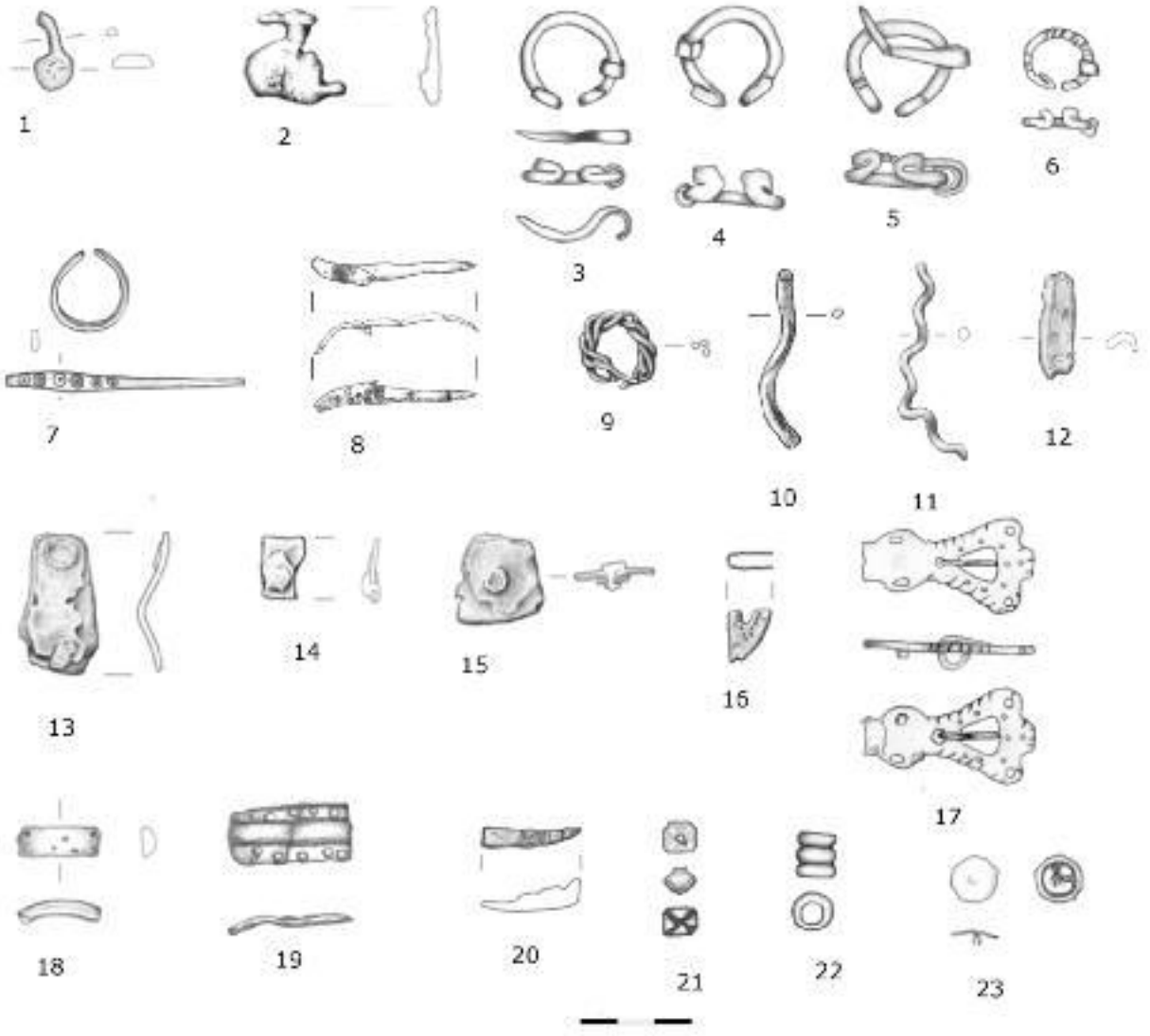

Fig. 4. Examples of copper alloy finds from the trench of 2006 on ares 38–42 and 37–43 (drawing L. Jończyk): 1. inv. 531/06; 2. inv. 41/06; 3. inv. 12/06; 4. inv. 556/06; 5. inv. 62/06; 6. inv. 29/06; 7. inv. 225/06; 8. inv. 13/06; 9. inv. 432/06; 10. inv. 764/06; 11. inv. 520/06; 12. inv. 259/06; 13. inv. 103/06; 14. inv. 173/06; 15. inv. 335/06; 16. inv. 119/06; 17. inv. 235/06; 18. inv. 522/06; 19. inv. 770/06; 20. inv. 219/06; 21. inv. 226/06; 22. inv. 14/06; 23. inv. 352/06

[15] Odoj 1958, pl. XX: 5, 6.

Finds of objects made of non-ferrous metals also occur in other trenches and are particularly numerous in materials found during surface prospecting with metal detectors. Not all, however, can be directly linked to local metalworking. As seen from trench 8 (‘Mosiężysko’), at Szurpiły these objects also played an important role in the burial traditions of the early medieval Yotvingians, as confirmed by the massive collection of lumps of melted metal, damaged ornaments and fragments of cut necklaces discovered at the site.[16] A proportion of the finds from ‘Targowisko’ is also likely to be linked to various manifestations of ritual and preparations to burial. Some of the finds, however, clearly point to local manufacturing. The most numerous of these are waste and intermediate products of copper alloy forging. This includes a fragment of an ingot forged on a grooving stake [Fig. 5: 1] or a rod square in cross-section [Fig. 5: 2], which was burnt presumably

Fig. 5. Waste and intermediate products of non-ferrous metalworking found over 1981–2010 (photo K. Żołędziowski): 1. inv. 189/05P; 2. inv. 3/82P; 3. inv. 637/10P; 4. inv. 382/06; 5. inv. 547/10P; 6. inv. 752/05P

[16] Sawicka 2011, pp. 263–268.

in the process of annealing before another stage of forging. The group of intermediate products, on the other hand, presumably includes a four-armed plate fragment ornamented with imprinted points [Fig. 5: 3], most likely an unfinished bell. Another example of this category is a barb of a hinged buckle [Fig. 5: 4]. Absence of any trace of hammering at the rivet indicates that it was prepared for later use. Surface surveys have also rendered tools, which may be linked to the aforementioned manufacturing activities. This includes tanged punches [Fig. 6: 1–3], which may be interpreted as tools for imprinting lines and circles on the metal,[17] and a massive punch [Fig. 6: 3] as well as a small anvil [Fig. 6: 4] with a butt for fixing in the stump.[18]

Waste products of casting are decidedly less numerous. Only a strongly corroded fragment of a cut-off entry channel of a cast [Fig. 5: 5] and a spoilt cast of a penannular brooch with zoomorphic endings [Fig. 5: 6] may be included here.

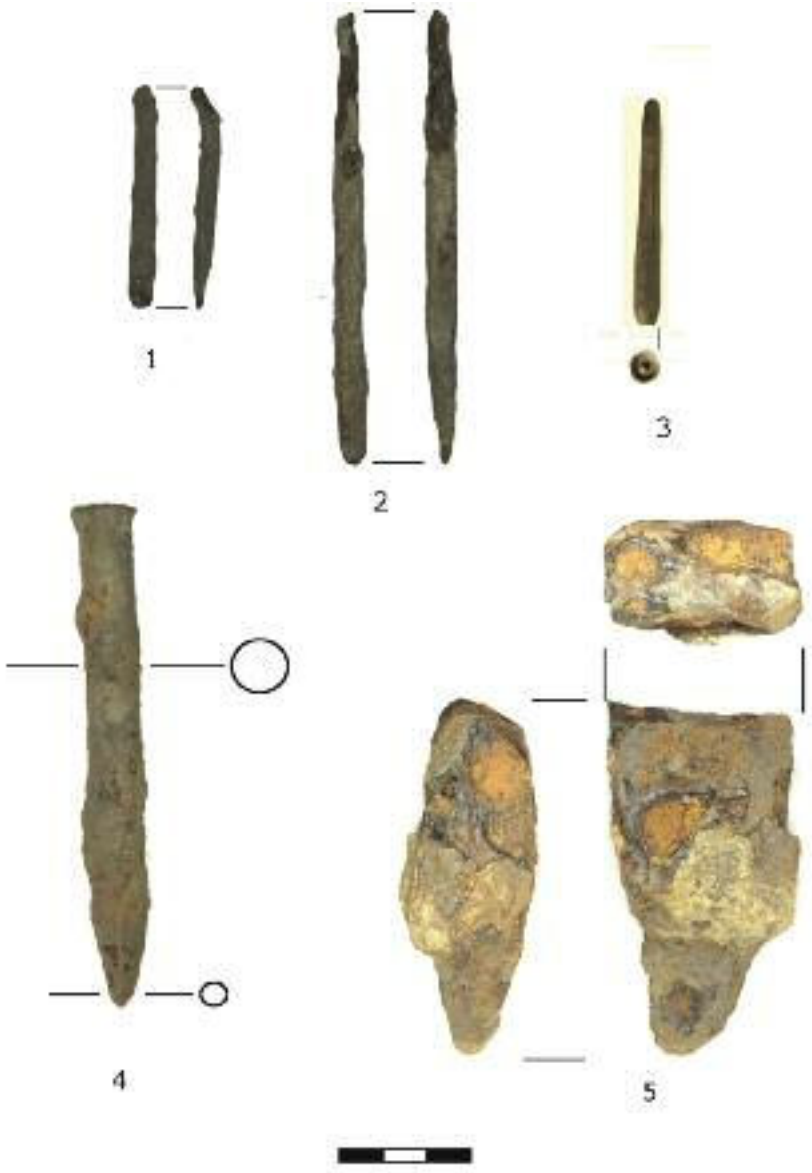

Fig. 6. Tools from surface survey of 2010 (photo K. Żołędziowski): 1. inv. 727/10P; 2. inv. 646/10P; 3. inv. 796/10P; 4. inv. 797/10P

[17] Coatsworth, Pinder 2002, pp. 46–50.
[18] Ohlhaver 1939, pp. 32–40.

Despite abundant evidence of local bronze working several important elements necessary for such a workshop are still missing. First of all, the casting furnaces are yet to be identified. As archaeological finds and experiments carried out in this field demonstrate,[19] a small pit lined with highly tempered clay [Fig. 7] or, in its absence, with stones is enough to melt copper alloys. Such objects are extremely perishable, especially in case of deep, intensive tillage, which is present at the 'Targowisko' settlement. Moreover in order for forging, which requires temperatures in the range of 600–700 degrees Celsius, a normal household hearth is quite sufficient.

Fig. 7. Reconstruction of casting furnace by paper author (photo N. Podgórska)

Also missing are ingots of the raw material. Finds from site 4 indicate, however, that the most frequent source of the raw material was scrap metal. We can interpret packages of scrap metal attached with rivets as a kind of packages of the metal were prepared for repeat smelting [Fig. 8: 1 & 2]. It also seems likely that rods collected from necklaces were reused [Fig. 4: 10 & 11], as indicated by the finds from the trench in the ares 38-42 and 37-43. Such rod fragments were found in this trench alongside buckles made of the same material. It also seems interesting that among the 'Totenkrone' necklaces found across Prussia some seem to lack an ending, which would indicate that parts were cut off.[20] Perhaps we are dealing with a phenomenon similar to that found in the case of silver ornament cuttings,[21] with the metal cut in this way serving as a means of exchange. Verifying this theory requires, however, further research.

[19] Lønborg 1998, p. 28.
[20] Odoj 1958, pls. XXI, XXII; http://www.smb-digital.de-/eMuseumPlus.
[21] Hårdh 1976, pp. 83–139.

The last of the missing elements is ceramics used in casting, that is crucibles. The issues of their production is exhaustively treated in Theophilus Presbyter's work of medieval crafts. He mentions that old crucibles were used in the production of new ones, ground to powder and mixed with raw clay.[22] This type of procedure means that a large part of the ceramics was reused and only a small part had any chance of survival. Taking into account the small proportion of casting in ornament production at 'Targowisko' absence of this type of finds may be blamed on the state of the site's preservation and the extent of excavations.

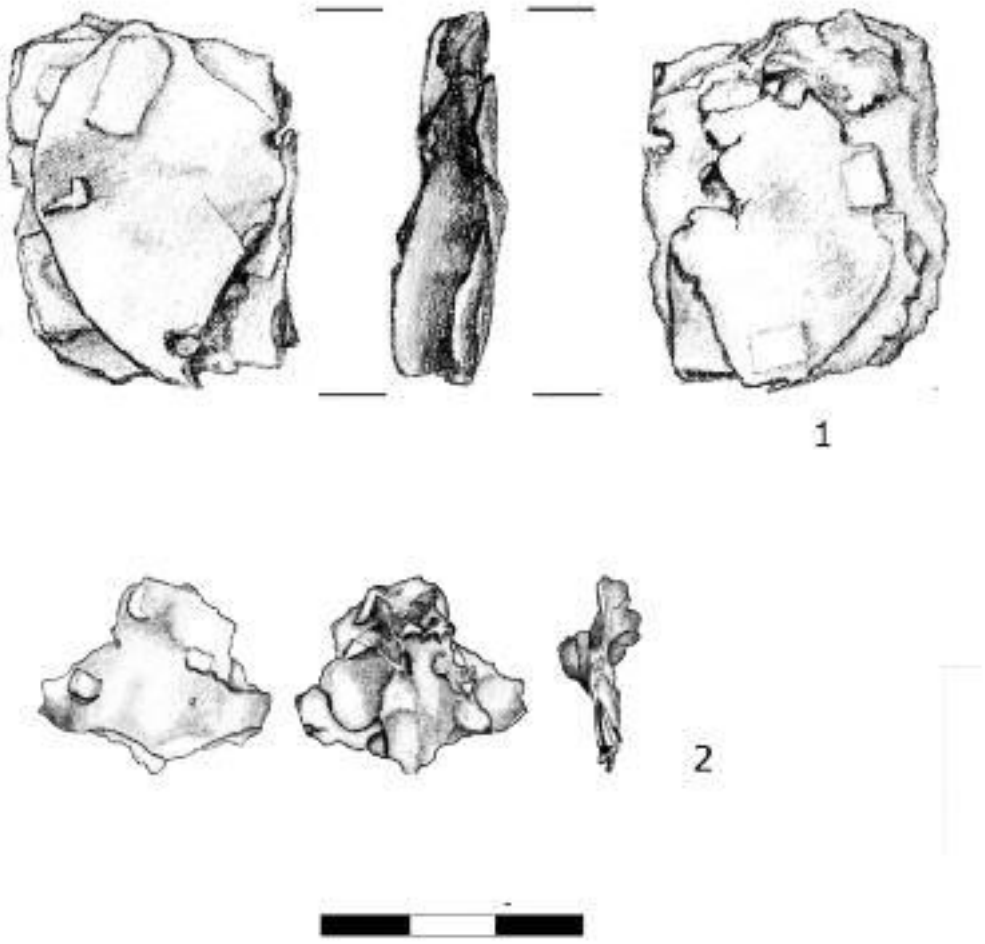

Fig. 8. Packets of plated waste prepared for recycling (drawing L. Jończyk):
1. inv. 213/05P; 2. inv. 1158/07

In beginning the summary of the paper, I wish to stress that it is not a comprehensive treatment of the site, but a brief outline of the issues associated with the identification of Yotvingian bronze--working workshops in archaeological material. A full and credible interpretation will be possible only after the completion of processing of the finds and mapping data. Nevertheless some conclusions may already be reached.

[22] Theophilus Presbyter, *Schedula diversarum artium*, 22 & 65.

Some of the finds confirm local bronze production, but no remains of hearths connected to this activity have been found. This may be explained by the significant deterioration of the site due to deep tillage and to the fact that such objects were often made of poorly baked clay. The most intensive production presumably took place in the ares 38-42 and 37-43, as confirmed by the finds from that area. Metalworking may also have taken place in other parts of the settlement. We also cannot rule out that the activity was seasonal and temporary hearths were placed haphazardly in different parts of the settlement, depending on needs of the time. Finds from the nearby cemetery of 'Mosiężysko' show that non-ferrous metals were also important in the spiritual life of the Yotvingians and some of the numerous faulty objects found at the 'Targowisko' may be connected to little known rituals.

The most numerous category of finds includes objects such as brooches or fittings. Numerous in this category are penannular brooches with bent endings, which display close stylistic parallels and similar radius of the wire, indicating presumably that they were made by the same hand. Ornaments such as necklaces, rhomboid pendants, bells, rings made of wire and tape and forged or plated bracelets were presumably also made in the local workshop. Numerous traces of repairs and modifications indicate the workshop also undertook work of that type.

The basic material for ornament production was copper alloys, although there is also a small number of objects of lead and tin and individual finds of silver and gold. The raw materials were presumably largely recycled from scrap metal. The site does not include pure metal, for example in the form of ingots, but packages of scrapped plate and smelted necklace fragments, which may also have been used for recycling. The planned chemical analysis of the finds may bring very interesting results in this matter.

The dominant technique of ornament manufacturing was forging and plastic deformation. Most objects were made of round wire and plates of varying thickness. Some items were also made of tape forged on specially profiled anvils, so-called grooving stakes. Tools found during surface surveys of 2010 may also be linked to forging. Scarcity of casting refuse shows that this was a less popular technique. It was presumably used mostly to supply intermediate products for further cold processing. The few cast elements, such as necklace endings display thickness and imprecise finishing, indicative of a low level of technological sophistication of the workshop. The products of Szurpiły craftsmen were presumably destined mostly for the local market.

On the basis of comparative material collected to date, we may presume that the workshop was functional in the latter stages of the early Middle Ages, that is between the eleventh and thirteenth centuries. The issue requires, however, further research.

Bibliography

Arbman 1940	H. Arbman, *Birka. Die Gräber, Tafeln* (= *Birka: Untersuchungen und Studien* 1), Uppsala.
Bitner-Wróblewska (ed.) 2002	A. Bitner-Wróblewska (ed.), *Kernave — litewska Troja. Katalog wystawy*, Warsaw.
Bogucki 2001	M. Bogucki, "Średniowieczne naszyjniki pruskie typu 'Totenkrone'", [in:] *Officina archaeologica optima: Studia darowane Jerzemu Okuliczowi-Kozarynowi w siedemdziesiątą rocznicę urodzin*, ed. W. Nowakowski, A. Szela, Warsaw, pp. 35–40.
Coatsworth, Pinder 2002	E. Coatsworth, M. Pinder, *The Art of the Anglo-Saxon Goldsmith: Fine Metalwork in Anglo-Saxon England, Its Practice and Practitioners* (= *Anglo-Saxon Studies* 2), Woodbridge.
Engel 2000	M. Engel, *Zdobione metalowe okucia pochewek noży wczesnośredniowiecznych z obszaru Polski* (unpublished MA thesis, Institute of Archaeology, University of Warsaw, supervisor: Prof. Jerzy Okulicz-Kozaryn).

Engel 2002	M. Engel, "Piec wapienniczy z osady w Konikowie (Rostku). Wyniki badań wykopaliskowych w sezonach 1999–2000", [in:] *Badania archeologiczne w Polsce północno-wschodniej i na zachodniej Białorusi w latach 2000–2001*, ed. M. Karczewska, M. Karczewski, Białystok, pp. 321–331.
Engel 2012	M. Engel, *Systemy wczesnośredniowiecznego osadnictwa jaćwieskiego w świetle badań ośrodków w Szurpiłach i Konikowie* (unpublished PhD thesis, Institute of Archaeology, University of Warsaw, supervisors: Prof. Jerzy Okulicz-Kozaryn and Prof. Wojciech Nowakowski).
Hårdh 1976	B. Hårdh, *Wikingerzeitliche Depotfunde aus Südschweden*, II: *Katalog und Tafeln* (= *Acta Archaeologica Lundensia*, Series in 4°, 9), Bonn – Lund.
Jaskanis 2008	D. Jaskanis, *Święck. Wczesnośredniowieczny zespół osadniczy na północno-wschodnim Mazowszu*, Warsaw.
Kaczyński 1958	M. Kaczyński, "Wczesnośredniowieczna zapinka znaleziona w miejscowości Żywa Woda, pow. Suwałki", *Wiadomości Archeologiczne* 25, fasc. 1–2, p. 153.
Kóčka-Krenz 1993	H. Kóčka-Krenz, *Biżuteria północno-zachodnio-słowiańska we wczesnym średniowieczu*, Poznań.
Korczak 2005	K. Korczak, *Wczesnośredniowieczne zapinki podkowiaste z ziem prus kich* (unpublished BA thesis, Institute of Archaeology, University of Warsaw, supervisor: Dr. Wojciech Wróblewski).
Kulakov 1990	V. Kulakov, *Drevnosti Prussov VI–XIII vv*., Moscow.
Lønborg 1998	B. Lønborg, *Vikingetidens metalbearbejdning* (= *Fynske Studier* 17), Odense.
Odoj 1958	R. Odoj, "Sprawozdanie z badań wykopaliskowych przeprowadzonych w Równinie Dolnej, pow. Kętrzyn, w 1956 i 1957 r.", *Rocznik Olsztyński* 1, pp. 116–156.
Ohlhaver 1939	H. Ohlhaver, *Der germanische Schmied und sein Werkzeug*, Leipzig.
Sawicka 2011	L. Sawicka, "Szurpiły, st. 8 ('Mosiężysko'), woj. podlaskie. Badania w latach 2008–2010", *Światowit* 49, pp. 263–268.
Sedov 2007	V. V. Sedov, *Isborsk v rannem srednovekove*, Moscow.
Zariņa 2006	A. Zariņa, *Salaspilis Laukskolaskapulauks 10.-13. gadsimts*, Riga.

Streszczenie

Czy na osadzie „Targowisko" (st. 4) w Szurpiłach (gm. Jeleniewo) działała pracownia brązownicza?

Szurpiły położone są ok. 15 km na północ od Suwałk. Osada „Targowisko" (st. 4) jest największą osadą kompleksu osadniczego, którego centralne miejsce stanowi grodzisko na Górze Zamkowej.

W 1980 r. do Szurpił zawitała ekspedycja archeologiczna pod kierownictwem profesora Jerzego Okulicza-Kozaryna. Pierwsze wykopy na „Targowisku" otworzono w roku 1981. Wiosną 1982 r. na terenie „Targowiska" przeprowadzono badania powierzchniowe połączone z planigrafią. Pozwoliły one na ustalenie zasięgu stanowiska. Wykopaliska trwały ciągle do 1990 r. Kolejne badania „Targowiska" realizowane były przez DAB PMA oraz IA UW w ramach „Projektu Szurpiły" w latach 2005–2010. W sezonach tych wykonano szereg prospekcji z użyciem wykrywaczy metali, pomiary geofizyczne, odwierty geologiczne oraz otworzono kolejne wykopy.

Podczas prowadzonych badań powierzchniowych na terenie niemal całego stanowiska znajdowane były liczne, często silnie rozdrobnione przedmioty wykonane ze stopów miedzi. Niektóre

z nich można zaliczyć do grupy odpadów lub półproduktów. Podczas badań wykopaliskowych w sezonie 2006 w jednym z wykopów [Fig. 3] udało się natrafić na znaczna koncentrację tego typu zabytków [Fig. 4]. Nie udało się jednak jednoznacznie zlokalizować pracowni, a co za tym idzie paleniska, które stanowiło zapewne jej serce. Wiązać można to ze znacznym stopniem zniszczenia osady przez głęboką orkę oraz faktem, że paleniska często wykonywane były ze słabo wypalonej, silnie schudzonej gliny.

Najliczniejszą kategorię wyrobów stanowią przedmioty takie jak zapinki czy okucia. Licznie reprezentowane są zapinki podkowiaste z odgiętymi końcami, silnie powiązane ze sobą stylistycznie i wykonane z podobnej średnicy drutu, co wskazuje, że wyszły prawdopodobnie spod tej samej ręki [Fig. 5]. Ozdoby takie jak naszyjniki, zawieszki romboidalne, dzwoneczki, pierścienie z drutu i taśmy oraz bransolety kute i blaszane zapewne również wykonywane były w miejscowej pracowni. Liczne ślady napraw i przeróbek na odnalezionych przedmiotach wskazują, że warsztat oprócz produkcji zajmował się również dokonywaniem napraw gotowych wyrobów, często pochodzących również z importu.

Podstawowym materiałem do produkcji ozdób były stopy miedzi, chociaż występuje również niewielka liczba przedmiotów ołowiano-cynowych oraz pojedyncze zabytki ze srebra i złota. Pozyskiwano go zapewne w dużej mierze ze złomu. Na stanowisku nie znaleziono czystego surowca, np. w postaci sztabek. Licznie występują natomiast paczki blaszanych odpadów oraz nadtopione fragmenty naszyjników [Fig. 6], które częściowo mogły być wykorzystywane jako materiał w lokalnej produkcji. Nie można jednak bezkrytycznie wiązać wszystkich tego rodzaju przedmiotów z działalnością lokalnego brązownika. Jak pokazują znaleziska z położonego w obrębie szurpilskiego kompleksu cmentarzyska warstwowego „Mosiężysko" (st. 8), cięte lub niszczone w inny sposób przedmioty ze stopów miedzi odgrywały zapewne również znaczą rolę w obrzędowości mieszkańców wczesnośredniowiecznej Jaćwieży.

Dominującą techniką wykonywania ozdób było kucie i obróbka metaloplastyczna. Odlewnictwo pełniło raczej funkcję pomocniczą. Prawdopodobnie działalność brązownicza miała charakter sezonowy i mogła odbywać się w kilku miejscach na terenie osady. Produkcja nastawiona była głównie na zaspokojenie potrzeb lokalnej społeczności, zaopatrując ją w przedmioty takie jak: zapinki podkowiaste, pierścienie, bransolety, naszyjniki i zawieszki. Ze wstępnych ustaleń wynika, że czas funkcjonowania warsztatu lub warsztatów przypadał na okres między XI a XIII w. n.e.

Karol Żołędziowski
Centre for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
karol.zoledziowski@gmail.com

Paweł Grosicki

SIZE CLASSIFICATION OF GLASSWARE FRAGMENTS — INTRODUCTION TO A NEW METHODOLOGY OF GLASSWARE RESEARCH

Abstract: The objective of the present paper is to propose the introduction of a new methodology of archaeology of glass in the form of a size classification of glassware. It has been conducted on the glassware collection from the excavation XXII. The proposed methodology may be applied to any given collection of late medieval and early modern glassware from archaeological excavations. It allows for conclusions regarding stratification and deposition thanks to ordering the collection by state of fragmentation and use of statistical tools such as the chi-squared test.

Key words: size classification, glassware, glass archaeology, late medieval and early modern, Elbląg

The finds of late medieval and early modern glassware from the archaeological site of the Elbląg Old Town [Fig. 1] signal the need for a renewed discussion of the methodology of glass research since the existing framework was developed in the 1970s and 1980s.[1] Based on statistical and technological analysis, it overlooks the state of preservation of the material. State of research on the latter issue has been treated as marginal with the processes of stratification and deposition overlooked altogether.[2]

Insufficient data regarding fragmentation of the glassware, found in publications to date, have convinced the present author to undertake an attempt at size classification of late medieval and early modern glassware fragments. The attempt has been carried out on the material found at the XXII excavation[3] in the Elbląg Old Town and based on a modified project by Andrzej Buko,[4] which applied to the state of fragmentation of ceramics found at Gostomianum in Sandomierz. The proposed methodology can also find application to glassware from the late medieval and early modern period, as demonstrated by the author in a master's thesis.[5] It allows not only for a re-ordering of the material from the point of view of fragmentation, but also for application of statistical tools, such as the chi-squared test, which in turn leads to conclusions regarding stratification and deposition of material at individual structures.[6] It may also be used to order any given collection of glassware from the point of view of fragmentation, which in turn allows for application

[1] Ciepiela 1971a; Ciepiela 1971b; Ščapova 1973; Dekówna 1980.

[2] Nawracki 1999; Biszkont 2005.

[3] Excavation XXII is the name for the cluster of structures by the market square in the Elbląg Old Town between the streets: Bednarska, Stary Rynek, Rybacka and Ścieżka Kościelna. It contains the other excavations: 10B, 14, 15, 16S, 26, 27, 28H, 31, 33, 34, 35, 36.

[4] Buko 1990, pp. 235–244.

[5] Grosicki 2014.

[6] For "archaeological structure" in this context, read: latrine.

of more advanced statistical methods. The objective of the paper is to propose the introduction to "archaeology of glass" of a new project of size classification of glassware and to point out the far--reaching benefits thereof.

Fig. 1. Drinking glassware from the Elbląg excavations, latter half of 14th – 15th century (Elbląg, Muzeum Historyczno-Archeologiczne)

Rules of classification

The material from the excavations at the Elbląg Old Town (excavation XXII) consists primarily of fragments of various types of drinking glasses, mostly of the Czech type. It has been subjected to size classification on the basis of morphological features of glassware fragments and divided into ten categories grouped by the three basic parts: neck, belly and bottom/foot[7] [Fig. 2]. The classification also includes the category "intact vessels", which is not further subdivided.

Fragments of necks and bottoms, as characteristic elements, have been divided by size into three categories. The first includes elements of the neck and upper part of the belly and of the bottom or foot that are not smaller than one-third of the respective total. The second category includes parts of the neck and in the lower part, a whole foot or bottom or foot/bottom with a fragment of the body allowing for each fragment's placement within the whole. The third category includes non-diagnostic shards, which contain only the upper or the lower edge of the vessel.

[7] The term "bottom/foot" has been created by the author for the purposes of size classification due to frequent co-existence of these parts in one fragment, which renders their separate quantification impractical. The catalogue will distinguish bottoms, feet and dual fragments.

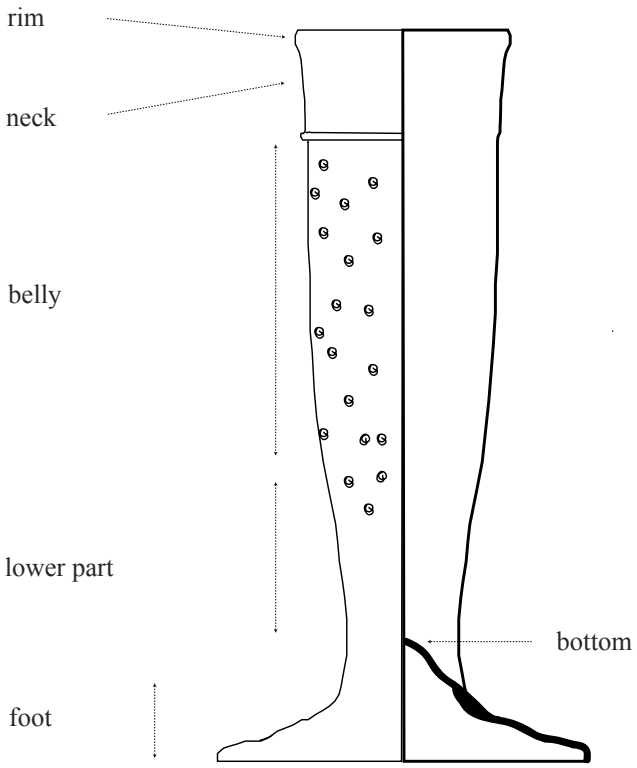

Fig. 2. Diagram of fluted glass morphological elements marked out
(drawing M. Janson)

For non-characteristic shards, namely bellies, a similar division has been applied based on surviving morphological characteristics. Fragments in category I display two morphological elements, for example the upper and lower part of the belly or the neck and a belly fragment. Single-element fragments, on the other hand, are more difficult to classify due to large variation in size. According to Andrzej Buko, further subcategories, IIa, IIb and III, can be identified thanks to a definition of the maximum radii of the fragments, which can then be plotted on a histogram. After performing these actions, one arrives at values on the basis of which it is possible to classify the fragments into relevant categories.[8]

The histogram arrived at in this way and based on the maximal radius of each belly fragment from excavation XXII at Elbląg can be seen in Fig. 3. The categories identified on its basis fit into ranges: III < 30 mm, IIb < 60 mm, IIa > 60 mm. This reasoning would be applicable to ceramic vessels, where variation in thickness is not significant. That is not, however, the case with glass objects due to clear differences in thickness, which can vary from 0.35 to 2.35 mm (that is, the highest value can be six times higher than the lowest). For that reason, the above comparison does not reflect objectively on the state of fragmentation of glassware. The fragments are qualitatively different and thus incomparable.

[8] Buko 1990, pp. 237–241.

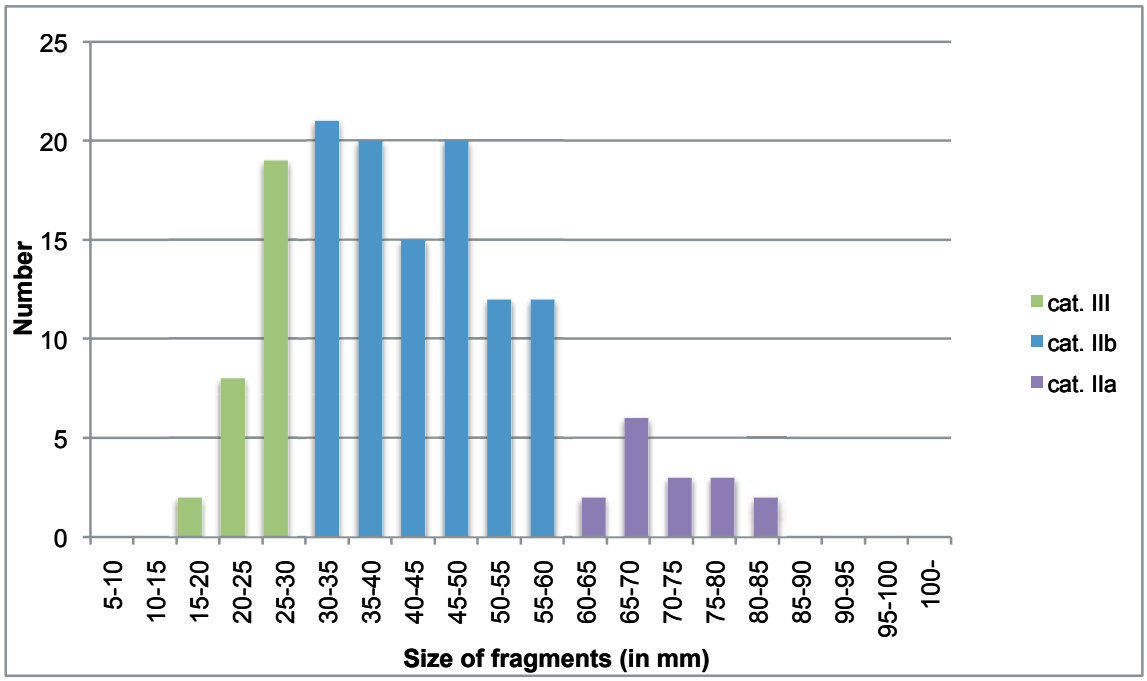

Fig. 3. Histogram I illustrating size ranges of belly categories, based on maximum radius

Classification becomes possible, and its results less arbitrary, when a histogram is based on the relative size ratio (W_W), which may be calculated by dividing the maximal radius of the fragment by its thickness. Such data are more objective. Thanks to this procedure, the ranges of size categories shift. The share of non-diagnostic shards of category III declines in favour of category IIa with the share of IIb roughly unchanged. The author considers thickness of glass to be very significant for the state of fragmentation of glassware found in archaeological excavations, as it is obvious that thinner glass is more destructible than thicker vessels. This is borne out by the histogram model on the basis of the W_W ratio [Fig. 4]. The categories it contains undergo a shift with

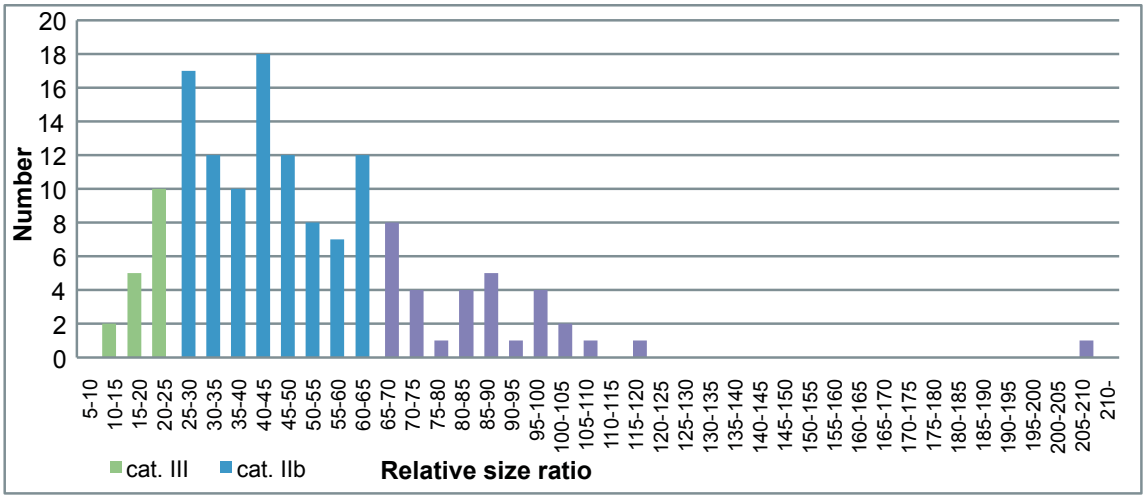

Fig. 4. Histogram II illustrating size ranges of belly categories, based on Ww ratio

the non-diagnostic proportion of the collection shrinking. The procedure is not arbitrary since a large proportion of category III fragments in histogram I met criteria necessary for various kinds of analysis. Thanks to the introduction of thickness as a criterion of classification, the subdivision of the collection becomes more realistic. In the author's opinion, it is histogram II that ought to be used for classification of bellies. Qualitative differences between the histograms are laid out in Table 1. It should be noted that each collection of glassware fragments is unique and must be approached individually. That means that the proposed method may be applied to any given glassware collection, but calculations for categories IIa, IIb i III must be carried out on a case-by-case basis.

Category	IIa	IIb	III
Histogram I	16	100	29
Histogram II	31	103	13

Tab. 1. Qualitative differences between belly categories in histograms I and II

Qualitative-quantitative analysis

The greater part of fragments from excavation XXII at the Elbląg Old Town consists of bellies, which make up 59.51 % of the total. Bottom/foot fragments make up 21.48 % of the collection, followed by necks (18.66 %). The least numerous category is what of "whole vessels" (0.35 %). The collection's qualitative and quantitative make-up is represented in Fig. 5.

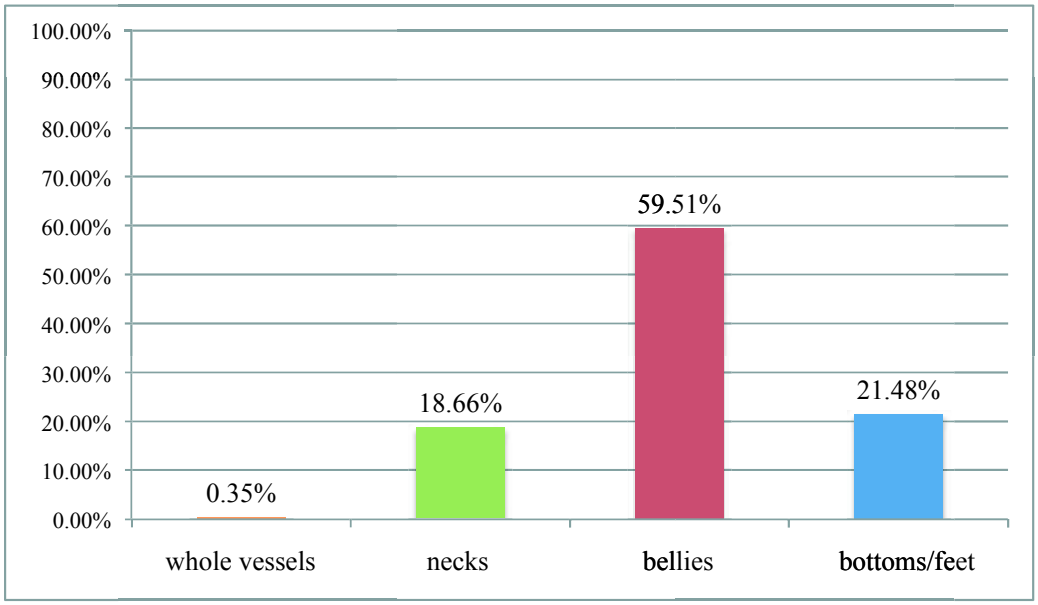

Fig. 5. Percentage distribution of glassware fragments from excavation XXII

Analysis of the collection's qualitative distribution reveals domination of the middle parts of vessels (169 fragments) due to the belly being the largest part at roughly 2/3 of each vessel's surface. The share of necks (53 fragments) and bottom/foot fragments (61) is much lower. The single "whole vessel" makes up the smallest category.

The next stage of analysis is to study the share of size categories in each group. Necks break up into: category I (24 items), category II (24 items), category III (5 items) [Fig. 6]. The distribution indicated shows that the edges of glass vessels are not greatly fragmented and are mostly diagnostic. In the group "bottom/foot" the shares of individual categories are the following: I — 16 items, II — 12 items, III — 33 items [Fig. 7]. The dominant position of non-diagnostic glass fragments testifies to a high degree of fragmentation and low analytical value of the material. Belly category distribution is the following: category I — 22 items, category IIa — 31 items, category IIb — 103 items, category III — 13 items [Fig. 8]. Analysis of the shares of individual fragments in the above categories is more difficult, as they are defined statistically. The division of category II into two subcategories also distorts the evaluation of the degree of fragmentation of the collection. In the case of earlier characteristic parts of the vessel, it was easy to find that the prevalence of the categories I and II testifies to a low degree of fragmentation. For categories IIa and IIb, with just one morphological element, that is not so easy. In this case, the main determinant is the W_W ratio.

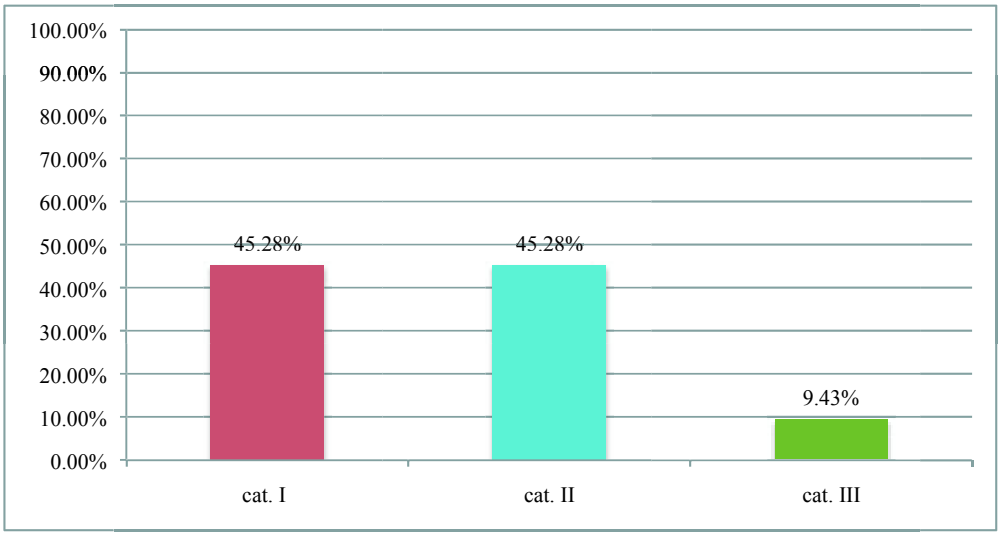

Fig. 6. Percentage distribution of neck categories from excavation XXII

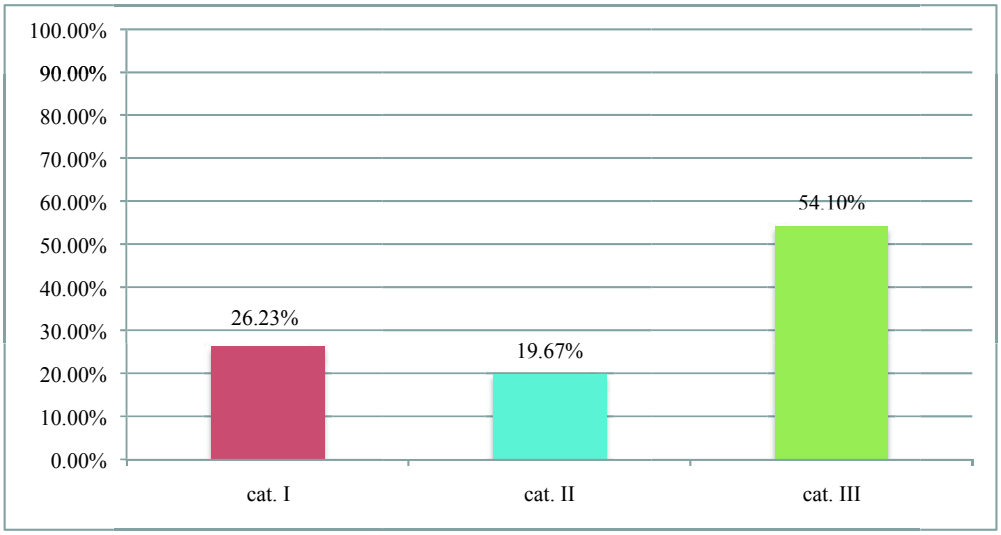

Fig. 7. Percentage distribution of foot/bottom categories from excavation XXII

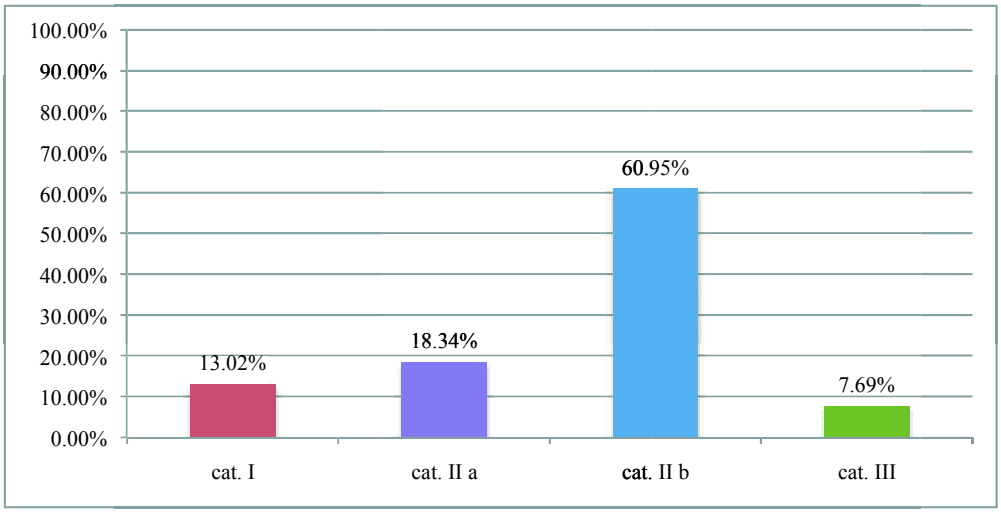

Fig. 8. Percentage distribution of belly categories from excavation XXII

In the author's opinion, the above categories should not be treated separately, but should be compared to category I due to a different definition. Taking into account the collection of the middle parts of vessels, it may be noted that it is fragmented to a high degree, but most fragments are not useful in some aspects of formal analysis.

The next stage in researching the state of fragmentation of glass vessels is to determine whether items in individual trenches are similar or dissimilar. In order to carry out the comparison, the basic statistical tool of the chi-squared test is used. The data regarding distribution of glass fragments in individual structures are found in Table 2. The chi-squared test serves to determine whether there is a relationship between distributions of a variable by comparing real data with a theoretical distribution. It must be borne in mind that the test can only be used when the minimum size of the sample (the number of fragments of a given type at the structure) is at least five.[9]

Size category	NUMBER OF TRENCH AND STRUCTURE																					Total
	10B		14	15		16s		26	27			28H	31	33	34			35		36		
	I	II	II	I	III	I	II	II	I	II	III	I	I	I	I	II	III	I	II	I	II	
I	1	0	0	3	0	2	7	1	0	2	9	1	0	0	0	1	0	0	3	27	3	60
II	4	0	1	2	0	0	3	8	0	1	4	0	0	0	0	1	0	0	1	9	2	36
II a	9	1	0	0	0	0	0	2	0	0	4	0	0	0	0	1	0	0	0	9	5	31
II b	7	0	1	0	1	0	12	3	0	0	16	1	6	0	1	5	0	1	6	35	8	103
III	1	3	0	2	0	0	1	5	2	2	6	0	1	3	0	1	1	1	2	14	8	53
Total	22	4	2	7	1	2	23	19	2	5	39	2	7	3	1	9	1	2	12	94	26	**283**

Tab. 2. Distribution of fragment numbers from trenches and structures they contain

[9] Jóźwiak, Podgórski 2012, p. 239.

For the purposes of the test, size categories including items from different structures are combined [Tab. 3]. Categories I and II are combined into a "low degree of fragmentation", while categories IIa, IIb and III into "high degree of fragmentation", in accordance with analysis carried out on the basis of histogram II. The criterion of at least five data points for each sample was met by just six structures in five trenches. For the purpose of the test, the structures lacking in sufficient numbers for analysis are combined into a single category, "other". Thanks to this procedure, the chi-squared test can be carried out on the whole collection, thus increasing its value. In addition, a separate analysis is carried out for trench 36, which alone contains all the structures that fit the test criteria, making it unique in the collection.

Degree of fragmentation	**NUMBER OF TRENCH AND STRUCTURE**																				
	10B		**14**	**15**		**16s**		**26**	**27**			**28H**	**31**	**33**	**34**			**35**		**36**		**Total**
	I	II	II	I	III	I	II	II	I	II	III	I	I	I	I	II	III	I	II	I	II	
Low	5	0	1	5	0	2	10	9	0	3	13	1	0	0	0	2	0	0	4	36	5	96
High	17	4	1	2	1	0	13	10	2	2	26	1	7	3	1	7	1	2	8	58	21	187
Total	22	4	2	7	1	2	23	19	2	5	39	2	7	3	1	9	1	2	12	94	26	283

Tab. 3. Combined distribution of fragment numbers from all trenches and structures they contain (latrines). In blue, trench 36, which is subject to further research in addition to general analysis. In green, structures that meet the criterion of at least five samples. In red, structures that do not contain sufficient material for chi-squared test and will thus be grouped as "other"

Below are found Tables 4 and 5 with a real and theoretical distribution for trench 36. The value for the chi-squared test is 3.29. The value of the test statistic for one degree of freedom and significance level of 0.05[10] amounted to 2.71. That indicates that from a statistical point of view, the structures have different distribution of fragment sizes.

Degree of fragmentation	Trench 36		Total
	Structure I	Structure II	
Low	36	5	41
High	58	21	79
Total	94	26	120

Tab. 4. Real distribution of fragment numbers from structures in trench 36

Degree of fragmentation	Trench 36		Total
	Structure I	Structure II	
Low	32,12	8,88	41
High	61,88	17,12	79
Total	94	26	120

Tab. 5. Theoretical distribution of fragment numbers from structures in trench 36

[10] In practice, the significance level used is typically lower than 0.1 and the level of 0.05 is recommended.

Tables 6 and 7 set out the real and theoretical distribution for all structures. The value of the chi-squared statistic amounts to 7.42. The value of the test statistic for six degrees of freedom and significance level of 0.05 amounts to 12.59. The result indicates that from the statistical point of view the structures under study have uniform distribution of fragment sizes. It should also be noted that on the basis of the test there is a 70 % probability (significance level of 0.3) that structures in all trenches differ amongst themselves. For this kind of test, however, the required level of significance is higher.

Degree of fragmentation	Structures from trench							Total
	10B(I)	16s(II)	26(II)	27(III)	36(I)	36(II)	other	
Low	5	10	9	13	36	5	18	96
High	17	13	10	26	58	21	42	187
Total	22	23	19	39	94	26	60	283

Tab. 6. Real distribution of fragment numbers from structures in all trenches

Degree of fragmentation	Structures from trench							Total
	10B(I)	16s(II)	26(II)	27(III)	36(I)	36(II)	other	
Low	7,46	7,80	6,45	13,23	31,89	8,82	20,35	96
High	14,54	15,20	12,55	25,77	62,11	17,18	39,65	187
Total	22	23	19	39	94	26	60	283

Tab. 7. Theoretical distribution of fragment numbers from structures in all trenches

In summarising the results of size classification carried out on glass vessels from the urban quarter in the vicinity of the Elbląg central square, known as excavation XXII, it should be noted that the state of fragmentation of the excavated material is relatively high. Only necks, which represent 18.66 % of the collection, are well preserved. The chi-squared test demonstrates that all structures display a similar distribution of glassware fragmentation. That indicates that sedimentation processes took a similar course in each of them. Attention should, however, be drawn to some of them. As pointed out before, there is a 70 % probability that structures in the trenches differ — that their distribution is different. Trench 36, for which a separate analysis has been carried out, stands out. In this case the state of fragmentation of the preserved material in the two excavated latrines is very different. This could be the result of different periods and intensity of their use. One of the two is designated as structure I (it is earlier — ceramic allows to date to the 14th/15th–17th centuries). Structure II, found in another part of the courtyard, can be interpreted as a later latrine (from the 16th/17th–19th centuries). A distribution different from theoretical can also be found for structure II from trench 26.

The visible difference in fragmentation at some of the structures under study may be due to uneven pace of residue removal from different latrines. Faeces and waste removal in the medieval and early modern city was a matter for private citizens with the authorities staying away unless neighbour rights were violated. There existed prohibitions of throwing the waste into the streets during the day, onto a neighbour's plot or of spraying mulch onto the streets. Cleaning up latrines, on the other hand, was a matter outside public interest and was left to private citizens.[11] The data above indicate, however, that latrines within XXII were cleaned out fairly regularly with few exceptions, which may have resulted in the small differences in the state of fragmentation of glassware remains.

[11] Czaja 2005, pp. 345–348.

It is interesting that none of the latrines under study displays signs of stratigraphic distortion due to later digging. The latrines were mostly used for an extended period of time, from the fourteenth/fifteenth century all the way to the nineteenth. The exception is structure III from trench 27, which was only in use until the end of the fifteenth century, when it was filled in. The lack of stratigraphic distortions coincident with a high degree of fragmentation of glassware remains may point to two facts. First, periodic cleaning undoubtedly disturbs the process of layer formation in such structures. Such interventions must impact completeness of glassware preservation. Second, such a high degree of fragmentation may result from a prolonged period that objects would remain in the context where damage originally occurred. The process of deposition of a vessel may have been extremely complex — from the damage, to throwing it into the courtyard to eventual deposition in the latrine during cleaning.

As can be seen, the project of size classification of glassware remains is extremely interesting and could make a significant contribution to methodology of "glass archaeology". Most of all, it offers a new outlook on fragmentation late medieval and early modern drinking vessels found in the course of archaeological excavations. It may serve to order any given collection of the type. On that basis, it is possible to implement a more sophisticated statistical analysis in the form of the chi-squared test, whose key findings allow for conclusions on stratification and deposition of the material.

Bibliography

Biszkont 2005	J. Biszkont, *Późnośredniowieczne szklarstwo na Śląsku*, Wrocław.
Buko 1990	A. Buko, *Ceramika wczesnopolska: wprowadzenie do badań*, Wrocław.
Ciepiela 1971a	S. Ciepiela, "Ozdoby i naczynia szklane odkryte w Nakle nad Notecią", *Wiadomości Archeologiczne* 36, fasc. 2, pp. 203–212.
Ciepiela 1971b	S. Ciepiela, "Zabytki szklane ze Świecia nad Wisłą", *Pomorania Antiqua* 3, pp. 479–496.
Czaja 2005	R. Czaja, "Troska o stan sanitarny w miastach pruskich w XIV i XV wieku", *Kwartalnik Historii Kultury Materialnej* 53, fasc. 3–4, pp. 343–349.
Dekówna 1980	M. Dekówna, *Szkło w Europie wczesnośredniowiecznej*, Wrocław – Warsaw – Cracow – Gdańsk.
Grosicki 2014	P. Grosicki, *Późnośredniowieczne i wczesnonowożytne naczynia szklane z wykopu nr XXII w Elblągu* (unpublished MA thesis, Institute of Archaeology, University of Warsaw, supervisor: Prof. Joanna Kalaga).
Jóźwiak, Podgórski 2012	J. Jóźwiak, J. Podgórski, *Statystyka od podstaw*, Warsaw.
Nawracki 1999	M. Nawracki, "Późnośredniowieczne i nowożytne szkła z terenu zamku krzyżackiego w Toruniu", [in:] *Archeologia szkła*, VIII, ed. J. Olczak (= *Acta Universitatis Nicolai Copernici*, *Archeologia* 27), Toruń, pp. 53–132.
Ščapova 1973	J. L. Ščapova, "Zasady interpretacji analiz składu szkła zabytkowego", *Archeologia Polski* 18, fasc. 1, pp. 15–72.

Streszczenie

Klasyfikacja wielkościowa fragmentów naczyń szklanych — wstęp do nowej metodyki badań nad szkłem

Dotychczasowa metodyka badań naczyń szklanych okresu późnośredniowiecznego i wczesnonowożytnego opiera się na założeniach z lat siedemdziesiątych – osiemdziesiątych XX wieku, całkowicie pomijając problematykę fizycznego stanu zachowania materiału, a w szczególności rozkład wielkościowy fragmentów. Celem artykułu jest propozycja wprowadzenia do „archeologii szkła" projektu klasyfikacji wielkościowej naczyń szklanych i wskazanie daleko idących korzyści z niej wypływających**.** Po wykonaniu wyżej wspomnianej klasyfikacji na zbiorze 283 ułamków naczyń szklanych pozyskanych z badań wykopaliskowych w wykopie XXII na Starym Mieście w Elblągu możliwe stało się wnioskowanie o przebiegu procesów stratyfikacyjnych i depozycyjnych. Na podstawie wykonanych analiz statystycznych pod postacią testu zgodności chi-kwadrat stwierdzono, że procesy te przebiegały w 21 obiektach w sposób podobny. Jednakże, mimo że są one pod względem statystycznym takie same, niektóre z nich mają odmienny rozkład, na co zwrócono szczególną uwagę.

Wprowadzenie nowego zagadnienia do metodyki badań nad szkłem umożliwi uporządkowanie dowolnego zbioru naczyń pod względem stanu rozdrobnienia materiału, a co za tym idzie — stworzy możliwość wdrożenia bardziej zaawansowanych metod statystycznych.

Paweł Grosicki
Center for Research
on the Antiquity
of Southeastern Europe
University of Warsaw
pawel.grosicki@me.com

WSKAZÓWKI DLA AUTORÓW *NOVENSIA*

Redakcja *Novensia* przygotowała wskazówki dla autorów, poświęcone formie artykułów składanych do druku w tym czasopiśmie. Przygotowanie tekstów i materiałów ilustracyjnych zgodnie z nimi znacznie usprawni prace redakcyjne nad poszczególnymi artykułami i przyspieszy proces ich publikacji.

ZALECENIA OGÓLNE:

1. Prosimy nadsyłać teksty zapisane standardową czcionką (Times New Roman, Garamond etc.) — 12 pkt. tekst, 10 pkt. przypisy.
2. Teksty prosimy przysyłać jako dokumenty tekstowe (pliki DOC) oraz w formie pliku PDF.
3. Ilustracje powinny znaleźć się w osobnych plikach, nie w pliku tekstowym.
4. Każdy artykuł winien posiadać krótki abstrakt i listę słów kluczowych (w języku angielskim) oraz streszczenie (w języku polskim w przypadku tekstów obcojęzycznych, w języku angielskim w przypadku tekstów polskich).
5. Autorów prosimy o podawanie swojej afiliacji.

PRZYPISY:

Przypisy na dole strony winny zawierać, oprócz koniecznych uzupełnień, odsyłacze do literatury podanej w bibliografii, wedle schematu:

NAZWISKO rok wydania, numery stron.

np. KOLENDO 2008, s. 120–121.

Uwagi:

1. Przy cytowaniu kilku pozycji w jednym przypisie prosimy rozdzielać je średnikiem. Jeśli jest to kilka prac tego samego autora, można pisać:
   ECK 2001; ECK 2003a
   lub:
   ECK 2001; 2003a

2. Każde odwołanie bibliograficzne zamieszczone w przypisie musi znaleźć swe pełne rozwinięcie w wykazie cytowanej literatury na końcu artykułu.

ZESTAWIENIE CYTOWANEJ LITERATURY:

Zestawienie cytowanej literatuty winno się znajdować na końcu, po tekście artykułu.

Każda pozycja w zestawieniu winna rozpoczynać się od:
NAZWISKO rok wydania —

Po czym następują:

1. Książka:

I. Nazwisko, *Tytuł książki*, miejsce wydania.

np. Parnicki-Pudełko 1990 — S. Parnicki-Pudełko, *The Fortifications in the Western Sector of Novae*, Poznań.

2. Książka wydana w serii:

I. Nazwisko, *Tytuł książki* (= *Nazwa serii* numer w serii), miejsce wydania.

np. Kunisz 1987 — A. Kunisz, *Le trésor d'antoniniens et de folles des 'Principia' de la légion de Novae (Bulgarie)* (= *Studia Antiqua* 10), Warszawa.

3. Artykuł/rozdział w pracy zbiorowej:

I. Nazwisko, „Tytuł artykułu/rozdziału", [in:] *Tytuł pracy zbiorowej*, ed. I. Nazwisko, miejsce wydania, numery stron.

np. Dyczek 2005 — P. Dyczek, „On the genesis of Roman legionary hospitals", [in:] *Limes XIX, Proceedings of the XIXth International Congress of Roman Frontier Studies, Pécs, Hungary, September 2003*, ed. Z. Visy, Pécs, s. 871–881.

4. Artykuł/rozdział w pracy zbiorowej wydanej w serii:

I. Nazwisko, „Tytuł artykułu/rozdziału", [in:] *Tytuł pracy zbiorowej*, ed. I. Nazwisko (= *Nazwa serii* numer w serii), miejsce wydania, numery stron.

np. Kolendo 2008 — J. Kolendo, „Novae during the Goth raid of AD 250/1 (Iordanes, *Getica* 101–103)", [in:] *A Companion to the Study of Novae*, ed. T. Derda, P. Dyczek, J. Kolendo (= *Novae. Legionary Fortress and Late Antique Town* 1), Warsaw, s. 117–131.

5. Artykuł w czasopiśmie:

I. Nazwisko, „Tytuł artykułu", *Tytuł czasopisma* numer rocznika, numery stron.

np. Lemke 2009 — M. Lemke, „Stone projectiles from Novae", *Novensia* 20, s. 209–219.

6. Artykuł (hasło) w encyklopedii:

I. Nazwisko, „Tytuł artykułu (hasła)", *Tytuł encyklopedii* numer tomu (ewentualnie), miejsce wydania, numery stron lub kolumn.

np. Cermanović-Kuzmanović 1976 — A. Cermanović-Kuzmanović, „Risinium", *The Princeton Encyclopedia of Classical Sites*, Princeton, s. 760.

Uwagi:

1. Jeżeli zamieszczamy w bibliografii kilka pozycji autorstwa jednej osoby, posiadających tę samą datę wydania, po roku wydania należy dodawać kolejne litery alfabetu (np. 1998a, 1998b, 1998c itd.), umieszczając pozycje w kolejności alfabetycznej pierwszych liter tytułów.
2. Jeżeli dana pozycja ma dwóch lub trzech autorów, zamieszczamy ich nazwiska w kolejności podanej na stronie tytułowej, rozdzielając je przecinkami. Jeżeli jest więcej niż trzech autorów, piszemy jedno nazwisko i dodajemy *et alii*.
3. W tytułach książek angielskich zapisujemy wszystkie wyrazy wielkimi literami; w tytułach artykułów angielskich nie używamy wielkich liter poza nazwami własnymi.
4. W przypadku, kiedy wielokrotnie cytuje się powszechnie znaną serię (np. *CIL*) czy encyklopedię (*RE*), prosimy o cytowanie ich w zapisie skrótowym oraz zamieszczenie listy skrótów poniżej bibliografii. Zasada ta nie stosuje się do przypadków, kiedy publikacja taka cytowana jest jeden raz.
5. W przypadku tytułów w językach niebędących kongresowymi prosimy zamieszczać w nawiasie kwadratowym ich tłumaczenia na język artykułu, któremu towarzyszy bibliografia.
6. Przed numerami stron (kolumn) winien stać skrót słowa oznaczającego stronę (kolumnę) w języku, w którym napisany jest artykuł (pol.: s., kol.; ang.: p./pp., col./cols; niem.: S., Sp., itd.).
7. Pomiędzy numerami stron powinna stać półpauza (zob. 9) bez spacji, np. 22–35.
8. Jeżeli miejsce wydania zawiera w sobie nazwy kilku miast, należy stosować między nimi półpauzę (zob. 9) ze spacjami, np. Warszawa – Kraków – Wrocław.
9. Półpauzę uzyskuje się na klawiaturze w połączeniu Ctrl + – (z klawiatury numerycznej).
10. Strony internetowe winny być cytowane z podaniem pełnego URL zarówno w przypisach, jak i w bibliografii. Przy ich cytowaniu prosimy podawać datę dostępu. Jeśli istnieje wersja papierowa danej pozycji, należy cytować ją, nie wersję elektroniczną.

ZASADY TRANSLITERACJI NAZW WŁASNYCH ZAPISANYCH CYRYLICĄ

Nazwy własne (nazwy geograficzne, imiona i nazwiska) zapisane cyrylicą prosimy podawać w transliteracji, według następujących zasad:

cyrylica	transliteracja
а	a
б	b
в	v
г	g
д	d
е	e
ж	ž
з	z
и	i

й	j
к	k
л	l
м	m
н	n
о	o
п	p
р	r
с	s
т	t
у	u
ф	f
х	h
ц	c
ч	č
ш	š
щ	šč (rosyjski); št (bułgarski)
ъ	ă (bułgarski)
ы	y (rosyjski)
ь	’
э	e (rosyjski)
ю	ju
я	ja
ђ	đ (serbski)
ѓ	g’ (macedoński)
љ	lj (serbski)
њ	nj (serbski)
ћ	ć (serbski)
ќ	k’ (macedoński)
џ	dž (serbski)

ZASADY ODMIANY NAZW GEOGRAFICZNYCH (DOTYCZY TEKSTÓW POLSKICH):

1. Nazwy geograficzne starożytne greckie (np. Rhizon) i łacińskie (np. Novae) prosimy podawać zawsze w wersji nieodmiennej. Mimo że jest to czasami wbrew duchowi polszczyzny, taka zasada pozwoli uniknąć sytuacji typu Serdica – Serdiki.

2. Nazwy geograficzne współczesne prosimy podawać w tradycyjnej wersji polskiej, o ile taka istnieje; np. Warna (nie Varna), Konstanca (nie Constanţa). W sytuacji, gdy polska nazwa tradycyjna różni się znacznie od nazwy obcej, można tę drugą podać w nawiasie; np. Aluta (Olt).

3. Wszystkie nazwy geograficzne współczesne, zarówno tradycyjne polskie, jak obce, zasadniczo odmieniamy, z zachowaniem „zdrowego rozsądku”. Tak więc pisać będziemy: Warna – Warny – w Warnie, Aluta – Aluty – nad Alutą, a także Svištov – Svištova – w Svištovie, Hârşova – Hârşovy – w Hârşovie, Iskăr – Iskăru – nad Iskărem. W przypad-

kach, gdy nazwa niechętnie poddaje się polskiej odmianie — zwłaszcza nazwy zakończone na -n, np. Gigen (analogicznie do Bonn, Essen, Xanten), oraz nazwy dwuczłonowe, np. Malăk Preslavec – należy pozostawić ją nieodmienną (w Gigen, w pobliżu Malăk Preslavec).

4. Formę tradycyjnej nazwy polskiej można znaleźć w: Henryk Batowski, *Słownik nazw miejscowych Europy środkowej i wschodniej XIX i XX wieku*, Warszawa 1964.

ILUSTRACJE:

1. Każda ilustracja zawarta w artykule musi być przywołana w tekście.
2. Odnośniki do ilustracji podajemy w tekście, w nawiasach kwadratowych; np. [Fig. 1], [Figs. 2–3] (w tekstach angielskich), [Ryc. 1], [Ryc. 2–3] (w tekstach polskich), [Abb. 1], [Abb. 2–3] (w tekstach niemieckich) itp.
3. Każda ilustracja musi mieć podpis objaśniający jej zawartość. Podpisy do ilustracji prosimy przesyłać jako listę na końcu artykułu (po bibliografii).
4. Podpis ilustracji musi zawierać informację o jej wykonawcy. Autorzy artykułów odpowiedzialni są za uzyskanie wszelkich pozwoleń i praw potrzebnych do publikacji nadsyłanych przez siebie materiałów.
5. Każdą ilustrację prosimy nadsyłać w osobnym pliku. Nazwy plików powinny być numerami figur przywołanych w tekście.

Zdjęcia:
Prosimy przesyłać oryginalne pliki z aparatu cyfrowego (formaty TIFF, JPEG, RAW etc.) w maksymalnej posiadanej rozdzielczości.

Skany:
Slajdy powinny być skanowane w rozdzielczości 2400 dpi i zapisywane w formacie TIFF.
Rysunki w tuszu etc. powinny być skanowane w rozdzielczości 1200 dpi, jako RGB (kolor) lub GREYSCALE (cz.-b.) i zapisywane w formacie TIFF.
Rysunki:
Ilustracje (plany, mapy, rysunki zabytków etc.) wykonane w formie elektronicznej prosimy przesyłać w oprogramowaniu, w jakim zostały wykonane, czyli Corel (do wersji X3) lub Ilustrator (AI). W przypadku korzystania z programów takich jak Autocad czy Archicad należy zapisać pliki dla formatu np. Corela.
Dodatkowo prosimy o przesłanie tych samych ilustracji w formie plików PDF lub JPG, które posłużą do wglądu.
Prosimy nie przesyłać rysunków w formie plików JPG lub PDF jako materiału ilustracyjnego, jeżeli posiadają Państwo ich wersję w programach graficznych.

Parametry dla rysunków w Corelu i Ilustratorze:
Minimalna grubość linii: 0,1 mm.
Stosowana kolorystyka: CMYK, w przypadku koloru czarnego C=0 M=0 Y=0 K=100.
W przypadku stosowania kilku odcieni szarości, różnice pomiędzy nimi powinny wynosić min. 10 %.
Czcionka Arial; przy miarce: 6 pt, w innych opisach na planach: 7–9 pt.

GUIDELINES FOR *NOVENSIA* AUTHORS

Novensia editors have prepared the present guidelines for preparing articles and materials for publishing in the periodical. All efforts by prospective authors to follow these guidelines will greatly facilitate editorial work and quicken the publishing process.

GENERAL GUIDELINES:

1. Texts should be submitted in standard font (Times New Roman, Garamond etc.) — 12 pt text, 10 pt footnotes.
2. Texts should be submitted as text documents (DOC files) and as a PDF file.
3. Illustrations need to be submitted separately; do not paste them in the text file.
4. Each article should have an abstract and keywords (in English) and summary (in Polish for texts not in Polish, in English for texts in Polish).
5. Authors are requested to provide their institutional affiliation.

FOOTNOTES:

Footnote are bottom of page and should include, beside relevant text, bibliographic references following the model below:

> LAST NAME year of publication, page range.
>
> e.g. KOLENDO 2008, pp. 120–121.

Notes:

1. Semicolons should be used to separate reference items in footnotes. For a number of works by the same author use either:
   ECK 2001; ECK 2003a
   or:
   ECK 2001; 2003a

2. All footnote references need to be listed as a full bibliographic reference at the end of the article.

LIST OF BIBLIOGRAPHIC REFERENCES:

A list of bibliographic references follows the text of the article.
Each item on the list begins with:
LAST NAME year of publication —

Followed by:

1. Book:

F. Last name, *Title*, place of publication.

e.g. Parnicki-Pudełko 1990 — S. Parnicki-Pudełko, *The Fortifications in the Western Sector of Novae*, Poznań.

2. Book in series:

F. Last name, *Title* (= *Name of series* number in series), place of publication.

e.g. Kunisz 1987 — A. Kunisz, *Le trésor d'antoniniens et de folles des 'Principia' de la légion de Novae (Bulgarie)* (= *Studia Antiqua* 10), Warszawa.

3. Article/chapter in collective work:

F. Last name, "Title of article/chapter", [in:] *Title of collective work*, ed. F. Last name, place of publication, page range.

e.g. Dyczek 2005 — P. Dyczek, "On the genesis of Roman legionary hospitals", [in:] *Limes XIX, Proceedings of the XIXth International Congress of Roman Frontier Studies, Pécs, Hungary, September 2003*, ed. Z. Visy, Pécs, p. 871–881.

4. Article/chapter in collective work published in a series:

F. Last name, "Title of article/chapter", [in:] *Title of collective work*, ed. F. Last name (= *Name of series* number in series), place of publication, page range.

e.g. Kolendo 2008 — J. Kolendo, "Novae during the Goth raid of AD 250/1 (Iordanes, *Getica* 101–103)", [in:] *A Companion to the Study of Novae*, ed. T. Derda, P. Dyczek, J. Kolendo (= *Novae. Legionary Fortress and Late Antique Town* 1), Warsaw, p. 117–131.

5. Article in periodical:

F. Last name, "Title of article", *Title of periodical* number of periodical, page range.

e.g. Lemke 2009 — M. Lemke, "Stone projectiles from Novae", *Novensia* 20, p. 209–219.

6. Article (item) in encyclopedia:

F. Last name, "Title of article (item)", *Title of encyclopedia* volume number (optional), place of publication, page or column range.

e.g. Cermanović-Kuzmanović 1976 — A. Cermanović-Kuzmanović, "Risinium", *The Princeton Encyclopedia of Classical Sites*, Princeton, p. 760.

Notes:

1. Items by the same author published in one year need to be identified by successive letters of the alphabet (e.g. 1998a, 1998b, 1998c etc.), listed in alphabetical order of titles.
2. Multiple authors need to be cited in the order on the title page, separated by commas. For more than three authors, list name of first author only and add *et alii.*
3. For book titles in English capitalize all words; in article titles in English capitalize only proper names.
4. For repeated citing of popular series (e.g. *CIL*) and encyclopedias (*RE*) list relevant abbreviations; write out in full if cited only once.
5. In case of titles in other than congress languages include translation into the language of the article, in square brackets [ ].
6. Pages (columns) should be preceded by the relevant abbreviation in the language of the article (PL: s., kol.; ENG: p./pp., col./cols; DE: S., Sp., etc.).
7. Page ranges should be given with 'en dash' (see pt. 9 below) without spaces, e.g. 22–35.
8. For multiple publication place names use 'en dash' (see pt. 9 below) with spaces, e.g. Warszawa – Kraków – Wrocław.
9. 'En dash' — key combination Ctrl + – (from the number keyboard).
10. Internet citations should provide full URL in footnotes as well as bibliography. Please provide access dates in each case. If a hard-copy version exists, do not cite electronic version.

TRANSLITERATION RULES FOR PROPER NAMES IN THE CYRILLIC ALPHABET

Proper names (geographical names, personal names and last names) in the Cyrillic alphabet should be transliterated according to the following rules:

Cyryllic alphabet	transliteration
а	a
б	b
в	v
г	g
д	d
е	e
ж	ž
з	z
и	i

й	j
к	k
л	l
м	m
н	n
о	o
п	p
р	r
с	s
т	t
у	u
ф	f
х	h
ц	c
ч	č
ш	š
щ	šč (Russian); št (Bulgarian)
ъ	ă (Bulgarian)
ы	y (Russian)
ь	’
э	e (Russian)
ю	ju
я	ja
ђ	đ (Serbian)
ѓ	g’ (Macedonian)
љ	lj (Serbian)
њ	nj (Serbian)
ћ	ć (Serbian)
ќ	k’ (Macedonian)
џ	dž (Serbian)

ILLUSTRATIONS:

1. Illustrations included with an article need to be cited in the text.
2. References to figures are given in the test in square brackets; e.g. [Fig. 1], [Figs. 2–3] (in English), [Ryc. 1], [Ryc. 2–3] (in Polish), [Abb. 1], [Abb. 2–3] (in German) etc.
3. Provide captions for figures describing content. List of figure captions can be appended at the end of the article (after the list of bibliographic references).
4. Include credit information. Authors are responsible for obtaining all relevant copyright permissions required for the legal publication of submitted materials.
5. Submit illustrations as separate files identified by the number of the figure as cited in the text of the article.

Photographs:
Photographs should be submitted as original digital files (TIFF, JPEG, RAW etc.) in maximum available resolution.

Scans:
Scan transparencies in 2400 dpi resolution and submit as TIFF files.
Ink drawings etc. should be scanned in 1200 dpi, as RGB (color) or GREYSCALE (black/white) in TIFF format.

Drawings:
Digitized figures (plans, maps, drawings of objects etc.) should be submitted as files of the original software in which they were done, that is Corel (not higher than X3) or Ilustrator (AI). For Autocad and Archicad software, files should be saved in Corel format, for example.
Submit all illustrations of this kind additionally as PDF or JPG files for inspection.
Avoid submitting JPG or PDF files of figures prepared in one of the graphic software programs.

Parameters for figures drawn using Corel or Illustrator software:
Minimum line thickness: 0.1 mm.
Color: CMYK, for black C=0 M=0 Y=0 K=100.
For shades of gray, the difference should be at least 10%.
For legends, Arial font; next to scale: 6 pt, other parts of the legend: 7–9 pt.