



Colloque international

Actualité archéologique
ukrainienne :
olbia pontique, Le Limes et Les barbares

Actualité archéologique ukrainienne :
Olbia Pontique, le *limes* et les Barbares

Актуальні питання української археології :
Ольвія Понтійська, Римський *лимес* і Варвари

Актуальные вопросы украинской археологии :
Ольвия Понтийская, Римский *лимес* и Варвары

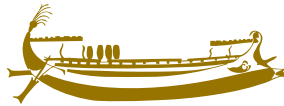
Current Ukrainian archaeology :
Pontic Olbia, the *Limes* and the Barbarians

ACTUALITÉ ARCHÉOLOGIQUE UKRAINIENNE : OLBIA PONTIQUE, LE *LIMES* ET LES BARBARES

Pré-actes

publiés sous la direction de Pascal Burgunder

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« Etudes Bosphoranes »



Etudes Bosphoranes | Bosporan Studies

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Préface du Directeur de la Coopération Suisse en Ukraine, Ambassade de Suisse, Monsieur Holger Tausch

Kyiv, le 4 décembre 2018

L'Ukraine est plus que jamais à la recherche de son histoire et de son identité, à l'heure des réseaux d'information surmultipliés et des fausses vraies nouvelles, à l'heure de l'absence de temps pour les analyser. À cet instant de la confrontation entre deux mondes, nous nous voyons exposés à un pays qui se retrouve à la croisée des chemins entre son histoire récente - faite de multiples et profonds malheurs depuis sa première et courte indépendance, un siècle plus tôt - et son futur, que l'Ukraine essaie de définir à l'aide de pièces rapportées de son histoire.

L'archéologie est là, justement pour lui apporter des bribes, bien plus anciennes, de son riche passé et pour le nourrir de faits scientifiques qui démontrent inexorablement la grande variété dont le pays est fait. Mais, qu'en est-il de « l'actualité archéologique » ? N'est-ce pas là, dans le titre même de ce colloque que nous retrouvons cette confrontation directe entre passé et présent, entre ce qui fait le buzz et ce qui fait l'histoire ?

On est en droit de se demander qui, aujourd'hui, parmi la population d'Ukraine méridionale, à Odessa ou à Mykolaev, connaît encore l'existence même d'Olbia du Pont. Cette cité antique qui se dressait jadis non loin de là et dont il ne reste aujourd'hui qu'un lointain souvenir - cultivé probablement seulement grâce à ceux qui cherchent et restaurent les traces de ces monuments d'un temps révolu.

Merci à vous, archéologues de tous horizons qui, avec patience, précision et passion, ouvrez nos yeux sur les réalités d'une autre époque et qui permettez de prendre de la distance avec les visions politiques contemporaines souvent myopes de son futur et sourdes d'un passé pourtant riche et divers ! Merci d'éclairer d'une lanterne scientifique, les cercles les plus intéressés, d'abord, et de disséminer, ensuite, cette connaissance le plus largement possible !

Ces quelques mots pour encourager le succès de ce colloque et apporter notre soutien continu à une cause que la Suisse, au travers de la DDC, a également appuyé en Ukraine au moyen de programmes ciblés encourageant les partenariats scientifiques entre nos deux pays.

Introduction

Pascal Burgunder, Secrétaire scientifique du pôle de recherche « Etudes Bosporanes »

L'idée d'organiser un colloque consacré à des problématiques archéologiques en lien avec Olbia du Pont a surgi assez naturellement : une invitation à prendre part au *Forum olbicum*, à Nikolaev, rendait la présence d'Olbia aussi évidente qu'intrigante et une excursion sur le site de l'antique cité grecque, dans la lumière du mois de mai, achevait de charmer le voyageur.

Sans doute le souvenir de Valentina Krapivina, collaboratrice scientifique à l'Institut d'archéologie, à Kiev, cheffe d'expédition et Olbiopolitaine d'adoption, n'était-il pas étranger à cette rencontre, puisque l'archéologue ukrainienne avait évoqué presque dix ans plus tôt, à l'occasion d'une table ronde lausannoise dédiée déjà aux Sites archéologiques du bassin pontique, les principaux résultats des fouilles menées à Olbia Pontique*.

Les efforts déployés par Valentina Krapivina dans ses qualités de chercheuse et de pédagogue avaient porté leurs fruits, de même que l'inlassable engagement de Nadežda Gavriljuk en faveur de la recherche archéologique ukrainienne et de la jeune génération d'antiquisants : malgré une conjoncture politique et économique défavorable, notre connaissance de la cité grecque d'Olbia du Pont progressait, les premiers contours de ses campagnes (sa chôra) se dessinaient, de même que se précisaient encore les modalités de son voisinage « barbare », scythe et sarmate. Portant sur une période plus proche de nous, celle de l'Empire romain, des investigations récentes mettaient encore en lumière les vestiges d'une ligne défensive qui poursuivrait, en quelque sorte, le limes rhéno-danubien.

La dernière saveur du programme SCOPES lancé par le Fonds National Suisse pour la recherche scientifique (FNS) – constitué de subsides destinés à l'organisation de conférences scientifiques – allait constituer une merveilleuse opportunité de présenter en Suisse les derniers résultats de la recherche archéologique ukrainienne, comme en triptyque : à Olbia Pontique revenait le rôle d'axe central, autour duquel allaient être présentées des thématiques traitant aussi bien des populations voisines que des fortifications romaines établies en Ukraine méridionale.

Puisse donc cette nouvelle initiative entreprise dans le cadre du pôle de recherche « Etudes Bosphoranes » être l'initiatrice de nouveaux projets, puisse-t-elle favoriser l'échange entre les chercheurs, puisse-t-elle enfin trouver un auditoire curieux et ouvert à des territoires qui, en étant géographiquement proches, nous paraissent parfois éloignés !

Remerciements

L'organisation du colloque a été rendu possible grâce à un subside octroyé par le Fonds National Suisse pour la recherche scientifique (FNS) dont le programme de coopération scientifique avec les pays d'Europe médiane et ceux issus de l'Union soviétique (connu sous l'acronyme SCOPES) prenait fin cette année, après une bonne quinzaine d'années d'existence. Nous sommes également reconnaissants à la plateforme des études ukrainiennes en Suisse URIS, en particulier aux Prof. Korine Amacher et Frithjof Benjamin Schenk, d'avoir immédiatement soutenu notre démarche et proposé un soutien financier. La Fondation Vidrodgenia, de même que la Fondation Gandur pour l'Art, ont généreusement contribué à l'édition des pré-actes. Enfin, nous sommes redevables au Prof. Michel Fuchs, à l'Université de Lausanne, pour avoir encouragé ce projet, dans sa libéralité coutumière, ainsi qu'à Marek Choejcki, pour son aide à l'organisation du colloque et à la relecture des textes. Que toutes et tous trouvent ici l'expression de notre sincère reconnaissance !

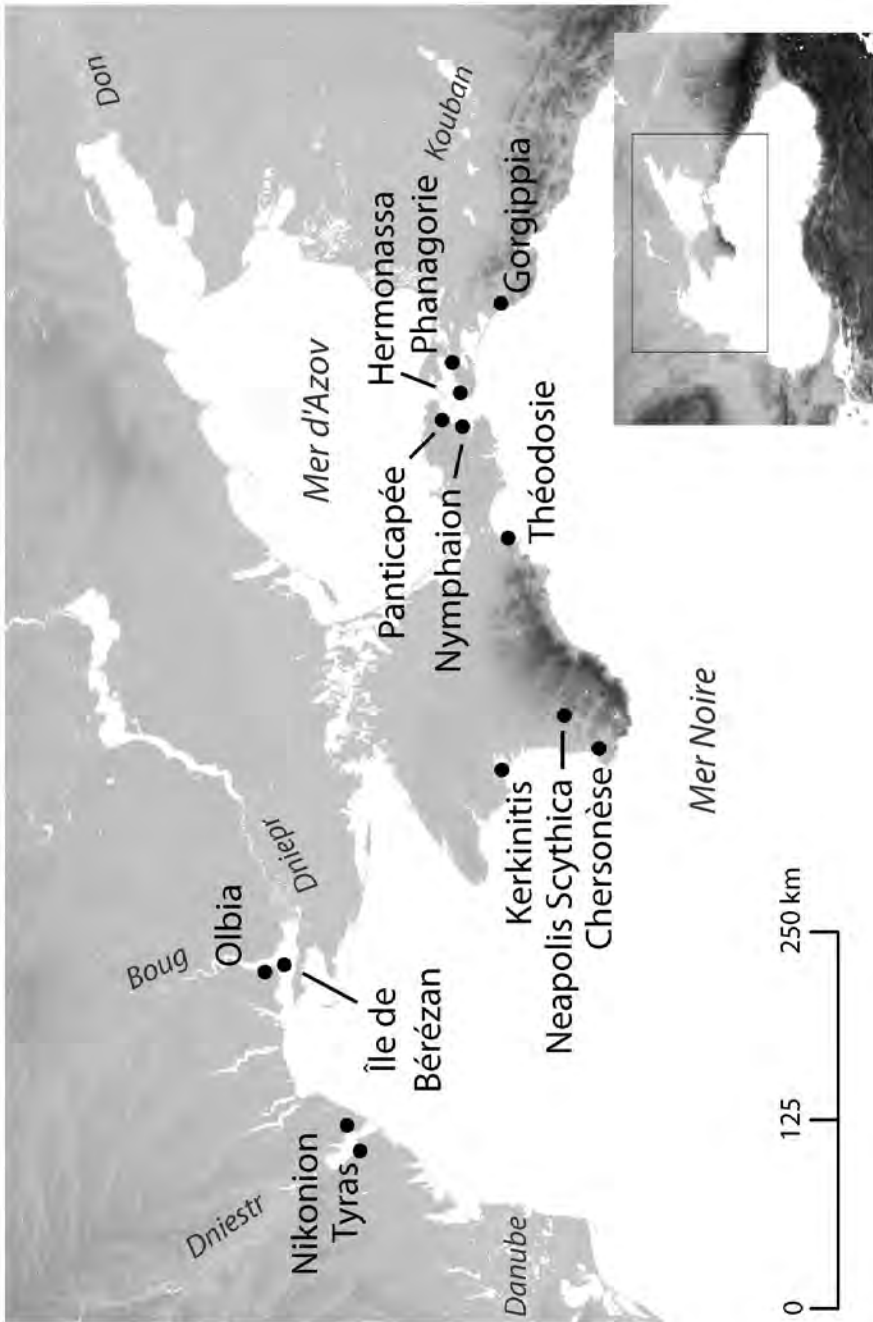
Usage et limites du livret

Le présent volume de pré-actes assume une vocation modeste : celle de servir de support aux conférences données durant les deux journées du colloque. En conséquence, nous n'avons pas appliqué de normes éditoriales strictes ni n'avons imposé aux auteurs de règles dans la translittération, ce que la rigueur exigerait évidemment dans le cas de la publication d'authentiques actes. Dans tous les cas, les indications bibliographiques, comme les illustrations, reproduites ici avec le luxe de la couleur, devraient orienter le lecteur curieux et lui offrir un digne panorama des derniers résultats de la recherche archéologique.

* Voir V.V. Krapivina, Olbia Pontica. Principaux résultats des fouilles menées de 2006 à 2010, in P. Burgunder (ed.), Etudes Pontiques. Histoire, historiographie et sites archéologiques du bassin de la mer Noire, Lausanne, 2012, 261-273.



Carte des cités fondées par les Grecs dans les bassins de la Méditerranée et de la mer Noire.



Carte du littoral septentrional de la mer Noire © UNIL/«Etudes Bosphoranes» (DAO L. Saget).

OLBIA PONTIQUE

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**Greeks and Barbarians of the Northern Black Sea area during
the Archaic period (the end of the 7th-6th centuries BC)**

The problem of Greek colonization in the Northern Black Sea area. Almost a hundred years ago Friedrich Bilabel has published his "Die ionische Kolonisation. Untersuchungen über die Gründungen der Ionier, deren staatliche und kulturelle Organisation und Beziehungen zu den Mutterstädten". This book became the first monographic thorough and meticulous study of Greek colonization by means of classical philology and epigraphy. But the phenomenon of the overseas spread of the Greek ancient world is still not completely understood even in our time. Despite many decades that have passed since Bilabel's work even the terms "colonization", "colony" are highly controversial and are recently widely debated. Our understanding of 'colonizations' (especially Greek) has changed radically in 21st century. But a complete rejection of the terms "colony", 'colonization', etc. is unfeasible because such concepts are being too much enshrined in practices and intuitively are almost undeniable. I. Malkin summed up the discussion by saying, "Historians of Greek colonization have never been happy with the term 'colonization' yet to this very day, nobody has come up with a viable alternative." Further we will use the term 'colonization' as a complex process of development of new lands on overseas shores in sites with highly attractive agriculture, mining, biological resources including fishing and stockbreeding and with full or partial reproduction of the mother-city socio-economic institutes and institutions including foundation of settlements (independent or not) often in different forms of city-states.

Studies of Greek colonization phenomenon has been carried out in many directions and varied fields not only in classical philology but in classical archaeology too. From F. Bilabel and until the end of the 20th century, significant results on Greek colonial expansion have been generalized and summarized in books written by Alexander Lessen, Thomas Dunbabin, Dmitry Kallistov, Dmitry Shelov, John Boardman, Alexander Graham, Vladimir Lapin, Anthony Snodgrass, Valery Yaylenko, Norbert Ehrhardt, Irad Malkin, Jury G. Vinogradov, Gocha Tsetskhladze. The growth of Post-Millennium bibliography has increased significantly in comparison with the previous age. More detailed studies which focuses to narrow areas, has some advantages and allow us to achieve more comprehensive result. A. Ivanchik's monographic philological study of

the pre- and early colonization (Ivanchik 2005) stands out among publications of the new 21st century. Aside from the A. Ivanchik's book, should be noted also a large number of thematic collections of works devoted to various aspects of colonization. As a rule, these books are proceedings of numerous highly qualified conferences. It was found that one of the most promising ways to formulate and find solution to problems of ancient colonization were economic approaches.

But investigations of the economic base of Greek colonization are still incomplete in many aspects. As it is known, the most appropriate access to the studies of the ancient Greek economy is the approach on the base of the New Institutional economics (NIE). Its ways have been represented in the works of Jan Morris, Alan Bresson, Leopold Mizho, Walter Sheidel, Peter Temin, N. Gavrylyuk (Gavrylyuk 2014) and others. The spread of Greek civilization into the northern Black Sea region began at the Archaic period. Its leading conductor was Miletus, considered as one of the greatest and wealthiest Greek cities. From another hand Miletus was under strong pressure from its neighbors, for example Samos or the powerful Lydia, and then Persia on the mainland. So the Greeks had to discover the New World for themselves on the coasts of Black Sea. Borysthenes and Olbia were established by Milesian settlers respectively in the middle 7th and middle 6th centuries BCE.

Greek settlers were well informed about strategic principles of placing their centers. The earliest Greek centers had been located near the mouths of Dniester, Dnieper, Don and others rivers because the mouths of the giant rivers of Eastern Europe were successful solution of many tasks of colonization.

But what are **the reasons for the success** of the Greek colonization of the Northern Black Sea region? In my opinion, the most important was the fact that the barbaric population here was practically absent. Mapping of Scythian burials of the 7th – first half of the 6th cc. BCE (17 points) (Murzin 1984), indicates their localization on the left bank of the Dnieper. That is, the steppe zone of the Greeks in this period might be terra nullius. In this case, we can talk the right of conquest the right of a conqueror to territory taken by force of arms. It was the first reasons for the success of the Greek colonization of the Northern Black Sea Area.

The second reason for the success of the Greek colonization of the mouth of the Dnieper-Bug estuary was that the outlines of the coastal zone in the Berezan peninsula almost repeated the contours of the coastal zone in the Miletus region.

In Cyrillic historiography, it is customary to single out **two periods** of the Great Greek colonization of the Northern Black Sea region.

The first phase of Greek colonization in the Lower Bug region is associated with the emergence and existence of settlement in the second half of VII - beginning of the VI century. It arose on the place of the modern island of Berezan. It was the first Ionian apoikia in the region. Berezan served as a fishing port. It was situated near fertile arable land on both banks of Berezan Estuary on the mainland. Thus, from the second quarter of the VI BC this coastal area was populated and Berezan's chora (from 20-25 rural settlements) had been formed. But only three sites (Great Chernomorka 2, Beikush, Victorovka) were excavated. Some scholars think that from this period began the massive process of land development by Greeks of this region (Kryzhytsky, Buyskikh, Burakov, Otreshko, 1989, p. 20-21).

The second phase of Greek colonization in the Lower Bug region Twin Borysthenes/Olbia as the Miletus colonies in the Northern Black Sea area. Materials of both cities can be used to develop an example model of Greek colonization in whole and to work-out of the factor of Hinterland in the Lower Dnieper and Bug in particular. After establishing a colony, inevitably begins a deepening process of their cultural and especially social and political autonomy. Another factor of the successful development of the Greek colonies is the factor of their hinterlands. The term "hinterland" has come a long way of development. Initially, it had very a simple meaning. The word was applied to the inland region lying behind a port (George Chisholm). Gradually, its content has evolved and become richer and varied. The term was used not only by geographers, economists, but also diplomats, politicians and finally historians. "Hinterland" has received the status of a concept that expresses the influence of inland region on the general state economic and political processes. Today it has several semantically related meanings. For example, the so-called "doctrine of the hinterland" is known.

We believe that "Hinterland" is the land or district situated behind a system-creating center on a coast or nearby the shoreline of a river. It included either one or more rural areas or craft settlements or removed territories with different resources or in-

frastructures, which were interdependent and closely linked economically between themselves.

Both Greek centers, Borysthenes and Olbia, had an extensive long-range hinterland. If at the first stage of colonization it was a free land, then at the second stage it was already inhabited by nomadic. The number of Scythian burials increases by 2-3 times. The question arises about the ethnicity of the neighboring population. The second question is the extent to which they entered into the composition of the population in Olbia and Berezan. There is a hypothesis that the handmade pottery confirms the habitation of the barbarian population in the Greek centers of the Northern Black Sea region. In our science there is the concept of "Scythian pot". The study of the handmade pottery from the materials of the Berezan, Olbia, their chorai and from the Scythian monuments testifies to the reverse process.

In the archaic layers of Berezan, Olbia there is indeed a large amount of handmade ceramics. It includes several genetically heterogeneous groups. Thus, in the archaic dugouts of Berezan, 34 % of the vessels have analogies in "Thracian" territory (Fig 1); more than 24 % ceramics came from the forest steppe zone of the Northern Black Sea Region, 30 % repeats the forms of Greek gray clay ceramics (Fig.2). Among the polished ceramics, which had previously been associated only with Kizil-Koba ceramics, only 2 % of the fragments belong to it, there are fragments of pithy from Colchis, fragments of beaker, having analogies in glossy Pre-Scythian ceramics (Fig.1) (Gavrylyuk 2017, 117-194).

Thus, the question of the relationship between the Greek and the barbarian component in the Northern Black Sea region during the archaic period is complex and should be considered only after a comprehensive study of the material culture of both Greek and Scythian artifacts.

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Fig.1 Thracian handmade pottery from the archaic Borysthenes (1-9) and its *chora* (10-12).



Fig.2. Greek (1-10), Cimmerian (11,15), Kizil-koba (13-14) and Colchisian (12) handmade pottery from the archaic Borysthènes

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Urbanisation of Berezan settlement and Olbia in the 6th – early 5th centuries BC.

The earliest building phase in Olbia, Borysthenes and the settlements of the Olbian (and Berezan) chora is represented by primitive dugouts of various layout (circular, oval, rectangular), carved in the underground. The dating of the transition to the building of above ground stone and mud brick houses from the earliest dugouts and the reasons for this change were for a long time among the most controversial problems in the history of the Berezan island site. This transition, which consisted in the beginning of the large-scale building of mudbrick and stone houses, and the emergence of the grid of house blocks, is dated to the 540^s BC, based on the results of recent investigations. Apparently it coincides with the arrival of a big wave of colonists, and almost simultaneously with the establishment of the Persian Achaemenid protectorate over Ionia after the defeat of the Lydian kingdom in 546 BC (Herod. I, 153-168). Perhaps the same events can be associated with the rapid growth of Olbia and its rural environment, construction of the first mudbrick and stone temple, and a rapid increase of the amount of offerings in the West Temenos. Moreover, some similarities between the ground plans of archaic Olbia and Borysthenes also show that their settlers had similar ideas about the development of urban space, and the urbanization of these centers took place almost simultaneously.

Although the urbanization process of the archaic Berezan settlement was quick, it could be divided into certain phases. The earliest phase is exemplified by the so-called "colonist's houses". A typical "colonist's house" is a partially submerged into the ground single-room rectangular building with walls made of mudbrick and stone, or with wattle and daub walls. These structures represent the transitional type from the dugouts of the early Berezan settlement to later multi-chamber houses, but typologically they were close to the latter ones, and probably belonged to the first inhabitants of the urbanized settlement formed on Berezan around the middle of the 6th century BC. Besides, one could observe an obvious link between the location of such dwellings and the subsequent insulae grid. Some of the "colonist's houses" either have the same orientation as the later multi-room buildings, or they fit within the later streets borders. Apparently, appearance of such structures on the Berezan settlement belongs to a relatively short phase preceding the beginning of mass construction of

the above the ground houses. Some of these edifices could belong to the vanguard of the "second wave" of the Berezan colonization. It is also probable that some of them could serve as first temporary shelters, built by the colonists of the "second wave" immediately after their landing.

It can be noted that dugouts, located in a line along the main longitudinal street of Olbia, also had an exceptionally rectangular shape, although within other excavation sectors (AGD, R- 25) both rectangular and circular dugout dwellings were investigated. This can serve as an additional confirmation of the fact that urban planning processes took place in Berezan and Olbia in a similar way and at a very close time.

According to the latest excavations, around the last quarter of the 6th century BC, i.e. several decades later than in Borysthenes, the dugouts in Olbia were replaced with above round houses, with a square plan and mudbrick walls. Apparently, these houses appeared simultaneously with the new regular city planning system, implemented at Olbia a short time later than at Borysthenes. Remains of the late archaic houses, included in the rectangular grid system of streets were recently uncovered next to the territory of the Southern Temenos within the sector R-25. These data, combined with the results of B. Farmakowsky, who excavated the late archaic crossroads between the Main Longitudinal and transversal streets in the centre of Olbia in 1924, could prove the presence of regular street grid in Olbia at least from the late 6th century BC (Bujskikh 2015, 7-15; Bujskikh 2018).

The street network of the Berezan settlement that emerged in 540s BC, existed with few changes for less than a century, i.e. until the second quarter of the 5th century, when the settlement was abandoned by most of its inhabitants. Although this urban period of the Berezan settlement's existence is quite short it can be divided into certain phases. Two main phases (II-A and II-B) can be demonstrated due to the traces of fire and massive destructions, which happened approximately in the last quarter or in the late 6th century BC. These catastrophic events, the cause of which is unclear, were followed by a new phase of construction activity. Evidence of that reconstruction was recorded during the archaeological survey in the various areas of the site, although often rebuilding affected the individual houses, without substantial changes to the insulae borders.

Recent investigations permitted to implement the essential corrections in the first planning scheme of the archaic city of Borysthenes, suggested by S.L. Solovyov ac-

ording to the data for the beginning of the 90th. New excavations demonstrated his idea about the presence of a city grid plan consisting of a system of blocks, separated by streets with a standard width (3,2-3,5 m) and more narrow crossing streets, but showed that the insulae grid was not completely orthogonal (Chistov, Krutilov 2014, 216-220). The city street network included no less than five main longitudinal streets running approximately from West to East. In reality these streets were not straight and strictly parallel, and besides they had some visible variations from the perpendicular direction. A number of perpendicular streets that crossed the ancient peninsula from the North to the South were larger, but until now almost ten of them were excavated in different sectors. It appears that in the western part of the city latitudinal streets had almost strong north-south orientation, and that in the central and eastern parts they demonstrate the different deviation to the southeast. This can be explained by the shape of the ancient peninsula as well as by the supposed location of the civic center of the archaic colony (Chistov 2015; Bujskikh, Chistov 2018).

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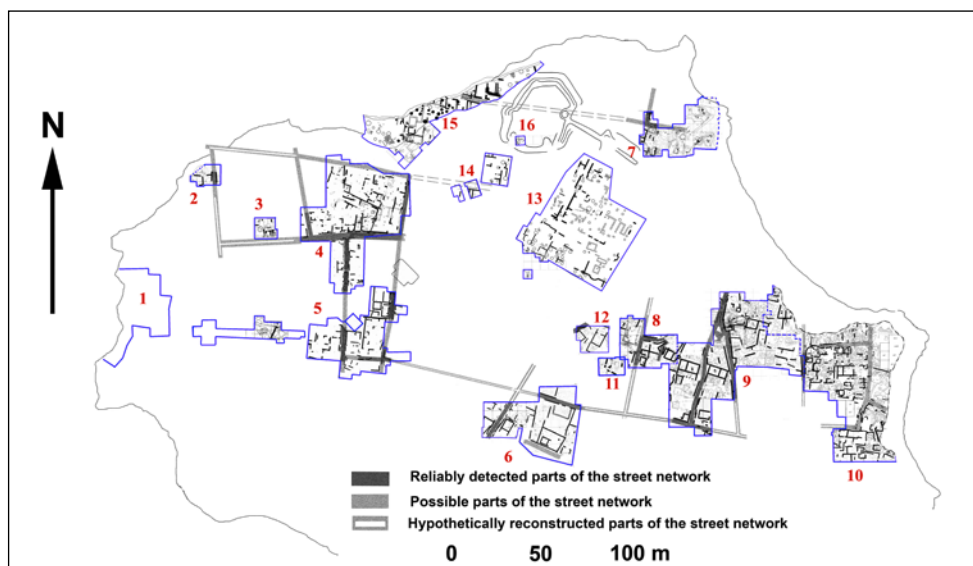


Fig. 1. Possible reconstruction of the street network of Berezan settlement. Numbers of the excavation sectors on the plan: 1 – Necropolis, 2 – sector “S-1” (Northern-1), 3 – sector “S-2” (Northern-2), 4 – sector “North-western A”, 5 – sector “North-western B”, 6 – sector “T”, 7 – sector “G”, 8 – sector “R-1v” (eastern), 9 – sector “O”-Western, 10 – sector “O”-Eastern, 11 – sector “R-1” (western), 12 – sector “G.Sh.”, 13 – sector “A1”, 14 – sectors “C4-6”, 15 – sector “B8”, 16 – sector “Zh”.

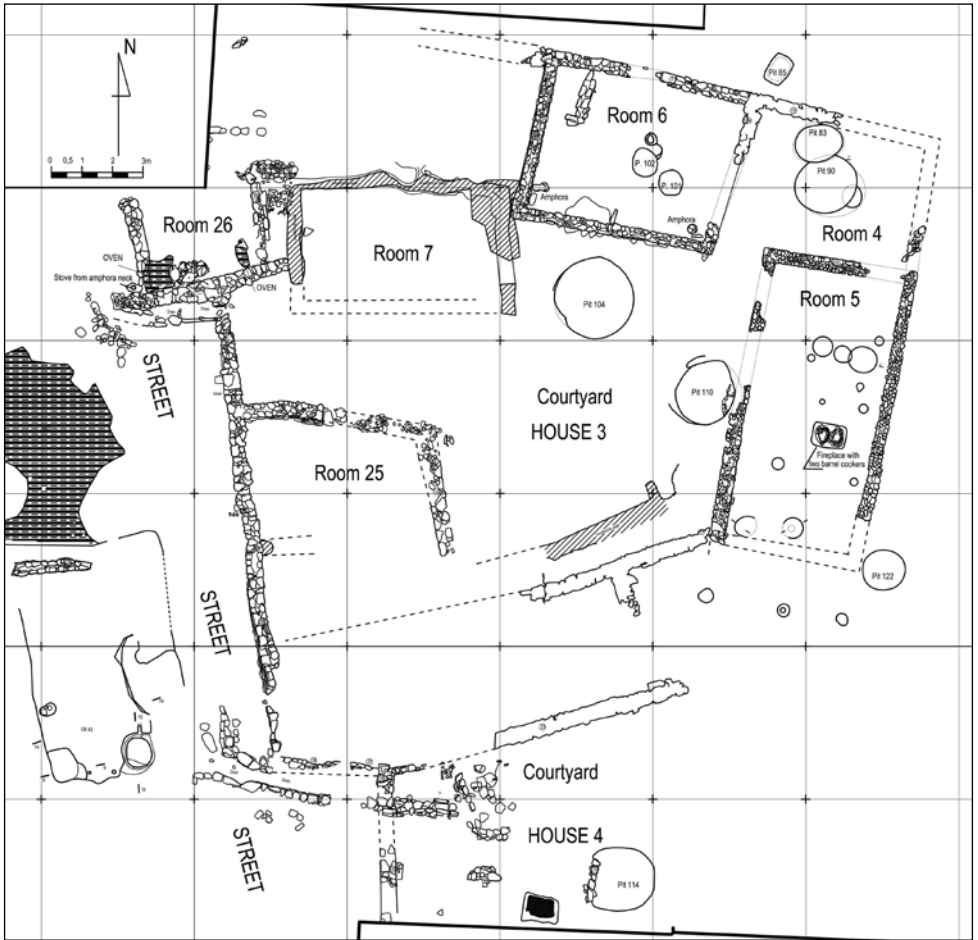


Fig. 2. Berezan, plan of House 3, sector "O-Eastern". Early phase II-A (third quarter of the 6th century BC).



Fig. 3. Berezan, western part of House 3. Phase IIA. View from the south-east.

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Lamps of Olbia Pontica: the end of the 7th c. BC – the beginning of the 5th c. AD

Interest in the material culture of the ancient cities of the Northern Black Sea region is caused, first of all, by the lack of a system generalizing works on similar issues. Such a statement is quite true for lamps, despite the fact that in recent years ancient lighting devices attracted the attention of researchers more often. Therefore, the large and diverse typologically collection of lamps from Olbia Pontica is of considerable interest. The research is devoted to a complex analysis and characterization of the collection of lamps from the end of the 7th c. BC till the beginning of the 5th c. AD of Olbia Pontica and its settlements. More than 5000 lamps were studied, found on the territory for the whole period of the existence of Olbia.

A critical analysis of the scientific literature and the history of the study of lighting devices is examined by the author. On the development of native historiography, it should be noted that only during the last two decades the work related to the study of lamps was separated from the work on ancient ceramic products originating from the Northern Black Sea Coast. In this case, the vast majority of researchers drew attention mainly to the lamps that were found in the Bosphorus (Arsenieva 1988; Zhuravlev 2005; 2007; 2010; 2011; Zakhochai 1994; Khachaturova 2002). The collection of lamps originating from the Northern Black Sea, in particular from the territory of the Olbia Pontica, still remains unknown to the wide scientific community.

The study of lamps in foreign historiography is fundamentally different from the experience of the native one. Publications of excavation materials from the cities and necropolis of the ancient Mediterranean, occurred not sporadically, but systematically, and as a result the lighting devices from the very beginning occupied a considerable niche among the remaining categories of consumer ceramics (Hermanns 2004; Bezzola 2004; Zimmer, Furtwängler 2003; Dupont 2005; Boardman 1966; Boardman, Hayes 1973; Vivliodetis 2012).

The created typology of lamps from Olbia includes 60 types and their variants, which contain both imported and local replicas. The division is based on typological and chronological principle. In addition, material from which the lamps were produced,

production centers, clay, morphology, shape and coating of lamps, are also used as parameters of classification.

The production technology of lamps and their usage, over time, attracts attention of the researchers as well. In addition, due to the significant chronological range, a change over time of the dynamics of lamp forms can be traced, from an open mold (Fig. 1, 1) to semi-closed (Fig. 1, 2-3) and closed forms (Fig. 1, 4).

Through analogies to the lamps from the Mediterranean and other ancient centers, it is possible to trace trade relations of cities importing lamps found on the territory of Olbia. Also, statistics of imports and local manufacture can reveal the ratio of lamps in chronological order.

The author also gives a description of the production technology of lamps and their usage. Several molds for lamp manufacturing were found (Fig. 2, 1-2) and also a lamp matrix (Fig. 3). Separately, the experimental data on the usage of antique lamps is noted (Fig. 4; Fig. 5). Those statistics made it possible to distinguish between pre-Roman imports and local productions and Roman times in the areas of Olbia and its settlements. Most researchers tend to think that there were no special workshops for manufacturing separate from ceramics. Therefore, the composition of clay, coating, and sometimes decorative motifs do not differ from those that has the rest ceramic products.

The main functional purpose of lamps was, of course, lighting. They were used not only in everyday life, but also in public buildings, temples, and theaters. That is why they could play the role of votives in certain temples (Bailey 1975, 9). In addition, numerous finds of lamps in necropolis indicate that they also had a ritual role in the funeral ceremony. The lamp could also be used simply as a storage tank for oil.

The experiment on the usage of lamps was conducted in 2014. Four clay lamps were taken, three of which were authentic antique items, and one – made by a modern potter. The tasks of the experiment were as follows:

- 1) to determine the amount of time for the lamp to completely burn with full reservoir of fuel;
- 2) to find out the difference between the various composition of clay, the coating and their relationship with the duration of the combustion and the impenetrable ability of clay;
- 3) to trace the connection between the degree of closure of the object with the duration of the combustion;

- 4) to find out which type of lamps would be the most convenient in transportation during combustion :
with a high stand and a handle, without a stand and without a handle, without a stand and with a handle, and without a handle and with a vertical loop-handle.
- 5) to check the degree of illumination of a room from the lamps.

As a result of this experiment, it was found that for a roughly identical amount of fuel, the total amount of time required for full burning up for Hellenistic period objects was 6 hours, 20 minutes, and 7 hours, 33 minutes, as for early wide-open lamps of Classical period it was 2 hours, 05 minutes. This difference in time is explained by two factors: firstly, the shape of products (the high and semi-closed form of the product does not allow the fuel to evaporate, in contrast to the low and open form); and secondly, the intensity of the fire (with a low fire, the product will burn longer).

Lamps are an important material for dating objects, because they served as attributes of daily usage, and they are found in mass. Made from clay (as opposed to metal versions), they had a rather limited period of usage, as they often broke down, and needed to manufacture new ones that did not necessarily repeat the shape of the previous ones. As a result, we get a change in the shape and details for greater ease of usage.

Thus, massive ceramic material, which, in our opinion, includes antique lamps, is primarily an archaeological source to study the characteristics of production and trade. The chronological distribution of lamps originating from the territory of Olbia and its settlements can be divided into imported types and local ones as follows: the Archaic period (Attic and Corinthian products occupy the first two places; local types make up a small part); the Classical era (the situation is changing in favor of increasing the number of local products, even somewhat prevailing trusted types of Ionia, however, Attic products still continue to dominate); Hellenistic period (local production represents the largest share of lamps of the given period, with the foreground of the Asia Minor centers that extensively export their products to our region): Roman time (the prevailing of local types is the biggest, but rather numerous amount is represented by Asia Minor and Italian production centers).

Particular attention is deserved for the comparison of two, significant in number, lamp collections of the Northern Black Sea region: the Cimmerian Bosphorus and Olbia Pontica. The Olbian collection of lamps is quite varied in typological terms. When compa-

ring those two significant collections, it is worth noting that the Olbian one has more varied types, both imported and local ones, which can be seen in favor of the idea of long and strong relationships with ancient centers not only in the Northern Black Sea, but also in the Mediterranean. However, it should be noted that in each region can be distinguished specificity in the manufacture of local replicas, which is manifested not only in the excellent dough of clay and impurities, but also in the choice of types for the replicas manufacture.

The recent years of systemic archaeological research and finds of lamps on the territory of Olbia Pontica and its settlements, can shed some light on certain issues on the very first and the last periods of Olbia Pontica existence in the Black Sea region and to its historical processes at that time.

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Fig. 1

Fig.1. to determine the amount of time for the lamp to completely burn with full reservoir of fuel;

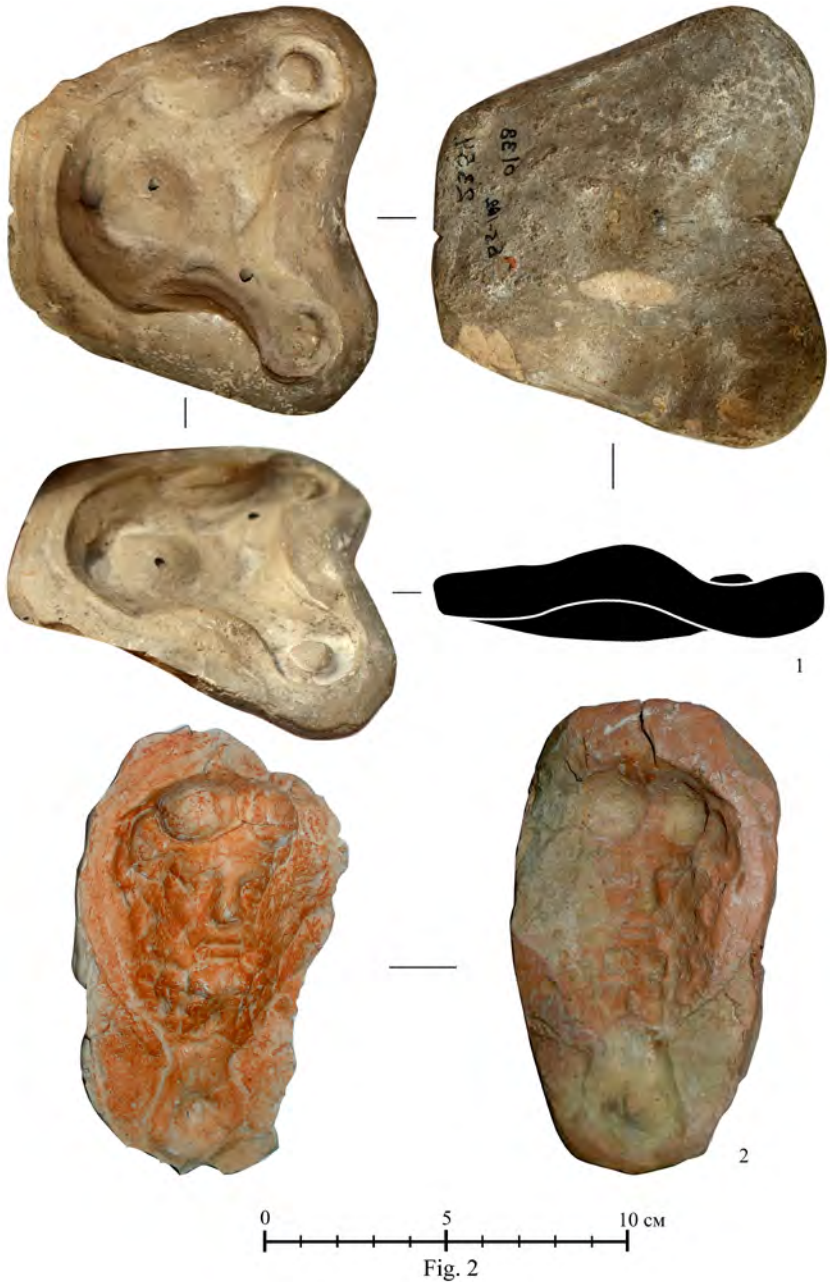


Fig. 2 Find out the difference between the various composition of clay, the coating and their relationship with the duration of the combustion and the impenetrability of clay;



Fig. 3

Fig. 3 Trace the connection between the degree of closure of the object with the duration of the combustion;



Fig. 4

Fig. 4 Find out which type of lamps would be the most convenient in transportation during combustion: with a high stand and a handle, without a stand and without a handle, without a stand and with a handle, and without a handle and with a vertical loop-handle.



Fig. 5

Fig. 5 Check the degree of illumination of a room from the lamps.

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Ancient glass in Olbia before the invention of blowing

Some varieties of material culture reflected the common Greek identity of Mediterranean world and settlers of Black Sea coast very evidently. The glass vessels belonged to aforementioned varieties. Vessels of every technology applied by contemporary Mediterranean craftsmen were found in Olbia. Collection of glass from Olbia is not qualitatively poorer than any other collection from major centers of Greek world of that time. Olbia yielded vessels made in following technologies: core-formed, sandwich gold-glass, gold-band, mosaic, cast monochrome vessels.

Core-formed glass vessels. There were not so many works directly aimed at the study of glass vessels from Olbia: M.I. Rostovtsev (1914), O.A. Puklina (2016, 2018), A.M. Kolesnychenko (2016, 2017).

Core-formed vessels entered the main centers of Northern Pontic region, namely Olbia and Panticapeum and some other finds were made in smaller settlements. Numerous finds are noticed at Tyras, Niconion, settlement on the Berezan' island and Bosporan necropolis Volna-1. At present, there are 280 specimens including 41 complete vessels. Olbia collection is the largest because here the fragments from urban cultural layers were systematically recorded. Olbia is the reference site for the core-formed glass research in northern Pontic region both in the sense of variability of vessels and in the sense of variability of contexts of the finds. The city's excavation lasted from the late XIXth century with little interruptions and recovered almost the complete set of the structural parts for an ancient Greek city: necropolis, temene, agora, citadel, living quarters, and uptown quarters. This enables us to study glass vessels in different contexts: quotidian, funeral, sacral etc. and characterize them in various aspects: quantitative and qualitative typology, dynamics and extent of import etc. The vessels from several structural parts of Olbia were published: from NGS (Lower city) (Puklina 2010, p. 487-497), AGD (Western temenos) (Skržinskaja 2006, 206-208), P-25 (Southern temenos) (Kolesničenko 2017, 64-81) and necropolis (Skudnova 1988; Kolesničenko 2016).

Olbia is the one and only site in Northern Pontic region which yielded the complete set of types of Mediterranean groups I-III according to classificatory schemes of D.

Harden and D. Grose (Harden 1981 ; Grose 1989). Vessels from city's cultural layers are very fragmented. This fact could hamper their typological attribution. The commonest shapes are alabastra (108 specimens). There are 50 amphoriskoi, 10 aryballoi, 2 unguentaria and a single hydriskos. The rest of fragments are either unidentifiable or were lost and could not be retrieved from any museum that keeps Olbian materials. The core-formed vessels were used in Olbia since the last quarter of the VI century BC till the early I century AD. Dynamics of their import changed in time. The largest quantity and qualitative variability is recorded during the time span of the last quarter of the VI century and the first quarter of the V century BC. Finds mostly came from necropolis, Western and Southern Temene of Olbia. Flacons from Olbian uptown excavation section "Necropolis-4" are also early enough to be added to this chronological group. The acme of city's existence saw the largest import of core-formed vessels found at every excavated structural part of the city. Despite the wide chronological ranges available for many specimens, the notable portion of finds falls into V century BC. If we discard the wide chronological ranges, then the second half of V century is marked by slow decline of core-formed vessels quantity and somewhere in the middle III century BC they will disappear completely. This pattern reflects the general scheme of development of Olbia. The largest import corresponds to the flourishing period of the city in V century BC, while the social and economic decline of urban life since the middle IV century BC and crisis of the early II century BC finds correlation in slow downward flow in import of expensive glassware (Kryžickij 1985, 172).

Core-formed glass vessels were found in the following contexts: funeral, temple-sacral, public and quotidian (Fig. 1). There were three temene in Olbia: Southern (excavation sector P-25), Eastern (excavation sector E) and Western (excavation sector AGD). The largest collection of core-formed vessels (in fragments: 29 items) was collected in the Southern temenos related to Aphrodite cult. It functioned in late VI – the first half of V century BC. The cumulative quantity of finds from temene outnumbers the number of vessels coming from public or quotidian contexts. The lower city (sector NGS) yielded a comparable number of fragments (around 20). It can be explained by large excavated area and meticulous excavation technique applied there.

Sometimes, quotidian contexts contain notable quantities of glassware shards. In 2015-2016, the uptown semi-dug-out N. 16 yielded 7 fragments from 6 vessels and numerous beads. They were dated to the last quarter of VI – early V century BC. This concentration of glass in a single context is the largest ever discovered in Olbia.

Maybe, the glassware indicates a particular status of this semi-dug-out – sacral center or trade facility. Similar concentration was recovered in agora of Macedonian Methoni. The excavations revealed the complexes of VI-V centuries BC with numerous finds of glass vessels and beads. The archaeologists link these complexes with functioning of a hypothetic workshop specialized in glass-working for production of beads and vessels. However, direct evidence for the existence of such a workshop was never found (Ignatiadou 2013, 84-85). The semi-dug-out N. 16 maybe was a particular storage facility where the fragments of broken glass items were gathered and temporarily kept in order to be recycled.

The glass vessels were put into burials of Olbians since VI up to I century BC. Probably there was a stable tradition of placement of glassware into a tomb as a reasonable and acceptable part of grave goods.

Thus, core-formed vessels were imported to Olbia during the whole period of their production in Mediterranean centers. The peak of their popularity happened in late Archaic and Early Classical periods. Likewise, the same was said for the Mediterranean world (McClellan 1984, 321). The high percentage of finds on necropolis indicates a tradition of use of glass flacons during burial rites. The latter was recorded in Mediterranean sites also on several occasions. The finds of vessels from temene could point to their sacral symbolic role and ritual importance in particular in temples of female divinities. The analogies are known from some ancient Greek temples from Aegean Sea and Mediterranean basin in general (Nenna 2012, 63-67).

Cast lidded bowls

The earliest cast vessels are represented by lidded bowls or exaleiptra, which were produced in the late IV – early III centuries BC and continued to be in use up till the late III – early II centuries BC (Stern 1999: 49). There were two specimens found in Olbia. They are kept in State Hermitage (Russian Federation, (Ростовцев 1914)) and Odessa archaeological museum.

Sandwich gold-glass vessels

This type of luxury glass vessels is often called “Canosa Group”. They were made in III – II century BC. D. Grouse suggested to narrow their chronological range down to the second half or even to the last quarter of the III – early II century BC (Grose 1989: 188). These vessels are really rare. There are only 22 items known so far (Cesarin 2018,

27). Olbia yielded a single shard from old excavations of B.V. Farmakovskij in 1903 (Farmakovskij 1906, 180-181). It is similar to vessels of Canosa due to its floral-geometric style of decoration.

Gold-band glass vessels

Olbia yielded some fragments from the excavation trench P-25 (Puklina 2016, 165) and an alabastron (II-I centuries BC) kept in Odessa Archaeological Museum. The largest spread of these vessels was seen in I century BC – I century AD.

Cast monochrome vessels (grooved, ribbed bowls)

There were some cast grooved bowls found in Olbia. A single conical bowl is kept in Odessa Archaeological Museum (Kolesničenko 2014), and some fragments of vessels of ovoid and conical shapes remain unpublished. A notable amount of these vessels was revealed in region of Syria and Palestine. They existed in the second half of II century BC, some survived well into I century BC (Jackson-Tal 2004, 17, 27).

Ribbed bowls (Rippenschalen) are known in large quantities in Olbia in the middle I century BC – I century AD. This group of vessels is numerous in various centers of north Euxine Pontus. Olbia yielded also fragments of mosaic ribbed bowls (Puklina 2016 fig.1, 1).

Mosaic glass vessels

The earliest specimen of this type from Olbia is a fusiform alabastron of II-I centuries BC, imitation of an onyx (Kunina 1997, cat. 94). In I century BC – I century AD they were popular in Olbia, their fragment being encountered in excavation sector P-25 and in the Lower city (Puklina 2016, 165). There were following shapes: semispherical bowls with straight rim, bowls on ring feet with bent out rim, plates.

The quantity and quality of the glass vessels from Olbia evidence the continuous import of expensive goods and prestige things from different centers of the Mediterranean basin. There were some rare and unique glass vessels discovered in Olbia.

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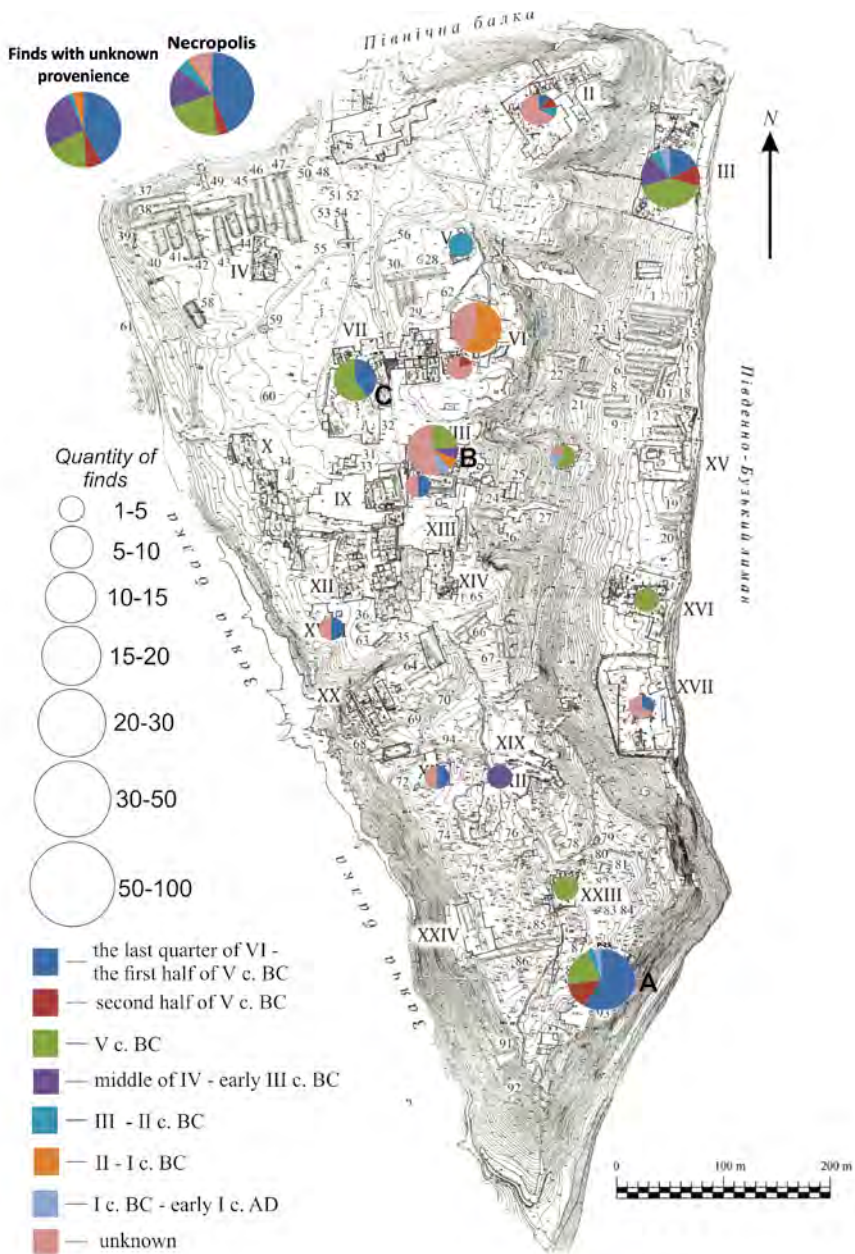


Fig.1. Distribution of core-formed glass vessels in Olbia. A – Southern Temenos (excavation sector P-25), B – Eastern Temenos (excavation sector E), C - Western Temenos (excavation sector AGD) based on topographic map by Kryzhytsky, Kariaka 2017.

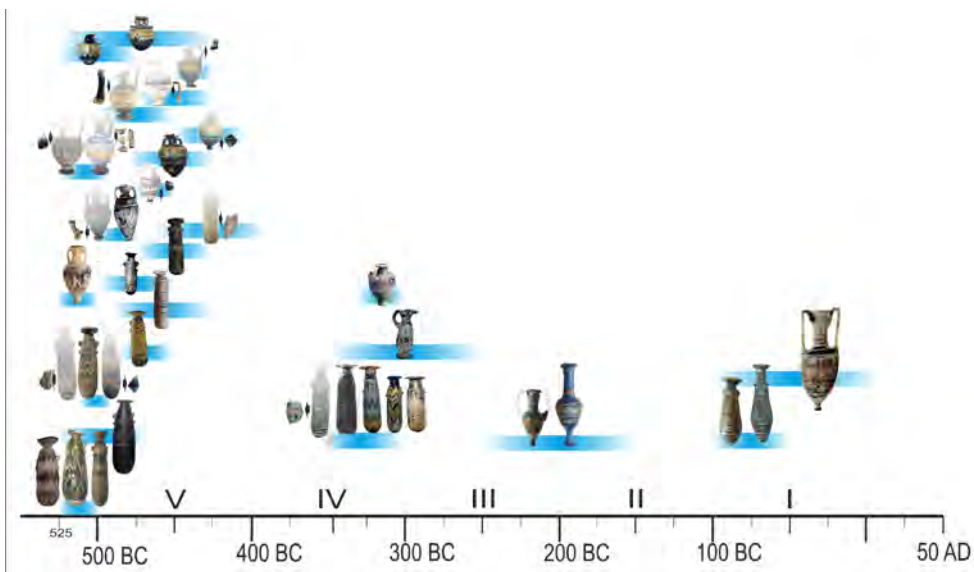


Fig. 2. Types of core-formed glass vessels in Olbia. Semi-transparent vessels represent the form, which is represented only by fragments.

AUX FRONTIÈRES DE L'OIKOUMÈNÈ

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The late Scythian culture: barbarians of the roman period

The Late Scythian culture is one of the least studied archaeological historical aspects of Ukraine. The population that forged this culture lived in the southern Ukraine during the Roman period, from the 2nd century BC till the mid-3rd century AD. Their closest neighbors were the Sarmatians who lived in the steppes on both banks of the Dnieper; the people of Zarubyntsi culture were neighboring them from the north, the Geto-Dacians from the west, and the Greeks from the North Pontic city-states (Olbia, Chersonesos, Bosphorus) – from the south. The Greek author Strabo provided us information about them, calling their country the Scythia Minor (Μικρά Σκυθία).

Besides the works of ancient Greek and Roman authors, the only sources on the history of Late Scythians are archaeological sites of two categories: the hill-forts and burial grounds. They are concentrated in three regions of modern Ukraine: along both banks of the Lower Dnieper river from Nikopol to Kherson, in the foothills of Crimea and in the Lower Danube region.

The Late Scythian lived in a unique natural zone named The Great Meadow. It was situated between Dnieper and Konka rivers which flowed parallel to each other about 200 km (fig. 1). There was plenty of animals and birds, numerous small rivers and lakes abundant with fishes, and the boundless meadows with high grass provided a permanent supply for horses and cattle. The Dnieper was the fastest and the most comfortable trade route with the Greek cities, among which Olbio was the most significant. We know only three Late Scythian necropolises near the settlement: Zolota Balka, Mykolaivka and Chervony Mayak. All of them have no the external indicators (that is to say flat burial grounds), placed in the steppe outside of the hill-fort and isolated by a ravine or a gully.

Mykolaivka hill-fort was discovered and partly explored by Victor Hoshkevich in the beginning of the last century, and at the same time the German professor Max Ebert began to excavate Mykolaivka necropolis (Goshkevich 1913; Ebert 1913). This exploration was continued by Moscow archaeologist Erast Symonovich who completed the excavation of Mykolaivka burial ground in 1966-1970. The material, except those excavated by Ebert, is still unstudied and unpublished.

Zolota Balka hill-fort and its necropolis were also partly excavated and published by Ukrainian scholar Maria Viazmitina in 1950-1952 (Viazmitina 1962; Viazmitina 1972). The Chervony Mayak necropolis was discovered in 1975 during the digging of water trenches. It was excavated by Moscow archeologists Erast Symonovich in 1976-1977 and Olga Gei in 1986-1988. Our team (Late Scythian expedition of the Institute of Archaeology of Ukrainian National Academy of Sciences) explores Chervony Mayak burial ground since 2011 (Symonenko, Sikoza, Dzneladze 2015). In total 153 tombs have discovered on the burial grave up today (fig. 2).

The most numerous graves at Late Scythian necropolises are the deep crypts, typical for this culture, containing several deceased, probably the relatives. The second type of burial construction at these necropolises is the niche-grave. The preliminary anthropological analyses showed the difference between the people buried in the crypts and those in the niche-graves. Among the funeral goods there are Greek red-slip and Scythian hand-made pottery, iron weapons and horse gear (swords, arrows and spear heads, bits), gold decorations, bronze adornment and personal items (fibulae, bracelets, mirrors), necklaces made of carnelian, jade, amber, and glass beads (fig.3).

More than 40 Egyptian figures made of faience and their imitations were found in the Late Scythian burial grounds Chervony Mayak and Mykolaivka and hill-forts Han-nivka, Velykaya Lepetykha, Ljubymivka. The peak of the use of Egyptian faience by the Late Scythians of Lower Dnieper area could be dated to the second half of 1st – mid-2nd century AD. In the same time the Crimean Late Scythians and Sarmatians used the figured Egypt faience objects as the amulets. The number and variety of the faience items in the Late Scythian culture shows that they could supply Sarmatians with faience (Dzneladze 2016).

Some graves of Chervony Mayak contained items typical for the Baltic region. Roman imported goods (amphorae, red-slip pottery and fibulae) allow to date the Late Scythian burial grounds of Lower Dnieper basin to the 2nd century BC – mid-3rd century AD.

Four chronological periods of Chervony Mayak can be distinguished: the earliest first stage (the second half of the 2nd century BC – the first half of the 1st century BC); the second stage (the second half of the 1st century BC – the first half of the 1st century AD) which is the time of appearance of the first Roman imports; the third “ stage of heyday ” (the second half of the 1st – the first half of the 2nd century AD) – the time

of increase of population at the settlement, the emergence of the “ Eastern wave “ of Sarmatian migration and the Sarmatization of the Late Scythian culture; the final fourth stage (the second half of 2nd century – the first half of the 3rd century AD), the time of the last Late Scythian funerals on the Chervony Mayak necropolis. The comparison of the number of fibulae with gender of the buried allows to research some patterns of the Late Scythian costume. The chronology of fibulae shows that one catacomb could be used for collective funeral no more than 50 years.

The multidiscipline study of the Late Scythian culture should include the following steps:

1. Sophisticated archaeological research (excavation, laboratory processing, restoration, drawing and photography).
2. Complete study of all categories of material (local-made and imported ceramics, weapons, fibulae, mirrors, beads etc.).
3. Research and reconstruction of ancient costume and adornment.
4. Anthropological research (gender analysis, paleopathology, DNA analyses).
5. Paleozoological research.
6. Structural and spectral analysis of metal and glass objects (weapons, adornments, vessels, beads etc.).
7. Development of relative and absolute chronology of the cemeteries with C14 dating.
8. Preparation of the monograph (text, drawings, photo etc.).

Thus, we should realize the unique opportunity to study the full living and funerary complex of the almost unknown Barbarian culture of Roman period in the North Pontic region.

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Fig.1. Archaeological sites of the Late Scythian culture in Lower Dnieper region.

I – hill-forts and settlements

II – necropolis

1 – Zolota Balka

2 – Gavrylivka

3 – Hannivka

4 – Sablukivka

5 – Konsulivka

6 – Chervony Mayak

7 – Staroshvedske (Zmiivka)

8 – Mykolaivka – Kozatske

9 – Lvove

10 – Tiaginka

11 – Poniativka

12 – Liubymivka

13 – Kairy

14 – Gornostaivka

15 – Velyka Lepetykha

16 – Znamianka



1



2

Fig. 2.
1. Necropolis Chervonyi Mayak.
2. Chervonyi Mayak, grave 130, 8-10 years girls with Roman imports adornment.



Fig. 3. Burial artefacts

1 – Red-slip vessel from Chervony Mayak, grave 126

2 – Red-slip vessels from Chervony Mayak, grave 131

3 – Egypt faience, glass and bronze amulets from Chervony Mayak, grave 126

4 – Gold plaques from Chervony Mayak, grave 128

5 – Glass and cornelian beads from Chervony Mayak, grave 128

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Scythia Minor at the Dnieper river. Noninvasive studies

The region of the Lower Dnieper is extremely rich in archaeological monuments of various ages. Due to the fact that the Dnieper river below the thresholds was an accumulation of numerous lakes, streams, small and medium-sized rivers falling to the mainstream, such an “oasis” surrounded by the steppe was always attractive for the local tribes. This region, as an area of free shipping, combining the steppe with the seaside, has long been of great commercial importance. The additional strategic importance of the Lower Dnieper was due to the existence of a number of river crossing sites connecting the left and right banks of the Dnieper making possible land transit in the east-west direction by overcoming this significant natural obstacle.

From II century B.C. till II century A.D, this territory is characterized by the emergence and existence of a number of specific archaeological landmarks on the steep banks of the river – powerful fortified hillforts, all built on similar principles. This group of monuments, that are traditionally identified as the Late Scythian hillforts (although, given the multiethnicity of their inhabitants and the absence of the predominant Scythian component, this term is not correct), is usually associated with the “Scythia Minor” on the Lower Dnipro, which is mentioned in the 7th book Geography by Strabo. According to our present knowledge, there are 15 Low Dnieper Late Scythian hillforts. Five hillforts, – Znamyanske, Velyka Lepetykha, Hornostaevske, Kaiirske and Lyubimivske – are on the left river bank. Ten of them – Zolota Balka, Gavrilovske, Sablukovske, Annyvske, Konsulovske, Chervonyi Maiak, Zmiivske, Kozatske (Mykolayivske), Ponyatovske, Lvovske – are on the right river bank. In addition, there are three cemeteries associated with these monuments.

The existence of these Lower Dnieper hillforts is associated with a number of military dangers, characterized on the one hand by a decline in political and economic life of ancient centers, and, on the other hand, by the collapse of the ethnopolitical association of the Scythian and non-Scythian tribes inhabiting the steppes and forest-steppes zones of the Northern Black Sea Region. (Nykonenko 2017, 243.Str. VII, IV, 5.)

Archaeological studies of these mentioned monuments have a great history from the beginning of the twentieth century. Since the 2000^s, in the study of the Lower Dnieper

hillforts of the II century. B.C. – II century A.D, step by step, the methods of noninvasive studies are being used, which allow, without direct intervention, to obtain information on particular features of these archaeological objects. Among methods used in the study of these sites are aerial photography and photogrammetry, geomagnetic shooting and measurement of the electrical resistance of the soil. The first geomagnetic shooting was carried out in 2006 by T.M. Smekalova at the hillfort of Chervonyi Maiak. These works have allowed to pre-determine the structure of the stone building of the monument.

Since 2015, noninvasive methods are regularly used by the joint Low Dnieper archaeological expedition of the Khortytsia National Reserve and the University of Warsaw. The first methods are involved in the study of the Konsulovske hillfort, which has been explored during the past five years. Before starting the excavations M. Bogatsky undertook the air photographic survey, while the geomagnetic survey and the measurements of electrical resistance of the soil were carried out by V. Malkovsky .

The main purpose of aerial photography was to obtain a set of photographs taken under certain conditions – from different heights and angles, vertical and inclined. They were used to create an orthophoto and a digital surface model.

Aerial photography was carried out using an air kite with a platform with an installed camera. For the conditions of the Konsulovske hillfort, this method seemed to be optimal. In the open space of the Low Dnieper steppes, where there are strong winds, the use of the kite was entirely reasonable. The shooting was conducted at a height of about 130 meters above the surface of the earth. At the stage of photogrammetric processing, 89 vertical images were converted into a three-dimensional terrain model and an orthophotoplan. The obtained data were entered into the WGS 84/UTM 36N EPSG 32636 coordinate system. It became possible due to the photomarkers placed all over the monument area. Their localization was carried out with the use of GPS hardware RTK. With such an equipment, the accuracy of the localization reaches several centimeters.

The analysis of the results of those techniques as well as the analysis of both vertical and angled photographs, allowed to accurately determine the shafts surrounding the main part of the hillfort and its citadel, practically for all its length. In the central part of the hillfort there is a decrease in the western shaft, which is observed about 25 meters

north of the southwest corner of the fortifications, with a length of about 50 meters. The analysis of the received digital surface model and the created color versions of the gradient, together with the so-called "hill shading", also confirmed the gap in the western shaft of the main part of the hillfort, which may be related to the entrance to the monument. (Matera, Bogackij, Malkovskij 2017, 125.)

Magnetic measurements were carried out with the aim of studying the largest possible area of the monument, searching for localization and determination of magnetic anomalies. The magnetized area covered 2.5 hectares. The use of magnetic measurements for archeological research is possible due to the properties of the magnetic field of the Earth, parameters of rocks, as well as other materials, of which archaeological objects are composed. The changes in the magnetic field intensity are due to the effect of the magnetic properties of the rocks and soils recorded thru the increase or decrease of the recorded quantities, or the result of residual magnetization obtained during different types of heat treatment or contact with the fire.

The research was carried out during same time using a magnetometer with GPS receiver RTK, which allowed to accurately register the changes in magnetic field values when synchronically registering the landscape. Due to this method it became possible to precisely allocate clusters of anomalies and determine the boundaries of the monument. The use of the GPS receiver RTK allowed making a precise, coordinated topographic plan of inscriptions with isolines every 0.5 meters. As a result of these measurements were created maps of the magnetic anomalies detected on the surveyed area.

In order to supplement the information obtained during the magnetic survey, measurements of the electrical resistance of the soil were also carried out on selected sections of the hillfort. Thus, an attempt was made to test the possibilities of using both methods in subsequent investigations of the hillforts of the Lower Dnieper region of the II century. B.C. – II century A.D. Measurement of electrical resistance was carried out on five sites of the hillfort, marked with a GPS RTK receiver.

Thus as a result of noninvasive studies of the Konsulovske hillfort, conducted in 2015, orthophotomaps, monuments, digital surface model and maps of magnetic anomalies and specific resistance of the soil were obtained, successfully used in further archaeological study of the site.

The effectiveness of noninvasive study methods at Konsulovske hillfort allowed to transfer the experience gained while researching to the rest of the synchronous monuments. The use of aerial photography and photogrammetric methods for the preparation of detailed and scalable plans of ancient hillforts has become widely used. It resulted in lifting into the air photographic equipment using unmanned flying machines. Unlike with air kites, unmanned flying machines do not depend on wind power, preparations for shooting and the work itself are much faster.

The accuracy of the data obtained allows the measurement of any part of the monument, every damage from erosion processes or human activity, based on the results of the image processing procedure. In most cases, this way allows to obtain new information about the monument that couldn't be fixed at the visual inspection of the surface and was considered lost. Based on the results, the creation of 3D models of monuments allow to keep all visually accessible information about them. In case of partial or complete destruction of the monuments, it is possible to obtain any measurements and the images from the required angle.

Recently photogrammetry techniques have also been successfully used in invasive studies, complementing them. For example, during the excavation of the Konsulovske hillfort, photogrammetric processing of images of various archaeological objects made it possible to create their 3D models, orthophotomaps and actually create digital copies at the time of the study. This allows, in the future, after the excavations, to measure any objects and their parts that are already underground. Creating 3D models of the earth's pits gives an opportunity to measure their volume, and orthophotomaps of the sections allow to study the stratigraphy of the monument and its elements in more detail. A separate area of research is the creation of 3D models of finds originating from the Lower Dnieper hillforts of the II century B.C. – II century A.D. Digital items thus acquire additional opportunities for studying: measuring the volume of vessels, obtaining any necessary sections of objects. Creating a base of 3D models of objects from the collection of the Lower Dnieper hillforts not only ensures the preservation of the most accessible information about their appearance, but also allows to work with this information remotely.

Thus, the introduction during the last decade in the study of the Lower Dnieper hillfort II century B.C. – II century A.D noninvasive methods greatly increased the possibilities for their scientific study. Some of the above-mentioned methods are also successfully

used in traditional archaeological research, improving the quality of investigation and getting new ways to obtain additional information about the past of this region.

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Fig. 1. The Lower Dnieper hillforts: 1. The Konsulovske hillfort; 2. The hillfort of Chervonyi Maiak; 3. The Annyvske hillfort.

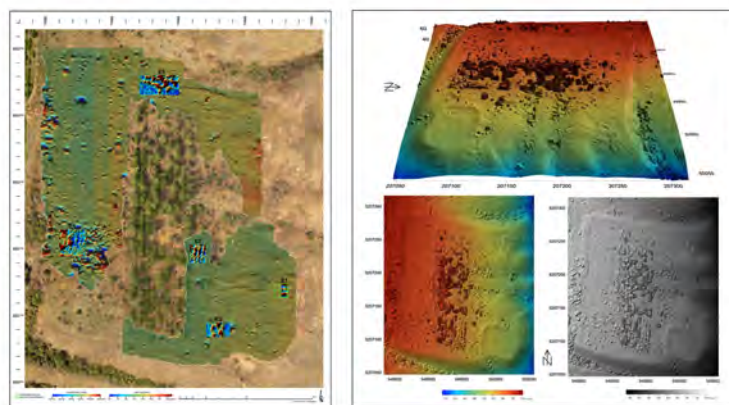


Fig. 2. Noninvasive studies of the Konsulovske hillfort: 1. Orthophotomap and the map of magnetic anomalies; 2. Digital surface model.

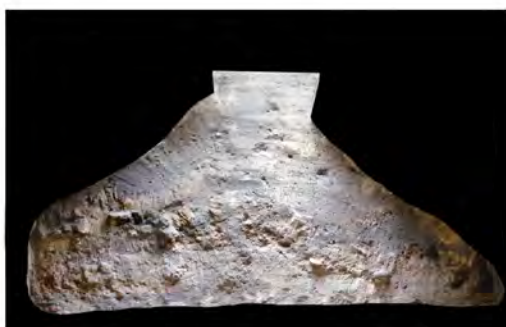


Fig. 3. Photogrammetry techniques in invasive studies: 1. 3D model of pit; 2. Orthophotoplan of pit section; 3. 3D excavation model.

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Beyond the *LIMES*: the Sarmatians in North Pontic region

Since the turn of the 3rd – 2nd centuries BC the steppes of Eurasia were occupied by numerous tribes of nomads – the Sarmatians. In literary sources their lands are named Sarmatia. The Sarmatians were Iranian-speaking nomads who inhabited the huge territory from the Altai Mountains in the East up to the Danube in the West (modern Russia, Kazakhstan, Ukraine, Moldova, Rumania, Hungary) from the 3rd century BC until the 4th century AD.

The culture and art of Sarmatians is a phenomenon lacking any analogies among nomadic civilizations of the ancient world. It was formed far in the Inner Asia absorbing the elements of neighbouring cultures – that of Hsiung-nu and China. In their turn the Sarmatians have brought it into Western Europe by one of the first waves of the Migration Period (Bachrach, 1973), which had a large impact onto the culture and art of European Barbarians – the Germans and Celts. A good example of this impact is the famous cycle of legends about King Arthur with the image of the dragon borrowed from the Sarmatian heroic epos (Makkay 1998). The Sarmatian mercenaries in the Roman cavalry became one of the sources of European Medieval knighthood (Cardini 1981).

Since the 2nd century BC till the 4th century AD the Sarmatians were one of the strongest ethnic and political powers of the North Pontic Region (the territory of modern Ukraine and Moldova). They made the final struck on declining Scythia; they were one of the main and most dangerous enemies of the Roman Empire. Keeping close contacts with the population of Greek cities – that of Olbia, Tyras, Chersonessos and Bosporan Kingdom – and with the neighbouring barbarian tribes – the Bastarnae, Goths, Late Scythians – the Sarmatians had a certain impact onto their history and culture.

The Sarmatian period of the Ukrainian history (2nd century BC – 4th century AD) coincided with several great epochs of world history. Its beginning corresponded to the final stage of Hellenistic period, the largest part of the Sarmatian period coincided with the Roman epoch, its final stage covering the beginning of the Great Migrations period. The Sarmatians were the original bridge between the East and the West, between two great civilizations of the ancient world: China and Rome. The fact that one of a branche of the great trade and economic communications network of the antiquity –

the Great Silk Road – passed across the Sarmatian steppes was of key importance in the history of the Sarmatians, China and Rome.

From the moment of their appearance in Eastern Europe and up to the end of their history the Sarmatians had close contacts with the neighboring states: North Pontic Greek polities and the Roman Empire. The Classical world knew Sarmatians well. Some facts of their history and culture had been collected in the works of Greek and Roman authors (Strabo, Pliny the Elder, Josephus Flavius, Cornelius Tacitus, Ammianus Marcellinus etc.). The important evidences are the ancient epigraphic documents: decrees and tombstones. Then, the most numerous archaeological evidences are objects of everyday use, jewelry, weapons, ritual objects etc. discovered in the graves.

The main tribal unions of the Sarmatians, known from literary sources, are the Yazygi, Rhozolani, Aorsi, Siraces and Alani (fig. 1). The first Sarmatian tribal units – Yazygi and Rhozolani – appeared on the territory of Ukraine in the 2nd century BC. In the mid-1st century AD the Aorsi and Alani moved here which caused the retreat of the Yazygi to the Hungarian Plain.

On the territory of modern Ukraine more than 1200 Sarmatian sites have been found. More than 90 percent of these sites were discovered in the last 30 years. Current research focus on Sarmatian culture and art, at least because of the fact that the scholars of Russia, Hungary, Romania and Moldova actively study the Sarmatian sites of these countries, whereas the territory of Ukraine is a serious lacuna in the Sarmatian research. Some monographs (Simonenko, Lobay 1991; Simonenko 1993; Dzygovski 2000; Dzygovski 2003) deal with the sites of certain regions, but yet there is no summarizing work of the North Pontic Sarmatian culture and art in the scientific literature. According to the modern chronology, three periods of the Sarmatian cultural-historical community have been distinguished: the Early Sarmatian (2nd – 1st centuries BC), the Middle Sarmatian (1st – mid-2nd century AD) and the Late Sarmatian (the second half of 2nd – 4th centuries AD).

The most spectacular Sarmatian sites on the territory of Ukraine are the graves of high nobility, so called “royal” tombs, dated to the Middle Sarmatian period.

The noble Sarmatians graves are unusual by dimensions and construction. They have a deep vast catacomb (Porohy) or a large pit (Sokolova Mohyla, Mokra, Vesniane), covered by wood, with sarcophagi or coffins. The deceased often were placed in a

special pose – spread arms and legs, bent at the elbows and knees (fig. 2). This position originates from Central Asia.

The main criterion of noble burials besides these features of the funeral rite is the presence of the rich grave goods. Among them are the jewelry, Greek and Roman metals (fig. 3) and glass wares, bronze ritual cauldrons, the gala weapons.

The tombs at Porohy, Vesniane, Tsvetna, Petriki, Mikhailivka, Sokolova Mohyla, Nohai-chik Barrow belong to the members of the supreme nobility (tribes or hordes chiefs-“kings”, “queens” or priestesses).

In the late 2nd century AD the tribes with original military culture of “longhead horsemen” came to North Pontic region from Lower Don steppes. They were the Alans mentioned in Late Roman literary sources. Tombs of their aristocracy are the narrow niche-graves accompanied by weapons and horse harness. The golden jewelry is not numerous but arm-belts of long swords and harness are decorated with elegant silver sets.

Circa the middle 3rd century AD those Sarmatians named Alans-Tanaitians have migrated to North Pontic area from the Lower Don basin. They were the bearers of Late Sarmatian culture of the second half of 3rd – the third quarter of 4th century AD. The main indicator of it are the primary graves in deep catacombs with jewelry of the original “cornelian” and cloisonné styles, Late Roman bronze and glass vessels.

In the mid-3rd century AD the Sarmatians of the Northern Pontic region fell under the invasion of the Goths and partially entered those communities. In the second half of the 4th century AD they were defeated by the Huns, partially destroyed, and later assimilated until gradually disappearing as an ethnic unit.

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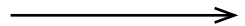


Fig. 1. Sarmatian tribes and their neighbours in Northern Pontic region.

I – 2nd century BC – mid-1st century AD ;

II – mid-1st – mid-2nd centuries AD ;

III – late 2nd – early 3rd centuries AD ;

IV – late 3rd – mid-4th centuries AD.





Fig. 2. Porohy village, barrow 1.
Sarmatian royal grave of the late 1st century AD.



Fig. 3. Chuhuno-Krepinka village, barrow 2. Roman bronze jug.

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Roman Age Anthropology of Southern Ukraine. Achievements and Problems.

Introduction

The study of the populations of the Northern Pontic region of Classical and Roman Ages began in the late 19th century with the works of A. Bogdanov. Basically the craniological identification of ethnicity of the Greek colonies has been conducted. More than once anthropologists have strode to resolve the question of the effect the Greek and Barbarian peoples made on the ethnic composition of policies' population. The Chersonesos as a Greek police and the Scythian Neapolis among the barbarian settlements have been studied most sophisticatedly up to now (T. Nazarova, A. Ivanov, T. Konduktorova). T. Konduktorova observed the striking similarity of the anthropological type of the population of Scythian Neapolis with the ones of another two sites of the same culture - Mykolaivka and Zolota Balka. The researcher believed that the Scythians constituted the basic part of the populations of the policies. The Sarmatians or other local ethnic groups (in the Crimea, presumably Taurians) presented the significant proportion of the populations as well. According to T. Konduktorova, the Greek anthropological component did not have any significant impact on the morphology of the inhabitants of Scythian Neapolis, Mykolaivka and Zolota Balka (Konduktorova 1972). Whereas the craniological features of these sites were comparatively homogeneous, the majority of the anthropological series from the North Pontic Greek cities demonstrated the mechanical mixture of various morphological types. This implied a certain cultural and biological isolation of the people of different ethnic groups.

One can agree with Al. Ivanov, that the Greeks, who have displaced the aborigines during the formation of colonies, stayed in the relative insularity (Ivanov 2011). However, it is possible that the intervention of Scythians and Sarmatians in the process of formation of city-states broke this isolation.

The population of Borysthenes (early Classical period) and Pontic Olbia (Hellenistic and Roman times) have been studied by Dr. Tetiana Nazarova (Nazarova 1994). Her research at the field of classical craniology and demography of the cities could be considered the base for the future research of these populations.

Some populations of Chernyakhiv culture, from the burial grounds of the central and southern Ukraine territory, are studied by Dr. Tetiana Rudich and by the author, through their way of life, diseases, morphological and demographical features.

Recently the Ukrainian anthropologists (including the author) have begun the research of the Late Scythian necropolis near the hill-fort Chervonyi Mayak. Its population had close links with Olbia and other Greek cities of the Northern Pontic region.

In the storage of the Bioarchaeological department of the Institute of Archaeology of Ukrainian Academy of Sciences in Kyiv, which is the center of Ukrainian anthropology, a hundred of skeletons of the Classic and Roman Age (mostly from the barbarian necropolises) are kept.

The main points of the research of these items in recent years, based on the study of pathological and morphological features of the skeletons, are the spreading of infectious diseases in the populations; the effect on life conditions the individual or populations' health; reconstruction of the economic strategies and diets; professional and household activities.

Challenges and Problems

The state of anthropological material from Greek-Roman cities of the Northern Pontic region is, unfortunately, very unsatisfactory.

The skeleton material from the excavations of the barrows and flat burial grounds which took place during the massive construction of the melioration structures (60-80s of the last century) is also limitedly available. The reason for the selective collecting of the human remains (mostly intact skulls and long bones) was the lack of the storage place and the lack of researchers. Besides that, the only methods of studying ancient bones till the beginning of the 21st century were sex and age determination, cranio-logical and osteological measurements for ethnic studies and height determination. Human remains from several hundred burials of the Olbia necropolis were reburied without proper analysis except some intact skulls.

The skeletal material (mainly the skulls) of the Late Scythian burial grounds of Mykolaivka and Zolota Balka, the burial grounds of the Crimea, the Sarmatian kurgan necropolises of Ust-Kamenka and Novopylypivka-Akkermen, selectively studied by A.

Schliz (1913), by T. Konduktorova (1972) are kept in the repositories of Moscow State University and are currently unavailable for Ukrainian researchers.

The excavations of the recent years brought a skeletal material which is available for the anthropological investigations by the various morphological, pathological and biochemical methods.

By now several circumstances complicate the craniological analysis of the skeletons from the necropolis of the Pontic region. One of them is the unsatisfactory preservation of the skulls due to the specificity of the soil. Besides, interpretations of the morphological components are complicated by the fact of periodical migration waves into the almost morphologically identical environment. The methods of paleogenetics (DNA) and the analysis of stable isotopes should help to solve these problems.

Demography of the population of Pontic region is studied by Dr. Tetiana Nazarova (Nazarova 2002). The researcher noted the predominance of children on some necropolises, among which two years old children and younger consist 43 % (Chersonesos). In Hellenistic and Roman Chersonesos, on Berezan island (Borysthenes) and in Kerkinitis, the average age of death for female population was determined as 29-33 years while this indicator for male ranges from 38 years (Berezan) to 45 years in Chersonesos and Kerkinitis (Nazarova 2002). The average age of 57 individuals from Olbia of the first centuries AD is determined as 40 years for male and 34 years for female (Nazarova 1994: 86). There is also fragmentary information on the Late Scythian necropolises of Mykolaivka and Zolota Balka. The determination of the age and sex of more than 150 individuals buried in the niche-graves and family crypts (Fig. 1) on the Chervony Mayak necropolis is in progress.

Unfortunately, morphological development of the individuals (body height and constitution), has practically not been studied because of the poor preservation of the material as well as the lack of interest in this aspect. The only indication for the body structure was the gracility of skulls indicated in most Hellenistic or Roman burial assemblages. This observation led some researchers to the conclusion that the populations belonged to the Mediterranean anthropological type (Konduktorova 1972; Nazarova 1994).

The detailed study of deformed skulls in the graves of Olbia and barbarian necropolises seems quite perspective. The custom of artificial deformation in Roman times

was the ritual practice of Sarmatians and Huns (Fig.2). Drs. Elena Batieva and Maria Balabanova have found the significant percentage of deformed skulls among male, female and children, primarily among nomads, but also among the town populations of Bosphorus. Artificially deformed skulls have also been found in the cities of Crimea (Chersonesos), in Olbia and Chervony Mayak. This custom, which is characteristic primarily for Sarmatians, could help to determine the level of anthropological sarmatization of the population of Northern Pontic cities.

One of the interesting and promising problems is the study of rituals and funeral rites that impacted the skeleton material. The pit No.18 on the territory of Olbia, which was a mass grave for 50 individuals (Kozub 1984) is an example of unusual burials. Unfortunately, the anthropological material was reburied. In the Bosphorus in Classic times the human sacrifices are known. One of them is mentioned by Dr. Aleksandra Buzhilova with coauthors (2002). I hope that the careful study of materials from settlements and ritual places will shed some light on those practices. Meanwhile, the only known, supposedly similar, complex in the region is the ash-hill discovered near village Viktorovka (Berezan) where 11 skeletons with perimortal skull injuries (Fig.3) and other signs of violent death were recovered (Bondarenko 2017).

Northern Pontic cities were the contact zones as well as intermediate and final points of migration. In Olbia and other settlements, such as Chervony Mayak, some traumas and diseases characteristic for contact zones and crowded places of diverse populations are expected. The contact diseases such as specific infections (tuberculosis and syphilis), childhood infectious diseases and metabolic disturbances should have been spread vastly. In addition, due to the high infectious risk one should awaited the high level mortality among children and young female.

In my opinion, the studies of paleo-diets based on both isotopic and paleopathological analyzes should give a reliable information about life and diets of the people of the Pontic regions of the Hellenistic and Roman Ages.

We hope that anthropological multidisciplinary international research of barbarian necropolises as well as Olbia population would help to understand the ancient migrations, the formation of periphery of the Roman Imperia and include the Ukrainian territory to the European historical context.

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Fig. 1. Chervony Mayak, 2015. Family crypt №126



Fig.2. Crimea, 1959. Skull with artificial cranial deformation



Fig.3 Viktorovka (Berezan), 2016. Ash-hill 1. Perimortal skull traumas (graves N°5a and N°5b).

LIMES ROMAIN

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The Roman Army on the Northern Shore of the Black Sea

After the establishment of the province of Moesia and the annexation of the Laevus Pontus at the beginning of the Tiberius' reign, the Romans headed northwards, in the area of the old Greek colonies, Tyras and Olbia, and even further east in the area of Chersonesus and in the Bosporan kingdom.

The very first information about the Roman presence in the Bosporan kingdom dates back to AD 49, when Tacitus (Ann. XII, 15) noted that: *at Mithridates Bosporanus amissis opibus vagus, postquam Didium ducem Romanum roburque exercitus abisse cognoverat, relictos in novo regno Cotyn iuventa rudem et paucas cohortium cum Iulio Aquila equite Romano*. The passage recalls the military expedition led by the Moesian governor, A. Didius Gallus in AD 44-45 (PIR2 D 70), in the area of Panticapaeum, to defend Cotys' (PIR2 C 1556) claims of the Bosporan kingdom against his brother, Mithridates VIII (PIR2 M 635). A Roman garrison was consequently left to protect the king and his kingdom (C. Iulius Aquila was probably *praepositus vexillationibus centenarius*) and A. Didius Gallus received *ornamenta triumphalia* (CIL III 7247 = 12278 = ILS 970). It seems that on top of the Moesian units, detachments of the Bithynia et Pontus province were sent (the financial procurator of Bithynia, Iunius Chilo (PIR2 I 744), who temporarily governed the province probably as *agens vice proconsulis*, received the *insignia consularia* and C. Iulius Aquila (PIR2 I 166) *insignia praetoria*, Tacitus, Ann. XII, 21; Suetonius, Claud., 24: *ornamenta consularia etiam procuratoribus ducenariis indulisit*). Later on, the two provinces collaborated together to defend the northern shore of the Black Sea. The lower Moesian army was active in Tyras, Olbia and Chersonesus, while the army of Pontus et Bithynia was active in the Bosporan kingdom.

The next important moment is related to M. Plautius Silvanus Aelianus' actions (PIR2 P 480), who had sent detachments to defend Chersonesus against the Sarmatians siege, led by one of their kings (CIL XIV 3608 = ILS 986: *motum orientem Sarmatar(um)/compressit quamvis parte(m) magna(m) exercitus/ad expeditionem in Armeniam mississet; Scytharum quoque regem a Cherronensi/ quae est ultra Borustenen opsidione summoto*), sometime after AD 62. At the beginning of his tenure in Moesia in AD 56/57, a new era began at Tyras (IOSPE I2 2; 4 = CIL III 781), event that was connected by some scholars with a possible integration into the Roman Empire. Al-

most at the same time, Olbia signed an alliance treaty (*symmachia*) with Rome (AE 1996, 1357). The coming of Rome was directly related to the constant threat for the Greek cities, represented by the Sarmatians, who had settled in the area at beginning of the first century AD (Plinius, NH, IV 80; Bârcă 2014).

Starting with the reign of Trajan, up to the middle of the third century, the Roman army was constantly present at the north of the Black Sea, as the epigraphic and archaeological evidence shows us (Sarnowski 1988; Matei-Popescu 2010).

Thus, a detachment of the V Macedonica legion is attested on the northern shore of the Black Sea, at Tyras and Chersonesus. The presence at Tyras is early, dating from AD 115-116, the detachment of the legion included a detachment of some auxiliary units (*per vexil(lationem) leg(ionis) V Mac(edonicae) et auxili(i)s eius*) under the command of centurion M. Ennius Illadianus (AE 1990, 868). Another inscription, set up in the honour of the same centurion, records Cornelius Vitalis, *actarius*, Iulius Iamblicus, *eques*, and Marcus Valerius, *valetudinarius* (AE 1990, 869). Still at Tyras, there are records of the centurion T. Trebius Fronto, with the inscription being placed by *principales legionis* from the vexillation of which only the name of Iulius Valens, *signifer* had been preserved. The legion name also appears within two extremely fragmentary inscriptions as well as on tile material. At Olbia, soldiers of legion V Macedonica were part of another vexillation located there together with detachments from other legions of Moesia Inferior. Additionally, legion stamps of two types were discovered at Chersonesus together with an inscription attesting a *miles legionis*, [...]tius Valens (for all these epigraphic attestations see Matei-Popescu 2010).

The I Italica legion sent, along with the V Macedonica and XI Claudia p. f. legions, vexillations to the north of the Black Sea. It is interesting to note that after the displacement of the V Macedonica legion to Dacia, the command of the vexillations passed to the *angusticlave* tribunes of the I Italica legion. Antonius Valens and Ti. Plautius Ti. f. Papiria Felix Ferruntianus are recorded in this office. The first is mentioned by two inscriptions discovered at Balaklava in Crimea, one placed in the local sanctuary by centurion Novius Ulpianus of legion I Italica, dedicated to Hercules and one to Iupiter Optimus Maximus Dolichenus (Sarnowski, Savelja 2000). The second centurion is recorded by an inscription at Mactaris (Africa) from which we discover that while tribune of the I Italica legion, he also held the office of *praepositus vexillationibus Ponticis apud Scythia(m) et Tauricam* (CIL VIII 619 = ILS 2747), thus at the command of legionary

vexillationes sent from Moesia Inferior or rather (vexillationes Ponticae) from Pontus et Bithynia north the Black Sea.

Around AD 185-186, the command over the Chersonesus vexillation (vexillatio Chersonessitana) was ensured by Atilius Primianus, tribunus and Valerius Maximus, centurio. Along with the former tribune, vexillation commander, L. Arrius Alcibiades, they are mentioned epigraphically in connection to abuses (exaggerandae vectigalis quantitatis sponte suscepisse) in the collection of the prostitution tax (vectigal lenocinii) (CIL III 13750 = IGR I 860). The name of the unit they served is not mentioned, yet given other inscriptions recording angusticlave tribunes of the I Italica legion at the command of the vexillation at Chersonesus, we may assume they belonged to the same legion. An inscription from the same city records M. Atalius Placidus, centurio. The inscription was placed pro succesu eius to Asclepius and Hygia by a medicus vexillationis and medicus duplicarius classis Flaviae Moesiacaе (AE 1995, 1350). A tile at Charax records another centurion of the I Italica legion, L(...) A(...) C(...), praepositus vex(illationis) Moes(iae) Inf(erioris) (CIL III 142145).

Fl. Sergius Sosibius, tribunus militum angusticlavius is attested in 184 at Chersonesus, by a dedication placed to Commodus and this tribune by T. Aur(elius) T. f. Cam(ilia) Secundus Rave(nna), tr(ierarchus) c(lassis) F(laviae) M(oesicae) (AE 1900, 199 = CIL III 1421434 = IOSPE I2 417). At Olbia, the troops of the I Italica legion are part of another detachment quartered there together with detachments from the other legions of Moesia Inferior (IOSPE I2 322).

A bellum Bosporanum is reported during Septimius Severus' reign in which a young recruit of legion I Italica participated according to an inscription from Preslav, set later on under Severus Alexander (AE 1991, 1378: ../leg. I Ital. [[AI]]ex[[andrianae]]/militavit bf. cos. et/cornicul. proc./quot (sic!) tiro proficiscens/in bello Bosporano/voverat et adiuvente/numen(e) (sic!) eius multis/periculis in barbarico/liberatus sit merito/votum posuit).

In the year 250, the vexillatio Chersonissitana was under the leadership of M. Ratinius M. f. Saturninus, only centurio legionis. The vexillation was in charge with the reconstruction of the schola principalium (AE 1996, 1358: scholam principalium a solo labsa (sic!) de suo aedificavit).

Obviously, the vexillations of legions, auxiliaries and fleet of Moesia Inferior present in the north of the Black Sea at Tyras, Olbia or Chersonesus (Karasiewicz-Szczypiorki 2012; Karasiewicz-Szczypiorki 2015, 21-55) were quartered precisely within these cities, and it is only later that the military quarters separated from the city by walls, forming true strongholds. Nevertheless, forts were built at Charax/Ai Todor (Karasiewicz-Szczypiorki 2015, 84-110) and Balaklava, as well as sentry postlike the one in Kazackaja (Karasiewicz-Szczypiorki 2015, 76-80)

Recently, a building at Balaklava in the Mediterranean style from the *latera praetorii* was uncovered, being probably the commander's house, the praetorium (Karasiewicz-Szczypiorki 2015, 56-75). Some years ago, a Dolichenum was excavated (Sarnowski, Savelja 2000).

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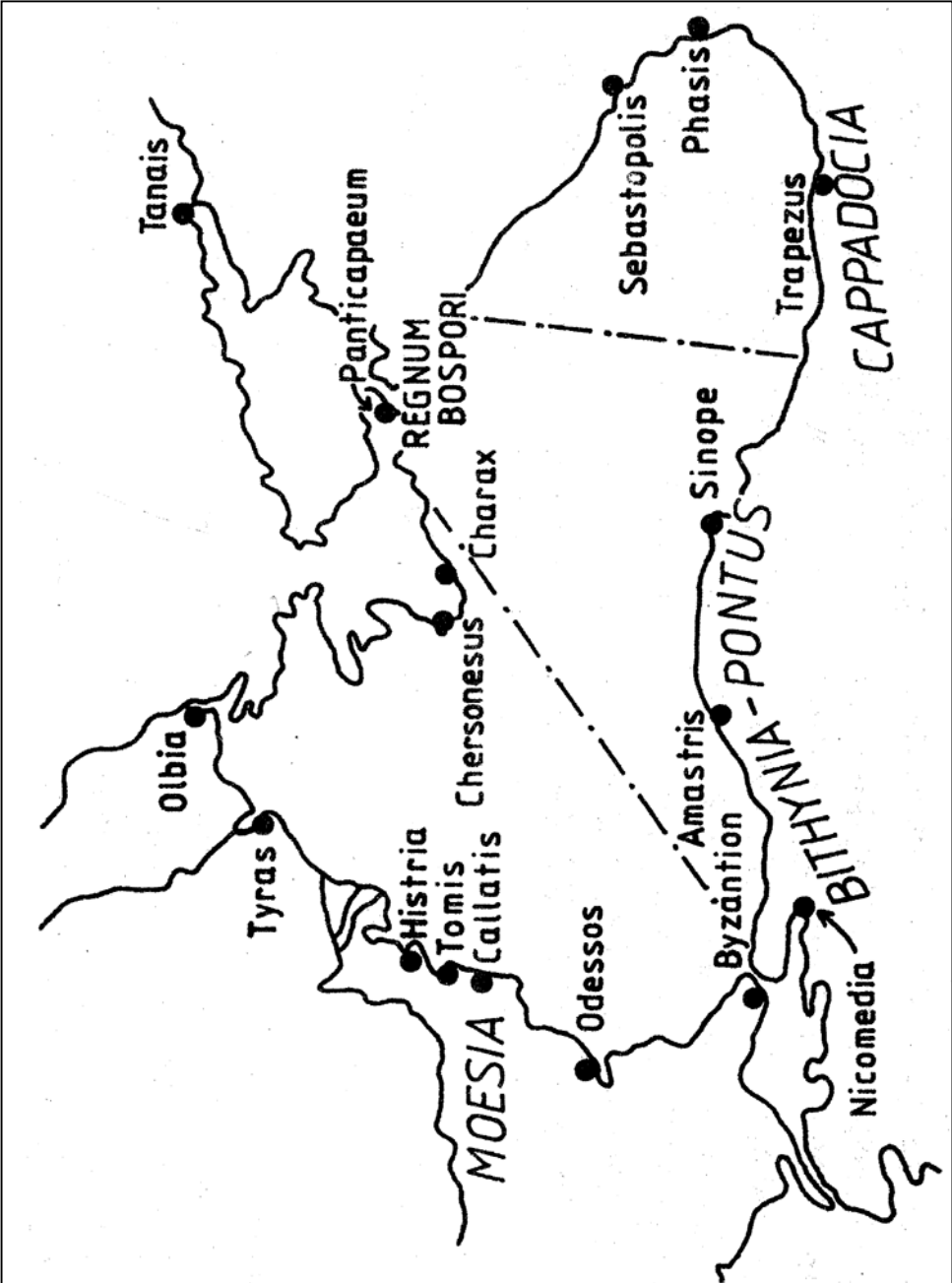


Fig. 1. The areas belonging to the armies of Moesia and Pontus et Bithynia (after Sarnowski 1988).

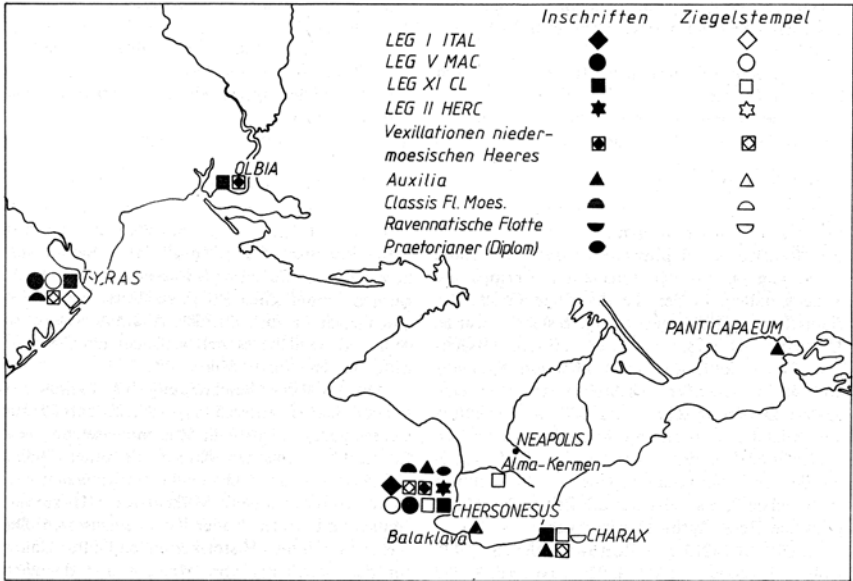


Fig. 2. The attested Roman army units (after Sarnowski 1988).

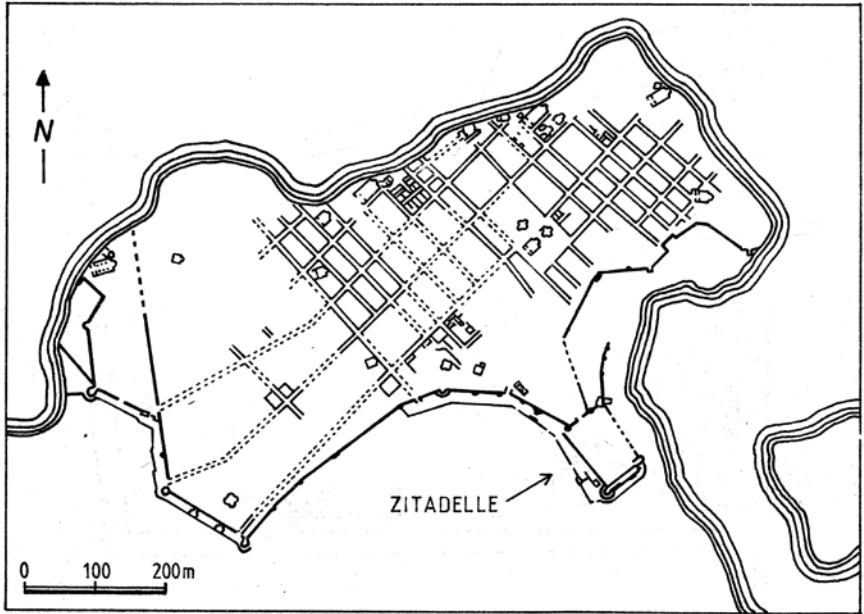


Fig. 3. The citadel of Chersonesus, where the garrison of the Roman army detachment was located (after Sarnowski 1988).

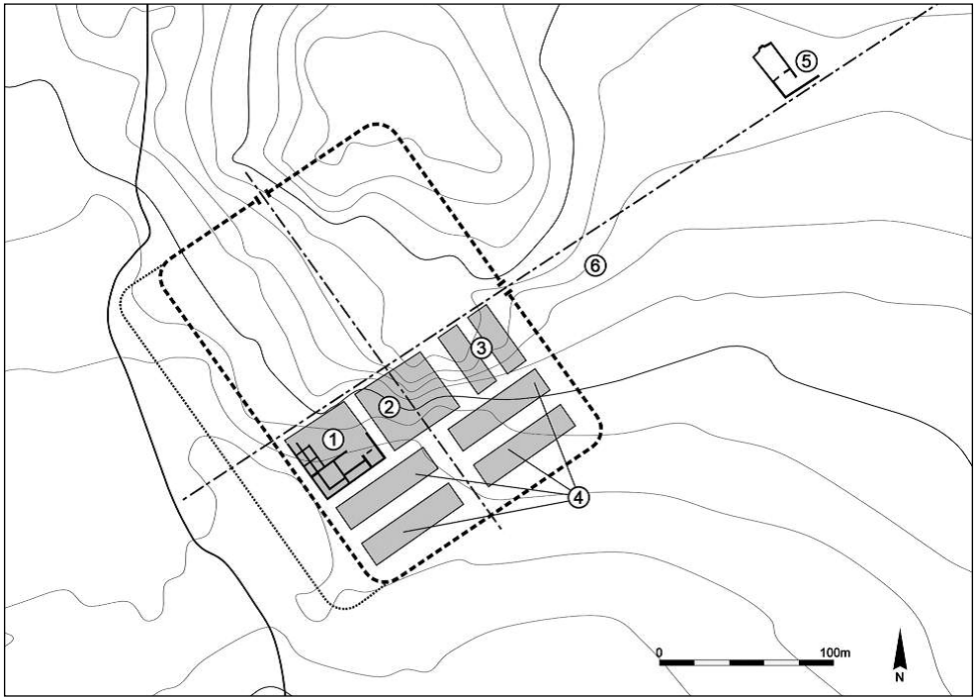


Fig. 4. The Balaklava Roman fort (after Karasiewicz-Szczypiorki 2015).

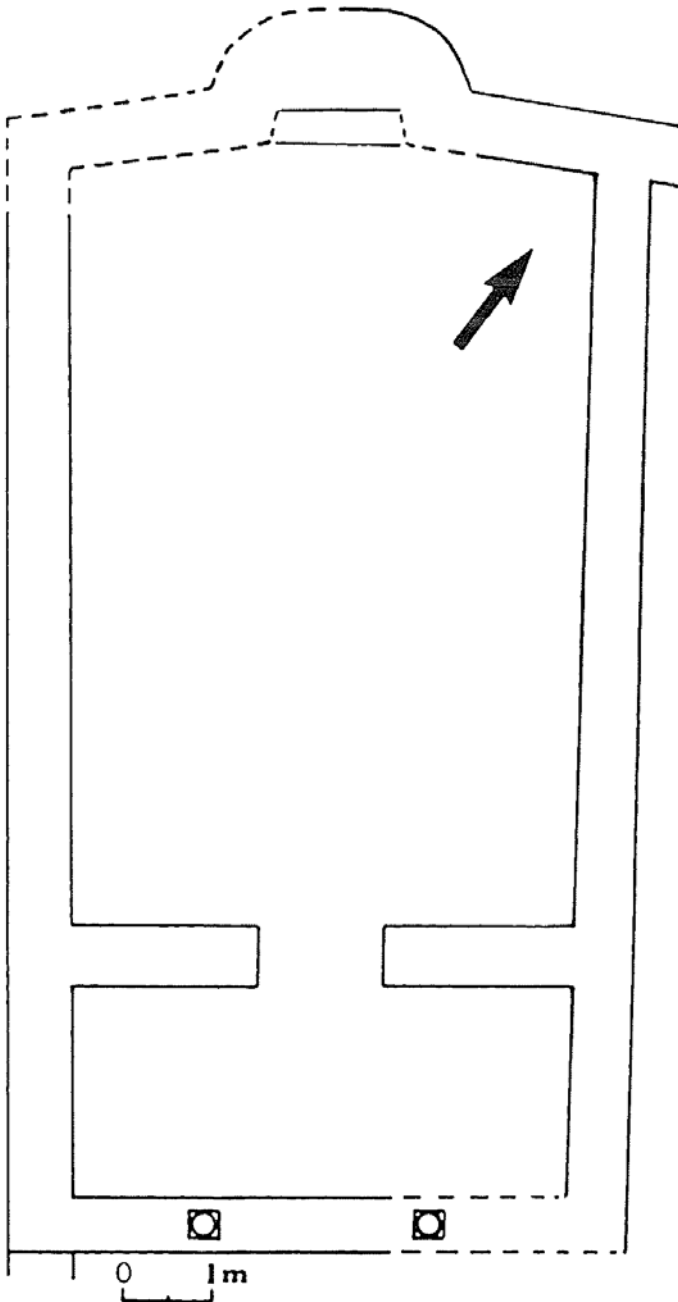


Fig. 5. The plan of the Balaklava Dolichenum (after Sarnowski, Savelja 2000).

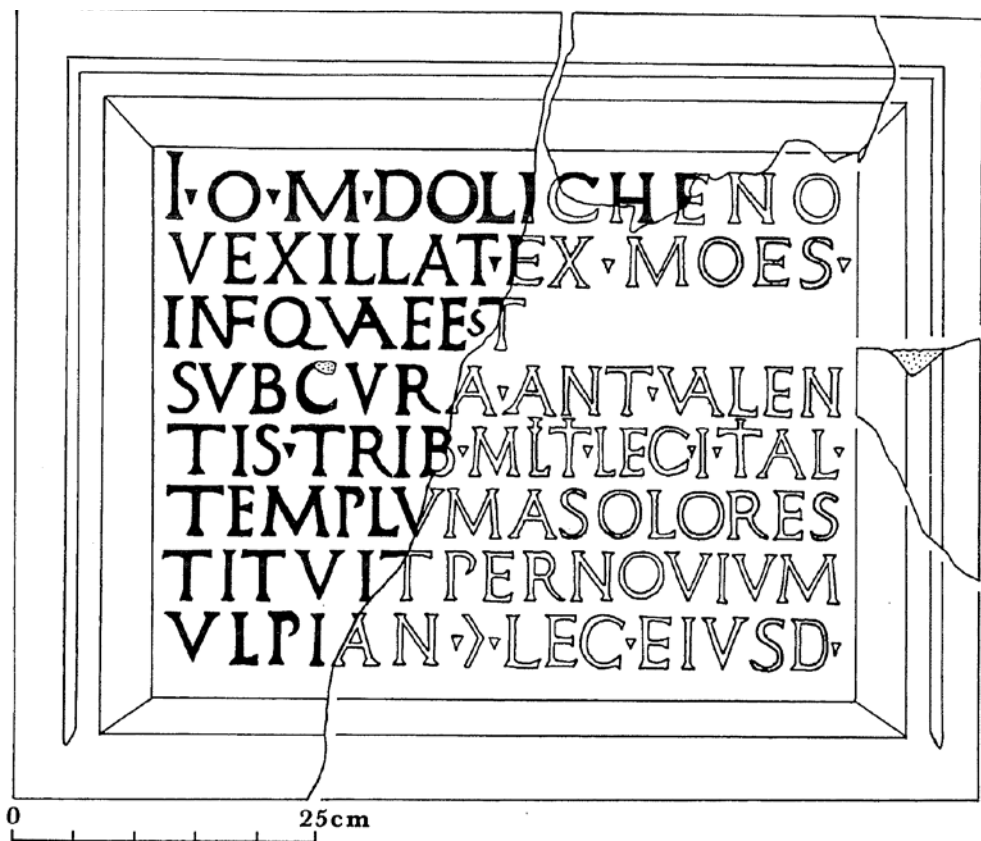


Fig. 6. The restoration inscription of the Balaklava Dolichenum (after Sarnowski, Savelja 2000)

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Olbia, the Sarmatians and the Roman *Limes*

One of the problematic topics in the history of Olbia during the Roman period was its relationships with the Sarmatians and the Roman Empire in the early ages AD. This period is described by the controversial view at the situation. Scholars' opinions diverge over question like Olbia's ethnic composition, stages of the Roman army's presence in its surroundings, or whether the Sarmatian groups were friendly or hostile towards the Olbian people, and whether these parties were allies or not (Buiskikh 1991, 128-133; Vinogradov 1994, 167-168; Zubar' 1994, 218-222; Karyshkovskiy 1982, 6-28; Krapivina 1993, 142-148; Bârcă 2014, 168-169, 178-180). An issue of the Sarmatian presence in Olbia is also a subject of controversy (Rusyaeva 2013, 142-148), however, the latest onomastic results suggest that the Sarmatians were present in Olbia as early even in the 1st century AD (Tokhtas'ev 2013, 568, 581, 585-588, 606).

A series of archeological findings with tamgas were discovered in Olbia and its surroundings (with lit.: Kozlenko 2018; Simonenko 2018). This addition to the already well known collection of tamga-shaped symbols, which increases with consequent excavations, is a substantial proof about the presence of the Sarmatian contingent in Olbia starting from the 1st century AD. Moreover, exploration efforts made in the territory of the Olbian chora revealed new monuments allowing to adjust the point of view at the military and political history of Olbia in the 1st century AD.

In 2011, visual archaeological exploration in the central part of the Olbian chora, near the village of Kamyanka, Ochakiv District, discovered a fortification dating back to the Roman period which after having been visually inspected can be interpreted as a Roman military camp (castellum).

This 7-ha facility is surrounded by a shaft, 10-15 meters wide (which spread significantly due to many years of plowing works), and a ditch. This fortification has a rectangular shape (260x270 m), extended along the northwest-southeast axis. In the north-western part of the line of defense there is a gap 10-12 meters wide. There are two more fortified structures of, – 61x65 meters, inside the camp, almost in the middle; each of them on its own is identical to the Roman fort Didova Khata III (Buiskikh 1991, 67-68; Gudea 2005, 472-475).

Examination of the Roman forts located in the Olbian state supports the hypothesis of the presence of Roman military units in Olbia's surroundings in the second half of the 1st century AD (Kozlenko 2016, 79-84), which was likely to result from T. Plautius Silvanus's activities in the Northern Black Sea Region – his campaign against Chersonesus “behind Borysthenes” besieged by the Scythians (CIL, XIV, 3608).

The exploration of Didova Khata III uncovered: fragments of Italian amphorae from the middle of the 1st century AD, soldiers' fibulas, a lead tag with “LEG...” inscription on it, and Antoninus Pius' denarius. The exploration efforts at Kamyanka V revealed a Zeus/eagle copper coin, middle of the 1st century AD (Karyshkovskiy 1982, 14).

In the excavated sections of ditches at the three lines of defense of the Roman fort Kamyanka V, there were found fragments of the Pontic amphorae from the middle – second half of the 1st century AD: type Sin III, S III, S IVA1 (Vnukov 2003, 109-111, 118-128), including a wall of a light-clay late Herakleian amphora with a scratched tamga (fig. 3, 1, 32).

Tamgas, especially, a drawn ones, can function, among other things, as an identification mark of the Sarmatians' immediate presence (Voronyatov 2009, 80). These findings and the Sarmatian burial sites of the 1st century AD known to be located near Olbia (with lit.: Kozlenko 2018, 249), which gravitate towards the location of the hill-forts and forts (fig. 2, 1); bones of a horse in the filling of the ditch around the inner fortification of the Roman camp Kamyanka V, and the ethnic and political situation in general may suggest a presence of the Sarmatian horsemen in the fortified facility. This hypothesis brings up a question: were they present concurrently with the Roman troops, or after the soldiers had abandoned the fort?

In 1984, during the exploration of the early-medieval basilica in Crimea, near the foot of Manhup, was discovered an Olbian decree which mentioned an embassy to legates of Moesia, including, apparently, Plautius Silvanus, the Aorsi kings, and some “auxiliary troops”, which “flooded our locality”, and whose emergence encouraged active efforts (Vinogradov 1994, 166-168). When using Yu. G. Vinogradov's translation “*συμμαχία*” as “auxilia”, it should be mentioned that the essential meaning of the Ancient Greek “*συμμαχία*” is “alliance”, “union”. The text is likely to imply an auxiliary union – vexillatio. Thus, grounds exist to relate the mentioned “auxiliary

troops" to the Roman military units who constructed wooden and earth forts on the border of the Olbian state.

If they were deployed at the same time, the Kamyanka V fort initially was outlined to contain the allied forces – the Sarmatians mentioned in the Manhup's decree (the Aorsi or the Alans) who were probably located in the southern part of the outer fort's perimeter. The classics' descriptions of the Roman camps provide data on the deployment of auxiliary troops of allied forces (Joseph. Flav., *Bell. Jud.*, IV, 9, 1; Pseudo-Hyg., *De Munit. Castr.* 19, 29, 43; Veget., III, 1), in particular, about the allied cavalry within the camp mentions Polybius (Polyb., VI, 30). Furthermore, the presence of the Sarmatian *arme blanche* in the forts is known from epigraphic findings discovered in the Roman fort Ribchester in the northern part of Britain (CIL. VII. 218, 229, 230). This version may be further evidenced by Tacitus' report on joined activities of the Sarmatian cavalry and the Roman troops in the Northern Black Sea Region during the war between Rome and Bosphorus, AD 45-49 (Tac., *Ann.* XII, 15-16).

An inscription in Ancient Greek on pedestals (NO. 131, Yaylenko 2017, 591-595), dated AD 70-90 (Vinogradov 1992, 29, 32), found in Olbia, in the Lower city (currently known as the place of origin of new terracotta warriors and eagles, and pieces of the Roman military equipment) mentions M. Aemilius Severinus, a centurion of the legio I Italica. He could be a commander of this *vexillatio* (cohort) whose task was to construct a defensive system around Olbia. Probably, this is what was documented in a respective inscription of the 1st century AD (IOSPE. I2. № 177), telling about structures which warranted "eternal security" to the Olbians (Buiskikh 1991, 114).

In addition to centurions, *evocati* could position themselves within the camp (Pseudo-Hyg., *De Munit. Castr.* 6). It should be mentioned in this regard that one of the Olbian decrees (NO. 45), of that time probably (Zubar' 1994, 220), was issued to honour the veteran of the Roman army – *evocatus* Agathocles "sent by the commanders to the city". The *evocatus*'s function, among other things, was to provide food to soldiers, which is interesting in connection with data from the Manhup's decree about the crop failure in Olbia (Vinogradov 1994, 167).

It is necessary to remind, that delivery of provisions to the forts, and support of columns was assigned to the cavalry, which was stationed in forts (Veget. *Epit. rei milit.*

3, 8). If in Kamenka V together with the Roman auxiliary infantry the Sarmatian horsemen were stationed, then this responsibility certainly was assigned to them.

The total area of Kamyanka V fort is 7 ha; it amounts to approximately a half of the territory of the Roman camp of the legio I Italica at Novae. The outline of Kamyanka camp is apparently intended for a vexillatio. We know about vexillations in forts to the north from the Danube from Hunt's papyrus (with lit.: Bondar' 2013, 25-26). Forts as large as Kamyanka V were designated for garrisons intended to be engaged in combat operations at any time of year. As is known, the sizes of the forts indicates the degree of threat around them. The fortress of vexillation of this size is a reaction to the actions of large groups of the enemy (Bishop 1999, p. 115). The layout and area of this fort suggest that at least 400-600 people (cohors quingenaria) were deployed there simultaneously, and it is highly probable that centuriae from various detachments located in isolated fortified facilities within a common one, thus, adhered to the layout plan and maintained their military identity within the perimeter of the fort. If forts Didova Khata III and Kamyanka V were constructed by several centuriae, the total number of Roman soldiers could be determined by the count of cohorts milliaria, i.e. about 1,000 men. As it is known, Flavius Josephus from king Agrippa's speech, AD 66, mentions 3,000 heavily-armed Roman warriors and 40 military ships who controlled the situation in Pontus and in the Maeotic Sea area (Joseph. Flav. Bell. Jud., II, 16, 4).

The main gate of the fort (porta praetoria) faces towards the likely appearance of the enemy. It is noteworthy that they are directed towards the location of the Sarmatian kingdom Aorsia. Built in the vicinity of Anchekraskoy gully, in ancient times it was a tributary of the Berezanskiy estuary, the camp confirms the decisive role of the best-equipped position when choosing the location of the forts around Olbia. With the participation, for example, in the campaign of T. Plautius Silvanus of the Roman fleet, such a factor as the presence of a nearby fortification of a waterway connected to the sea, of course, was of great importance. High burial mounds, near which Kamyanka V and Didova Khata III were laid, were used as patrol-signal posts for monitoring the surrounding territory. Remotely similar to Kamyanka V the fort of the I century AD available on the territory of Britain (fig. 2, 6), but it is much smaller in area and with one internal fortification. Almost identical to the camp of Didova Khata III and the internal fortification of Kamyanka V fort (fig. 2, 2) is known at the confluence of the Danube river and Siret river (Gudea 2005, 456-457).

With regard to the number of tamga-shaped symbols originating from Olbia and fortifications at its border, the suggestion that tribes who resided near Olbia were committed (by a bi- or trilateral agreement) to participate in construction of fortified lines at the borders of the Olbian state appears quite probable (Buisikh 1991, p. 128-129). Findings with tamga-shaped symbols are known in the regions where Roman garrisons contacted the Sarmatian world, implying that Sarmatian warriors could easily sign up with the Roman forces (Kostromichev 2016, 134-135).

Strong fortified structures constructed by the Roman auxiliary troops, probably with support of the Olbian settlers and some Sarmatian groups, suggest that a threat posed by other nomadic unions at the borders of the Olbian state was clear.

At the same time, according to the scholars, a Roman fortification emerges near the village of Orlovka and, probably, a fort around it; Galați, Lower Bessarabian Dyke, between the Pruth and Lake Yalpuh (fig. 1) were constructed. Tyras accommodates a Roman garrison; at the same time, it is a part of Moesia province. It would be a logical assumption, based on experience of the Roman military art and with regard to various opinions, that the Upper Bessarabian Dyke, between the Pruth and the Dniester was constructed enabling to form a line of Roman forts. As the dates of camps in Didova Khata III and Kamyanka V suggest, the defensive earthworks along the northern border of the Olbian state, as well as, probably, a number of settlements across the Olbian chora were built at the same time. T. Plautius Silvanus's campaign resulted in construction of the defensive earthworks around Chersonesus.

A camp at the confluence of the Sireth and Danube (fig. 2, 2, 2) identical to Didova Khata III and inner fortifications in Kamyanka V appears to be quite illustrative. It is highly likely that this fort near the Roman fortification Barboși, at the river crossing site, is one of the points where the Roman troops started their movement towards Tyras, Olbia and Taurida in the second half of the 1st century AD.

Thus, having attacked a foreign territory, the Roman troops with combined support from the sea made a passage to Taurida by land, constructed a defensive line by canons of a limes (Bujskich 1994) and established necessary control over the coastal belt of the Northern Black Sea Region having embraced a number of Ancient Greek cities in the immediate neighborhood of barbarian tribes.

In the light of historical events of that time in the Northern Black Sea Region involving these two parties, it should be mentioned that the Romans' enemies at some point could be the Aorsi or the Alans (Simonenko, Lobay 1991, 88; Schukin 1994, 216-218; Yatsenko 2001, 115-117; Dzigovskiy 2003, 101-113). They could also become their allies. It's not a surprise that some tamga-shaped symbols from Olbia (fig. 3, 6, 16, 23, 26, 34, 38, 39) have analogues in the very regions of the Upper and Lower Don – areas of the Alans' settlements. Data evidencing close relationships among Olbia, the Roman Empire and the Sarmatians documented in the Manhup decree where the Kingdom of Aorsia is mentioned, are supported by tamga-shaped symbols from the territory of the largest Roman field camp Kamyanka V located at the northwest border of the Olbian state.

In the second half of the 1st century AD Olbia became to some extent on the Sarmatians and their kings Pharzoios and later of his son Inismeus, which were based to the north-west of Olbia, in Aorsia country. At this time Olbia minted a gold and silver coins with the heads of these sarmatian king's and their family coat of arms – tamga, which is held in the paws of an eagle (Karyshkovskiy 1982a, 66-82). An eagle, in which some researchers see a sign of power and greatness of the Roman Empire – that is, a sign that the coins of the Sarmatian kings were minted in Olbia with the consent of Rome. According to Tacitus' report, the Rhoxolani slaughtered two Roman cohorts and invaded Moesia (Tac. Hist. I, 79). Thus, the escalation near the Danube was directly related to the Rhoxolani's intrusion. Though, Plautius Silvanus's epitaph (CIL. XIV, 3608) states that they had been allies some time earlier. It is quite possible that the political union of Aorsia headed by the Alanic elite was mostly committed to diplomatic contacts with the Roman Empire and the state of Olbia.

There is a convincing piece of evidence of the Sarmatians' immediate presence in Olbia found in a building of the second half of the 1st century AD located in the southern part of the Upper City (Kozlenko 2018, p. 245-246). In addition to a body of pottery items, it includes elements of the Sarmatian military kit: a bow cover plate made from bones, a bone tanged arrowhead, fragments of knives, two sharpening stones, elements of a horse rein, and an iron buckle (fig. 3, 2, 3-7).

Probably, on the territory of the Olbia state was sent a vexillatio, which included the Thracian troops, resulting in a burial near the village of Porogi, which correlates with king Inismeus, were could have been a Thracian-type knife (Simonenko, Lobay 1991,

15, fig. 7, 1), and in the burial of a notable Thracian warrior in the mound of Roshava Dragana with items of Sarmatian weapons, including tamgas (Buyukliev 1991, 37-46). This may turn out to be quite acceptable in the case of simultaneous location of detachments of Sarmatian horsemen and Roman auxiliary troops within the Roman fort Kamenka V. The presence of such rare elements as bone patches on the "Hun" type bow, from the considered complex of the Upper Town of Olbia, which in the Northern Black Sea region have analogies only in the Sarmatian noble burial near the village of Porogi, may indirectly testify in favor of such version. In addition to fragments of ceramic dishes, iron items and coins, a bronze plate (fig. 3, 2, 2) was found during the study of the fort, which has similarities with elements of protective ammunition to both Sarmatian soldiers (Simonenko 2015, 120-135) and soldiers of the Roman army (Robinson 1975, 154). Elements of protective weapons are also known in the burial of the Roshava Dragana mound (Buyukliev, 1991, 43, fig. 4, 1-2).

About the Roman military presence in Olbia in the 1st AD, except for the epigraphic sources and fortifications of the Roman model, may be evidenced by a fragment of the Roman military equipment (fig. 3, 2, 1) from the excavation of the site R-25 (O-2009/R-25/1233), which dates from the 1st century AD (Deschler-Erb 1999, taf. 42, 816-820). It is noteworthy that it was found in the immediate vicinity of the considered complex of the second half of the 1st century AD, with the Sarmatian combat kit. Thus, tamga-shaped signs can serve as a valuable source in analyzing a number of historical problems. Their presence and detection context confirms the point of view about the direct Sarmatian presence in Olbia since the second half of the 1st century AD (Simonenko 1999, p. 116; Tokhtas'ev 2013, 567-568). However, should one speak of Sarmatization or barbarization of the entire population of the city (Krapivina 2007, 164-165; Podosinov 2012, 178-180; Rusyaeva 2013, 142-148) or, rather, on the contrary – Hellenization of the Sarmatian layer – it would be a topic for another discussion.

In the middle of the II century AD, according to Julian Capitolin (Jul. Capit., IX, 9), Olbia is attacked by the "tauro-scythians", in which it is natural to see the Sarmatians (Buisikh 1991, 134; Simonenko 2015, 317). However, formed on the model of the Limes, the system of the ancient settlement around Olbia fulfilled its functions, and the Roman garrison, entered into Olbia at times of the emperor Antoninus Pius, in connection with this attack, is settled down for a long period.

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List of Abbreviations

NO – Nadpisi Ol'vii

CIL – Corpus inscriptionum Latinarum

IOSPE – Inscriptiones antiquae orae septentrionalis Ponti Euxini Graecae et Latinae

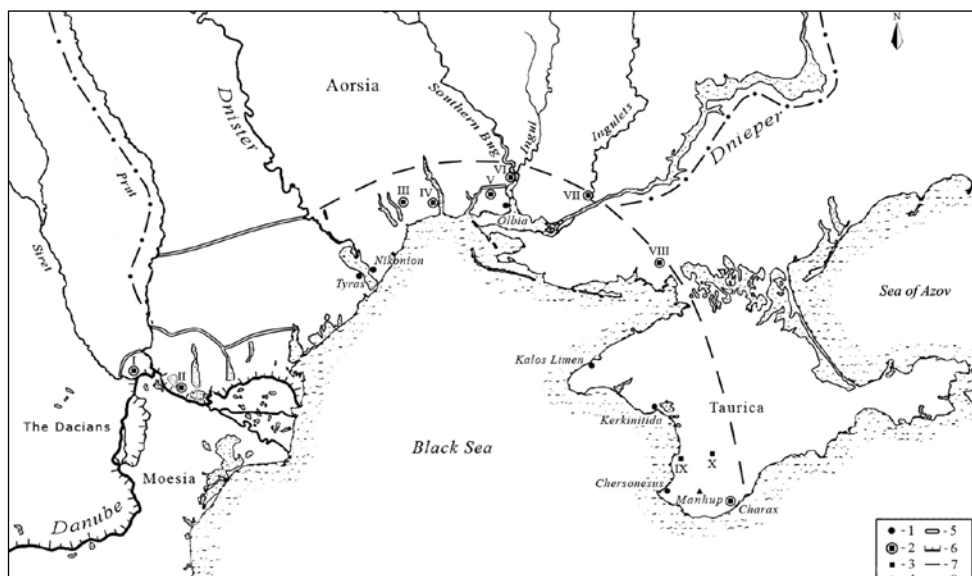


Fig. 1. Map of the land route of penetration of the Roman troops in the Northern Black Sea region in the third quarter of the 1st century AD

1 – cities; 2 – Roman forts (I – Galați; II – Orlovka; III – prospective fort Shevchenkovo II; IV – Tishkovka; V – Kamyanka; VI – Didova Khata III; VII – Dar’evka; VIII – prospective fort near Mirnoe village);
 3 – hillforts with traces of the Roman military presence in the second half of the 1st century AD (IX – Ust’-Al’minskoe hillfort; X – Alma-Kermen hillfort); 4 – place of discovery of the olbian decree; 5 – shafts;
 6 – borders of Moesia to the middle of the 1st century AD; 7 – the boundaries of the territory controlled by the Roman troops in the third quarter of the the 1st century AD; 8 – borders of Aorsia (by P.O. Karyshkovskiy, Ju.G. Vinogradov, M.B. Shukin, A.V. Simonenko).

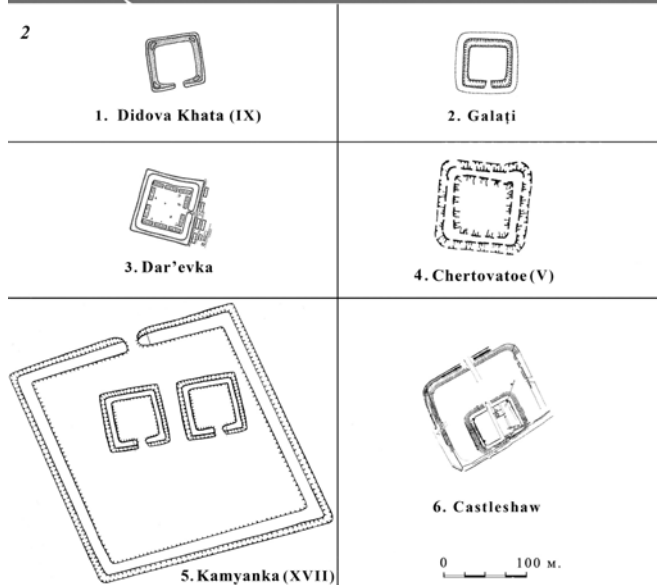
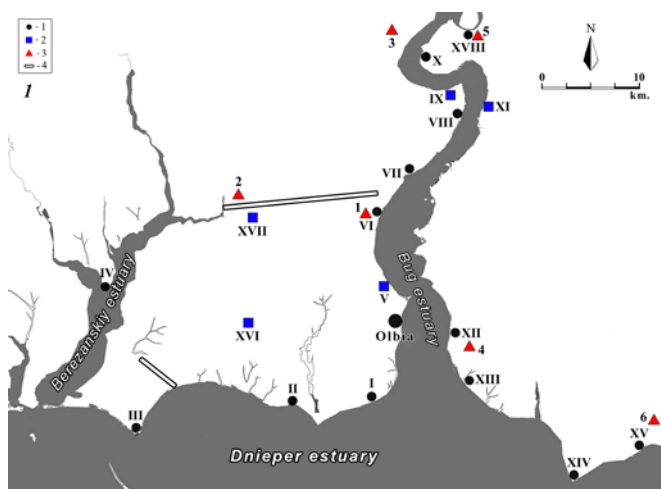


Fig. 2. 1. Map of the Lower Bug region of the first centuries AD with a Limes structure of fortifications. 1 – hillforts (I – Dneprovskoe II; II – Petukhovka II; III – Ochakov; IV – Mus; VI – Kozurka I; VII – Staraya Bogdanovka I; VIII – Radsad I; X – Popova Balka; XII – Semen Rog; XIII – Skel'ka; XIV – Stanislav; XV – Zolotoy Mus; XVIII – Staroflotski Barracks); 2 – forts (V – Chertovatoe; IX – Didova Khata III; XI – Siversov Mayak; XVI – Ostrovka; XVII – Kamyanka V); 3 – the Sarmatian graves (1 – Kozurka; 2 – Kamyanka; 3 – Vesnyanoe; 4 – Luparevo; 5 – Staroflotski Barracks; 6 – Shirokaya Balka); 4 – shafts.

2. Plans of the Roman forts: 1 – by V. V. Ruban, S. B. Buiskikh; 2 – by M. Brudiu; 3 – by G. P. Krusin; 4 – by V. I. Nazarchuk, S. B. Buiskikh; 5 – by R. O. Kozlenko; 6 – by D. Start.

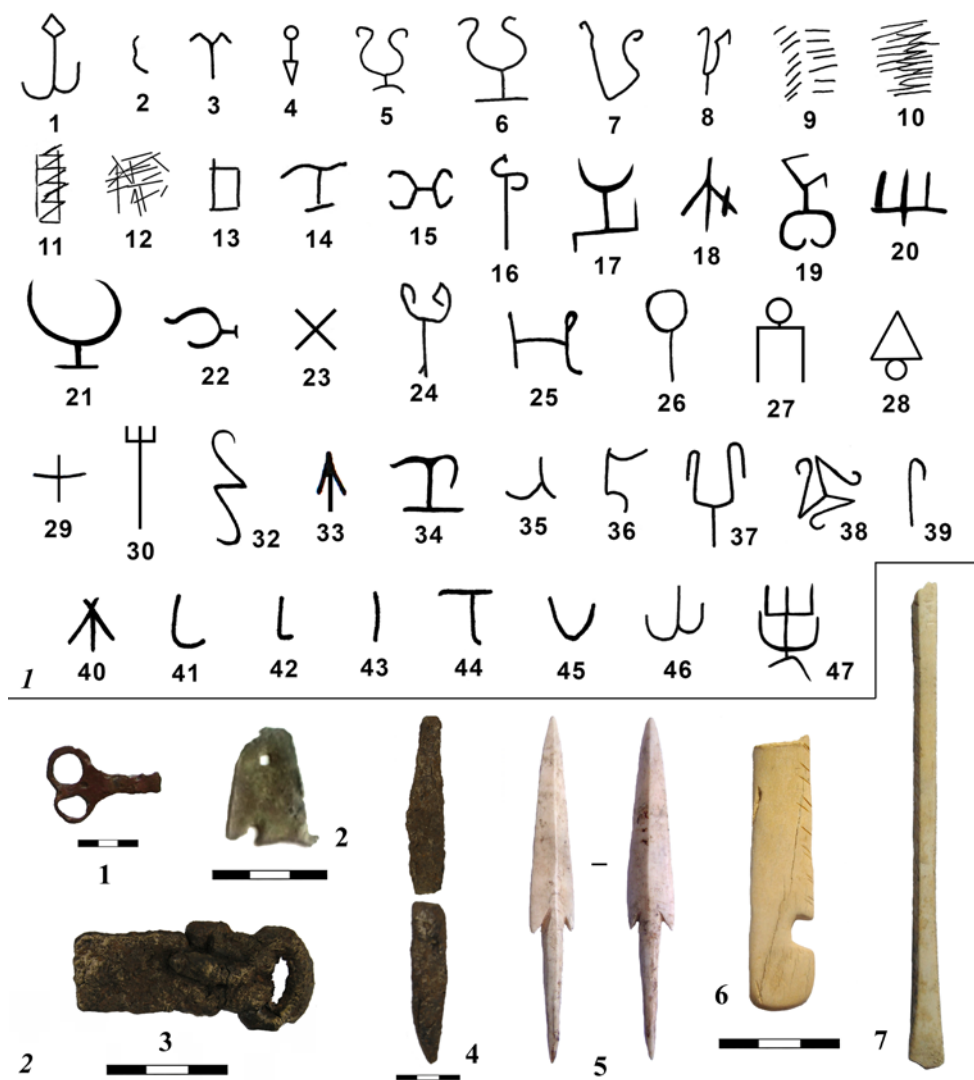


Fig. 3. 1. Tamga-signs from Olbia (sections R-23, R-25, the North wall of the citadel, the fort Kamyanka V): 1-16 – tamga-signs on bones (1-15 – astragals; 16 – hoof); 17-24 – tamga-signs on the stone; 25-45 – tamga-signs on ceramics; 46 – tamga-sign on the plummet; 47 – tamga-sign on the brick.

2. 1 – fragment of the Roman military equipment; 2 – bronze plate; 3 – iron buckle; 4-7 – iron and bone products of Sarmatian set from a structure from the Upper City of Olbia: 4 – iron knife; 5 – the arrowhead; 6 – fragment of the lateral overlap of the bow; 7 – the frontal overlap of the bow.

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A current summary of ancient paintings from southern Ukraine.

The currently known archaeological sites in southern Ukraine apparently have not produced remarkable assemblages of murals. This is at least the impression given after reading through the specialised scientific literature concerning the subject. In order to affirm or confirm this state of affairs, much work and research among the archives and the museum storage facilities is indispensable. In the mean time, I will present two published urban sites with Antique decorative wall paintings (Olbia, Kozyrka) and one from a funerary context, a Scythian Kurgan dating from the third century BCE.

I. Pontic Olbia

Against all expectations, the site of Olbia has not produced an assemblage of painted wall plasters with the exception of a single example published by Vladimir Nazarchuk in 1997. It is highly unlikely that the earlier excavations, notably those from the early twentieth century by Boris Farmakovskij, did not discover a single fragment of painted wall plaster. The excavation reports from the meticulous excavations carried out from 1901 to 1915, and those of 1924 to 1926, were presented as notices in the *Bulletins de la Commission archéologique impériale*, and while being succinct, do indicate regular and noticeable discoveries of Antique painted wall fragments. An example is the many fragments found during the excavation of the 'House of the stone mosaic' during 1902 and 1903. In 1909 the excavation of a tomb also revealed the presence of painted wall plaster in the spoil heap.

The excavation of a large cistern belonging to a Hellenistic period house (T-3), constructed on a terrace in the town, produced thousands of painted wall plaster fragments. The conservation state, though not perfect, still allowed the identification of four chromatic groups (black, white, grey and red). Statistically speaking, red was the dominant colour, but grey was specifically used with the stucco decorations. The fragments from areas with pictorial representations and chromatic transitions permit the proposed reconstruction of the organisation of the mural (fig.1). The wall's height is 1.69 m with the lower area comprising a grey band with a white band on top, which is decorated with geometric designs (?) and above a red surface of at least 1.16 m. The current state of research estimates that this Hellenistic house was occupied between 320 to 120 BCE.

II. Kozyrka

Situated a dozen kilometres north of Pontic Olbia, the site of Kozyrka was archaeologically examined at the end of the 1940^{'s}. The methodical excavations were carried out between 1954 and 1967 under the direction of Anatolij Burakov and revealed a small, fortified town built on a low plateau overlooking the region and the Boug estuary.

The small town was part of a network of fortified agricultural establishments with Olbia as the central hub. The founding of the town corresponded to a renewal period for the Greek city that had finally become emancipated from the late Scythian Kingdom, after having been devastated by the Getae incursions in the middle of the first century CE. Kozyrka was occupied from the end of the first century CE to the middle of the third century CE, with a short interruption in the middle of the second century due to a Scythian invasion.

It is the second phase of the small town's history, from the middle of the second century to the middle of the third century that is well known, with a residential neighbourhood that has been completely explored. Several houses with late Hellenistic floor plans, revealed painted wall plasters as well as stucco decorations. The intonaco adhered to a 2- 10 mm thick wall plaster, which was overlaid on a layer of clay that had been applied to the brickwork walls.

House number 4 produced several painted wall decors fragments. In the first room, the many fragments showed black and rose coloured backgrounds. Elements of a vegetal decoration on a rose background were found in another room of the same house, as well as imitation marble and wall plasters painted with bands of different colours.

The excavation of room number 2 produced a quantity of interesting finds. In one corner was a shallow clay walled pit containing three different coloured mineral pigment balls, the same as used for painting the surrounding walls. The northern section of the room contained a 1.30 m by 1.80 m brickwork burial vault housing six children's tombs. The painted wall plaster and stucco decorations were found in this vault, including a 30 x 40 cm fragment preserved on a block of brick showing the decor's sequence.

In 1966, Burakov published a reconstruction drawing of this sequence (fig. 2), which he believed to be the upper part of a wall with a moulded stucco decoration: the upper part containing a band he described as 'cherry coloured' separated from ano-

ther band of green colour by a fine white line. Two lines, one white, the other dark red, creates the transition to the beginning of a panel of imitation white marble with yellow veins and regularly spaced speckles.

The stucco decoration imitating a cornice is a reconstruction based on a large number of fragments in a poor state of preservation also from room number 2, as well as the adjacent space. The cornice is divided into four distinct zones comprising a thin painted band containing imitation marble alternated with aquatic themed compositions of vegetation and fresh water birds.

Both the painted plaster and the stucco decorations, dated between 150 and 250 CE, are compared with historically contemporary material discovered in the Danubian provinces, in particular those from Pannonia.

III. Mar'ivka

In 1976, E.P. Bunjatjan examined the Kurgan Number 9, and found extremely fragile remains of a painted wooden sarcophagus. This funerary monument was part of a tumulus cemetery composed of a dozen Scythian kurgans built not far from Dniepr and within the village limits of Mar'ivka. The Kurgan had a diameter of 52 m and a conserved height of 4.7 m. The backfill covered a tomb with two access shafts. The burial chamber had been nearly completely pillaged already in Antiquity. An access shaft located at the centre of the kurgan had been dug more than five metres below the ancient ground level. A 1.5 m corridor, lined with vegetable material, led to the funerary chamber – this is where the pillagers had abandoned the painted wood plank, apparently from a sarcophagus.

The funerary chamber, a sub-rectangular structure measuring 4.3 m by 4 m, had been emptied of its contents: only some human and animal bones as well as traces of paint trapped in the clay that had fallen from the ceiling. Along the southern wall of the chamber the archaeologists collected the meagre remains of the tomb's contents including arrowheads, tiny gold decorations, javelin fragments, raised coil pottery sherds, and a single gold earring with amber hanging drops. Traces of plant material littered with wood debris in the middle of the chamber indicated the location of a wooden sarcophagus.

The excavation of the 2.9 metres long entry corridor and a second access shaft produced a few pottery sherds, animal and human bones, corroded iron and bronze objects, bronze arrowheads and a gold ring mounted with a stater from the mint at Panticapaeum, the capital of the Kingdom of Cimmerian Bosphorus.

The wood plank, measuring 150 cm by 68 cm, had completely disintegrated, leaving only an imprint of its structure on the same clay as the painted composition. It is this impression that has been reproduced to scale (fig. 3) at the site. We can easily see three registers of about 40 cm, separated by ornamental bands, in which a pair of warriors occupies each space. The dynamic and the postures of the fighting warriors, their armours, and their clothing has led E. Fialko to suggest an Amazonomachy.

The hypothesis of a rich Scythian princely tomb seems probable in light of the numerous indications pointing to a royal occupant in the funeral chamber, notably the collection of arms and armour, an array of jewellery items and a painted sarcophagus. A stater provides a chronological span from end of the fourth century / beginning of the third century BCE, which is confirmed by other objects among the small finds.

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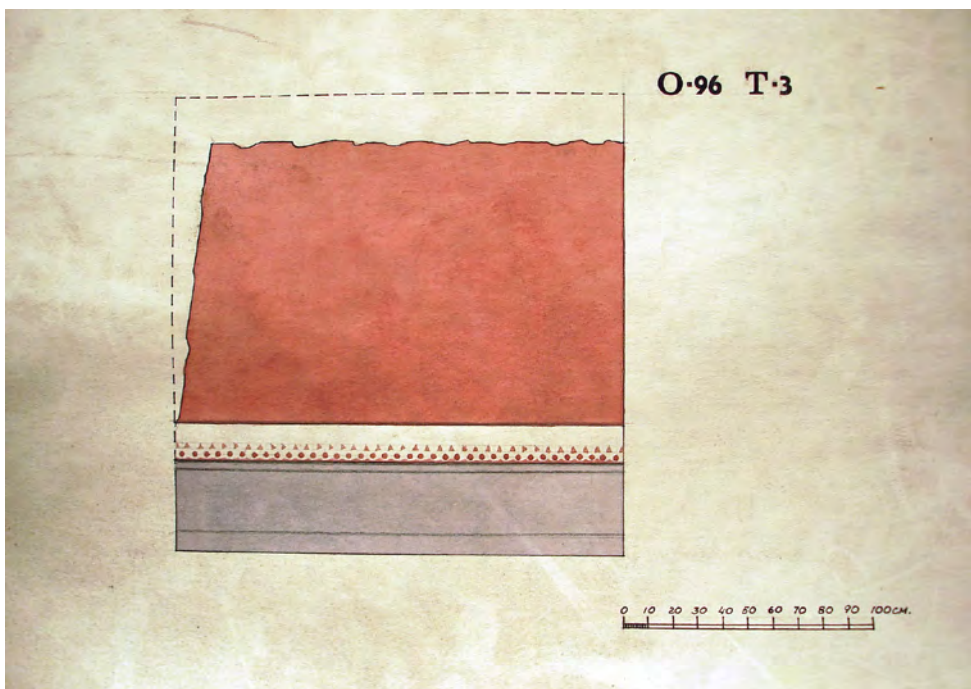


Fig. 1 Reconstruction of the wall mural in the Hellenistic house T-3, at Olbia.
With permission of VI. Nazarchuk (Scientific Archives).

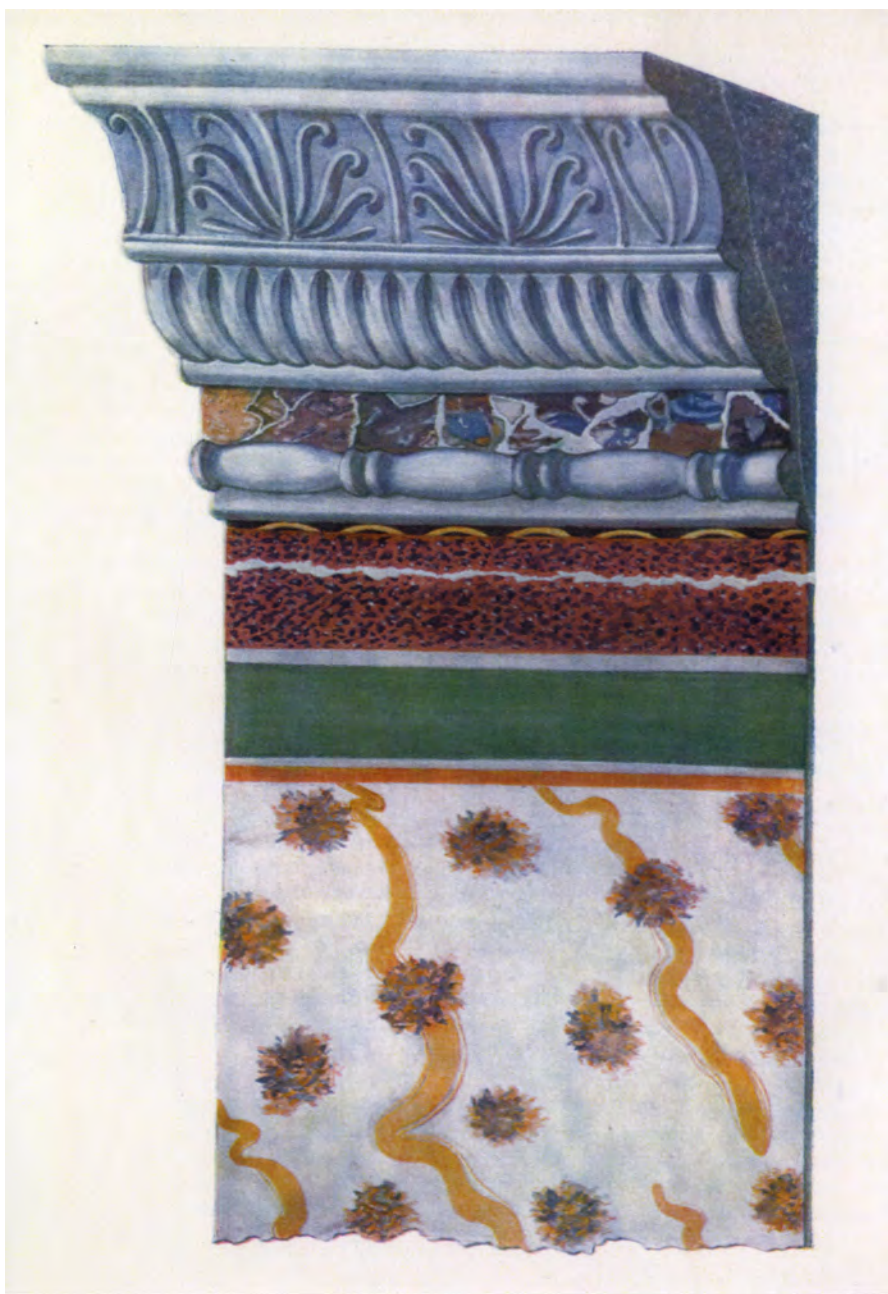


Fig. 2 Reconstruction of the wall mural and stucco decorations (house number 4) from Kozyrka (after Burakov 1966).



Fig. 3 Reconstruction of the painted wood plank discovered at Mar'ivka (after Bunyatyan, Fialko 2011).

Site emblématique du littoral septentrional de la mer Noire, la cité d'Olbia est fondée par des colons milésiens au début du VI^e siècle av. J.-C. L'opportunité est exceptionnelle, en Suisse, de pouvoir se familiariser avec les vestiges archéologiques d'Olbia et d'appréhender l'évolution des relations que la cité a nouées, au cours des siècles et jusqu'à époque romaine, avec les populations scythes, puis sarmates de son voisinage immédiat. Une dizaine de spécialistes venus de Kiev, Odessa, Nikolaev, Zaporijia, mais aussi de Saint-Pétersbourg et Bucarest présentent à l'Université de Lausanne les derniers résultats de leurs recherches.

Légende de l'illustration : Détail du pectoral en or découvert dans le kourgane de Tolstaja Mogila, Musée des Trésors Historiques d'Ukraine, Kiev. D'après W. Seipel (ed.), *Gold aus Kiew: 170 Meisterwerke aus der Schatzkammer der Ukraine*, Vienne, 1993.