

The Demarcation System of the Agricultural Environment of Olbia Pontike

Alexander V. Karjaka

The territory of Olbia's *chora* is known mainly from the settlements spread along the banks of the Bug, Dnieper, and Berezan' estuaries. Numerous investigations and expeditions have given us materials of Olbia's rural settlements, materials which are under the attention of numerous researches and much of which has been published.¹ Generally, it is assumed that the agricultural territory corresponds approximately to the extension of the settled area. How far inland the territory of the agricultural cultivation stretched has not been determined. The existence of ancient agricultural plots has been ascertained; however, their system was not established.

The main information about the demarcation system of Olbian fields comes from aerial photos. The quality of the aerial photos of the Soviet period is good enough for establishing separate fields as well as their borders, which appear lighter. Based on these resources, the demarcation system and ancient roads closest to Olbia could be partly reconstructed.²

In recent years satellite photos of high resolution made by NASA have become accessible for free on the internet site of Google Earth. This allows us to create a general satellite map of the entire area under consideration. The satellite map reveals how the situation in the Olbian *chora* area has changed considerably during the last 30 years. With a combination of satellite and aerial photos, which have been reduced to the same scale, stitched together and compared with the modern and earlier situation, it has been possible to observe existing soil anomalies and a number of ancient monuments in the area under consideration. From this it is possible to create the most complete picture of the agricultural territory of the ancient state of Olbia and to reconstruct missing parts where ever it is possible (Fig. 1).³ Thus, we obtain an overall picture of the general territory of the system of field divisions and ancient roads allowing us to determine its configuration and the main scheme of the spreading of fields and roads germane with it, as well as to specify features of the organization and construction of the fields.

Unfortunately the remains of the cadastre system of Olbia's *chora* is only partly preserved and even the collation of maps, aerial and satellite photos do not provide us with the complete picture of the system of ancient field division. Gaps where the borders of fields have disappeared still exist wherefore it has been necessity to reconstruct parts wherever possible.

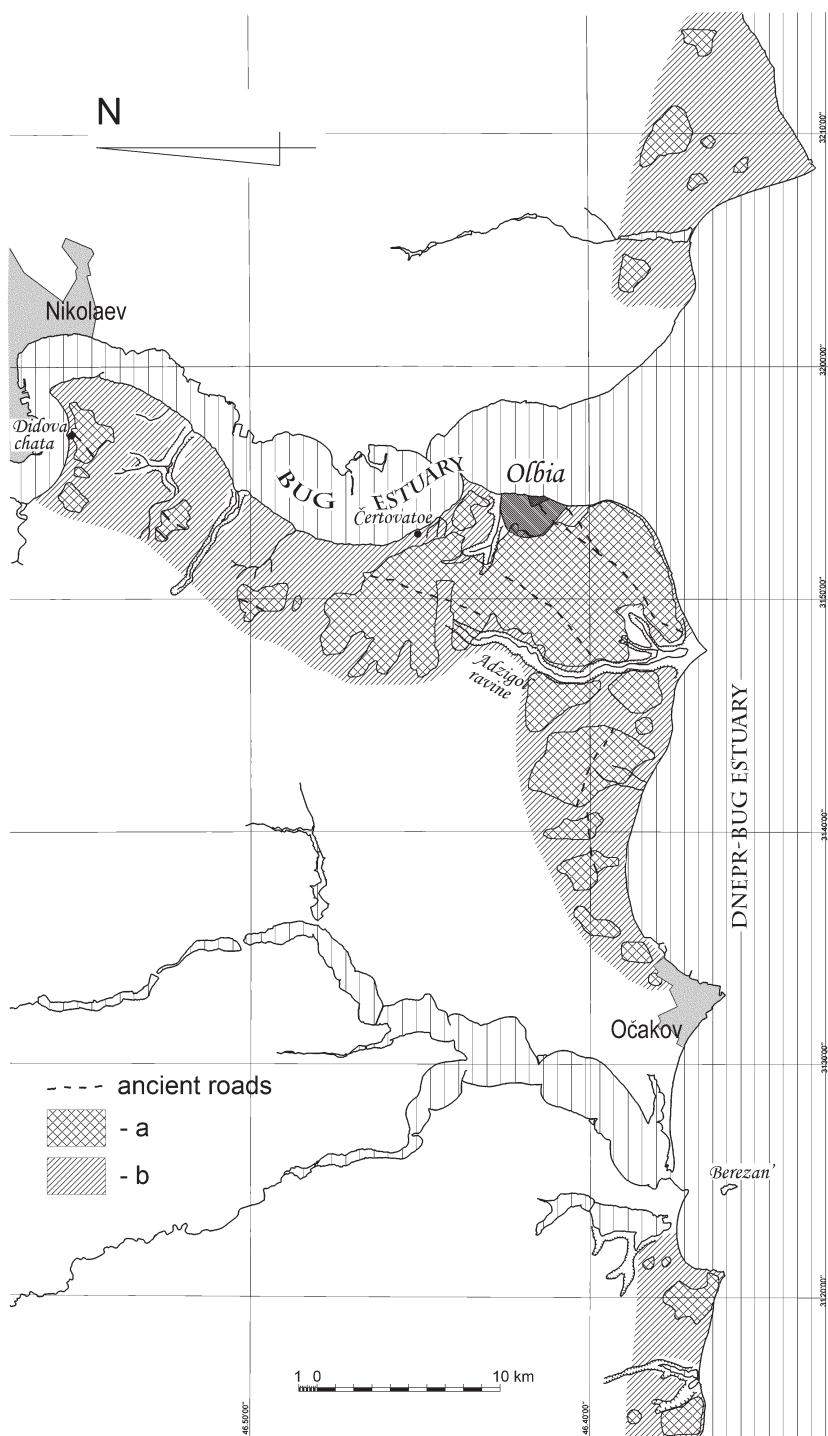


Fig. 1. a – Cadastre system of the b – Olbian chora as evidenced by satellite photos.

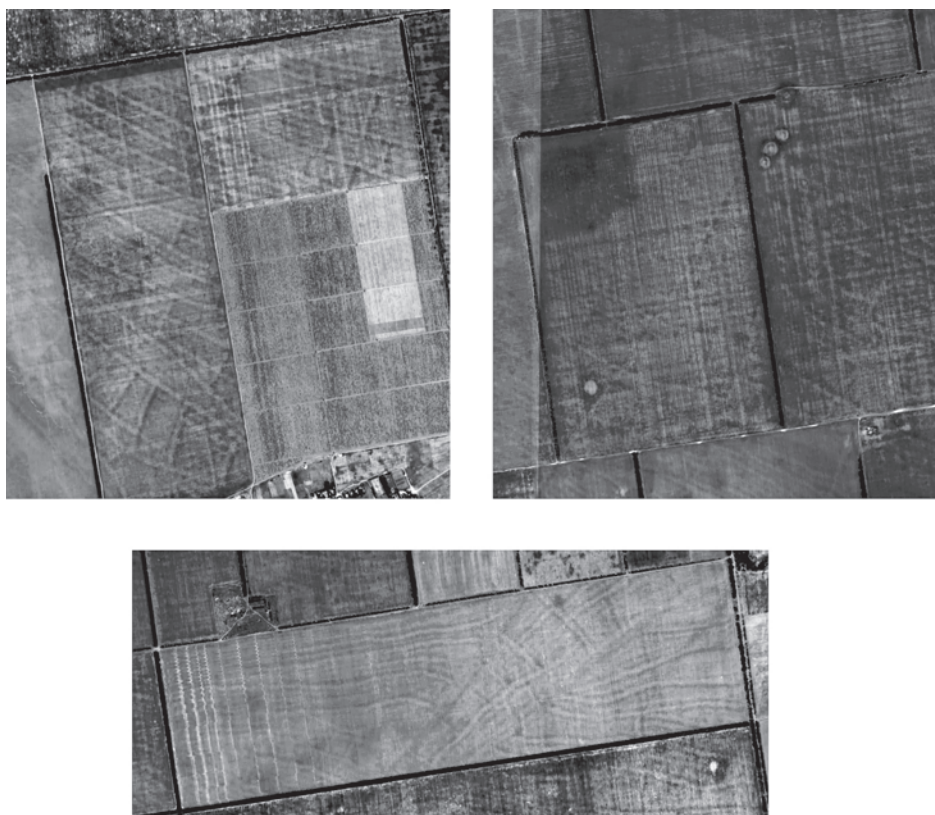


Fig. 2. Samples of ancient field borders in satellite photos.

As can be traced on the aerial and satellite photos, the agricultural territory of the state of Olbia where it was most intensively cultivated is the comparatively narrow area on the right bank of the Bug- and Dnieper-Bug Estuary, from the territory of the modern village Bol'shaja Korenicha, a suburb of Nikolaev to the north to the city of Očakov, to the west and the modern Stanislav Cape to the east. Its size is about 34 km N-S and 52 km E-W. The average width of this area was 6-7 km from the bank of the estuary. The largest depth inland we find closest to Olbia herself, where it reaches 8.7 km from the bank of the Dnieper-Bug Estuary. To the west this area gradually decreased from 5 to 1.5 km and gradually disappeared in the suburbs of modern Očakov. This may be due to the land being exploited to a lesser degree in Antiquity, but it may also be the result of recent human activity in the area. Olbia is located practically in the geometrical center of this field division system possibly in order to achieve a comfortable distance to the controllable territory which was about 25-26 km in both directions as the crows fly.

Also revealed is the territory along the Black Sea coast to the west of the Berezan' Estuary and the Island of Berezan' which was spatially separated

from the main territory of field divisions of Olbia at a distance of no less than 15 km. Its maximum size is 10 km E-W and 4 km N-S, so the overall width of Olbia's territory including the area around the Berezan' Estuary is about 77 km E-W.

The system of field divisions in the Olbian *chora* is represented by light, narrow lines which formed the borders of the ancient fields visible from a high altitude on the surface of modern fields (Fig. 2). These lines are practically invisible from the surface because of the large scale. In general the width of the lines is even and within the limits of 10-18 m, but the average width is about 14-16 m. Occasionally, the light lines of the demarcation system are accompanied by two parallel, narrow darker lines (usually darker than the field itself) of a width of 6-8 m. These narrow, darker lines are located close to the light lines and usually present on both sides of these, but sometimes they are single.

The areas of the ancient fields are dark. They are usually represented as narrow, elongated areas as a rule oriented across the slope towards the estuary bank and across the ancient roads on the map. The width of the fields is different ranging from 40 to 260 m, but the average size was about 60-70 m, a width of fields found almost everywhere in the territory under consideration. The determination of the length of the individual fields is difficult, because the locations of the crossing border line cannot be found resulting in fields that appear to be hundreds of meters and even kilometers long.

The best preserved territory where the borders between the ancient fields remain most visible is the territory closest to Olbia (Fig. 3). Running in an east and south-east direction, this territory is limited by the large Adžigol' Ravine. It was about 6.5-8.5 km wide E-W to 9.5-10.4 km (maximum 11.35 km) SE which would be a comfortable distance for a day's walk back and forth from the city. The northern border is as far as 12.6-13.7 km from Olbia.

Few ancient roads are revealed in this area. The first one has been traced in its entire distance. This road starts at the Western Gate of Olbia running 11.35 km SW to the bench of the cape between the Adžigol' and Dnieper-Bug estuaries. The second more minor road joins the first road 4.2 km from Olbia running along the ravine from the southern edge of the settlement of Olbia. The third large road is traced in the northern part of the *chora* nearest to Olbia. It runs NE-SW and can be traced for a distance of 6.6 km. By its direction it is obvious that this road connected the northern regions with the outspring of the Adžigol' Ravine and the rural settlements located in and along this valley.

The ancient fields in the territory closest to Olbia were definitely arranged according to the natural relief of the area across the slopes for easy drain of water from the fields and connected by the roads described above. The main lines of the fields cross the roads which in this area were mainly running along the estuary benches. The fields filled the space between the roads which is best represented in the area closest to Olbia. This fact suggests that at least

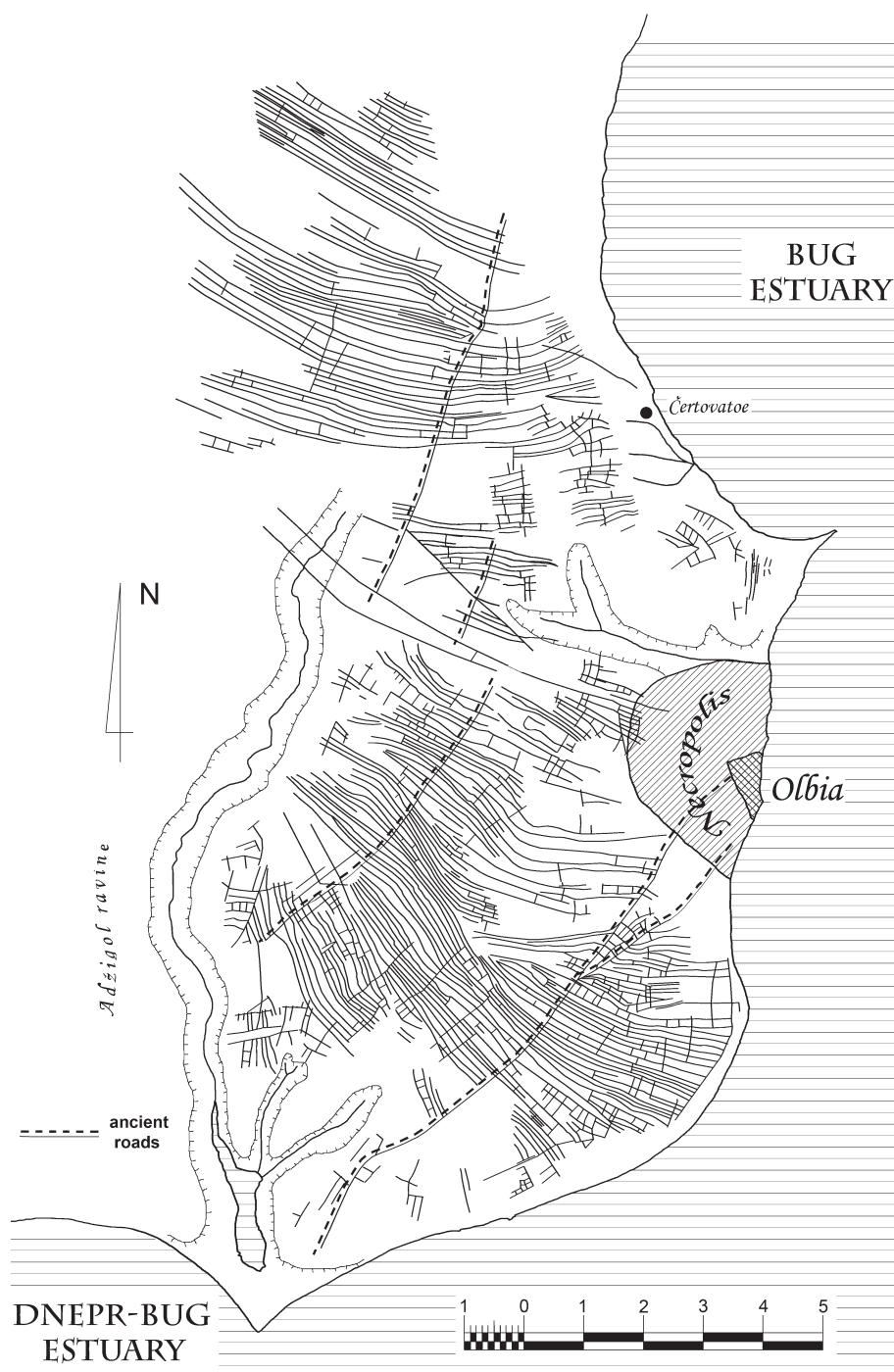


Fig. 3. Cadastre system in the chora closest to Olbia.

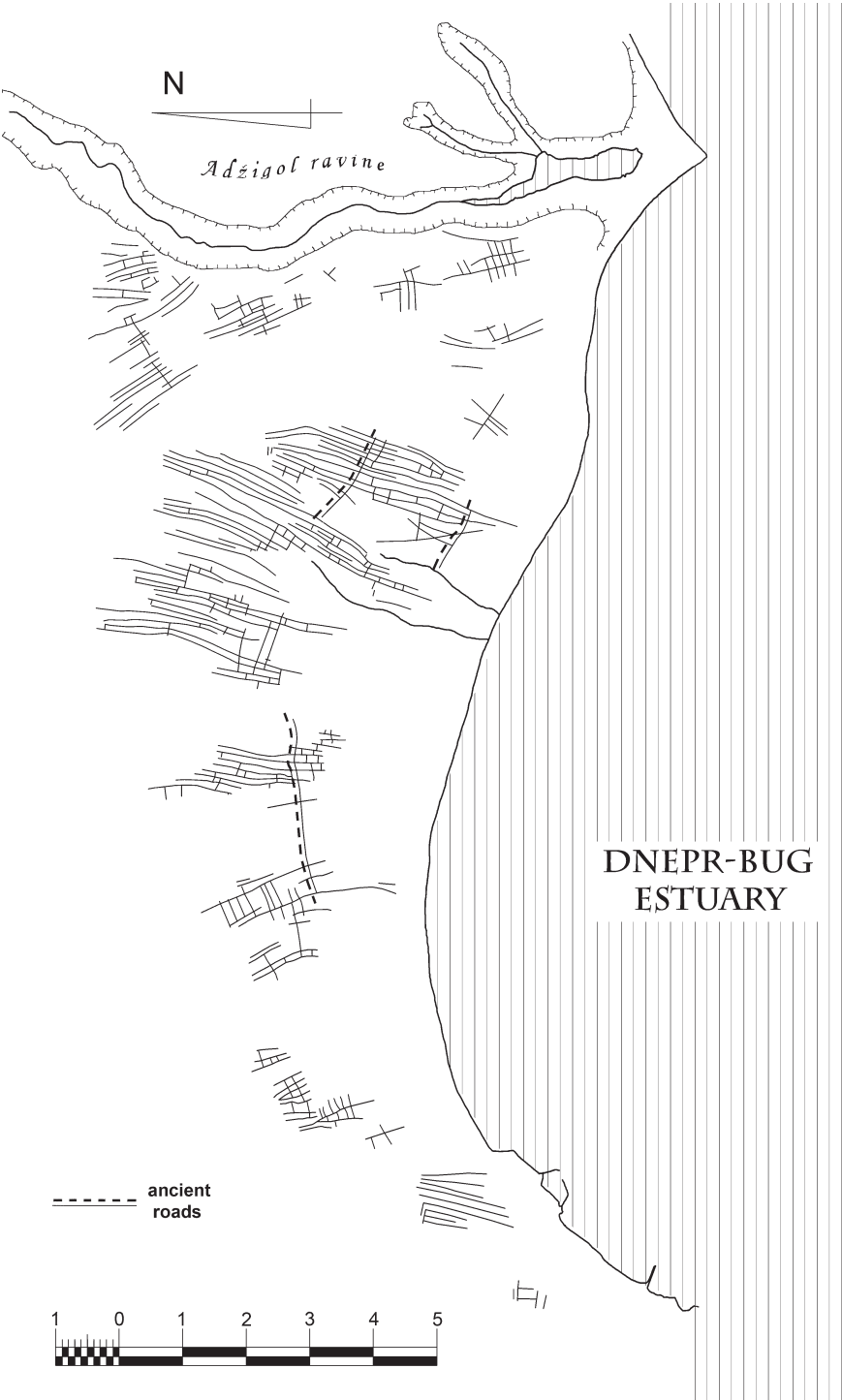


Fig. 4. Western part of demarcation system of the Olbian chora.

the described roads preceded the appearance of the fields in this area and that they were used when the fields were worked. Additionally in the area closest to Olbia there are a few places with fields of less elongated proportions.

The demarcation systems further west (Fig. 4), north (Fig. 5) and east (Fig. 6) reveal the same system of narrow fields and lines of demarcation as in the area closer to Olbia. In the western part the maximum distance of the fields from the estuary bank is about 8.1 km, but the distance gradually decrease to 1.5 km towards the west. The northern part of Olbia's cadastre sys-

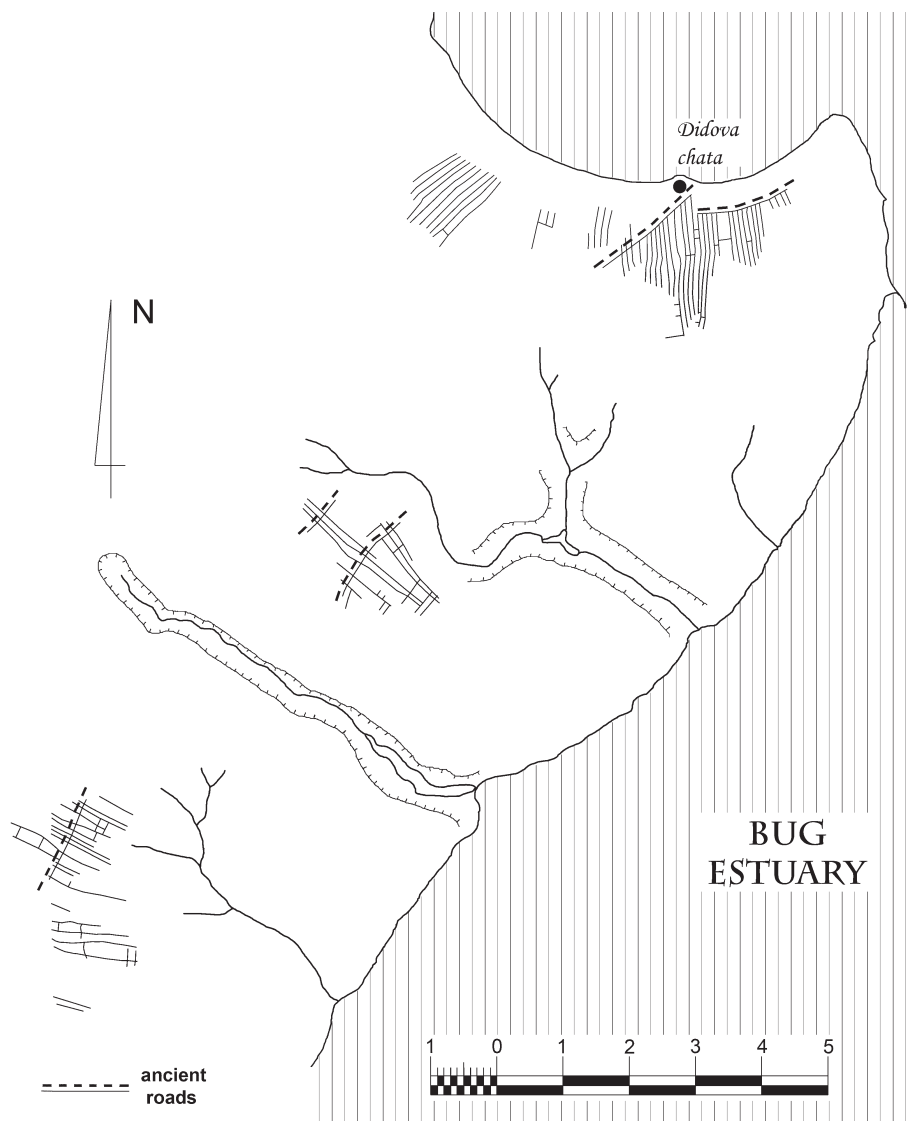


Fig. 5. Northern part of demarcation system of the Olbian chora.

tem is poorly preserved and few divisions are visible. It is interesting to note that in the very northern part of this region, the remains of the demarcation lines show the most regular arrangement with clear and rhythmic borders of the fields (Fig. 5). This indicates that the field division system in this area was created during a more or less short period of time and from a on before-

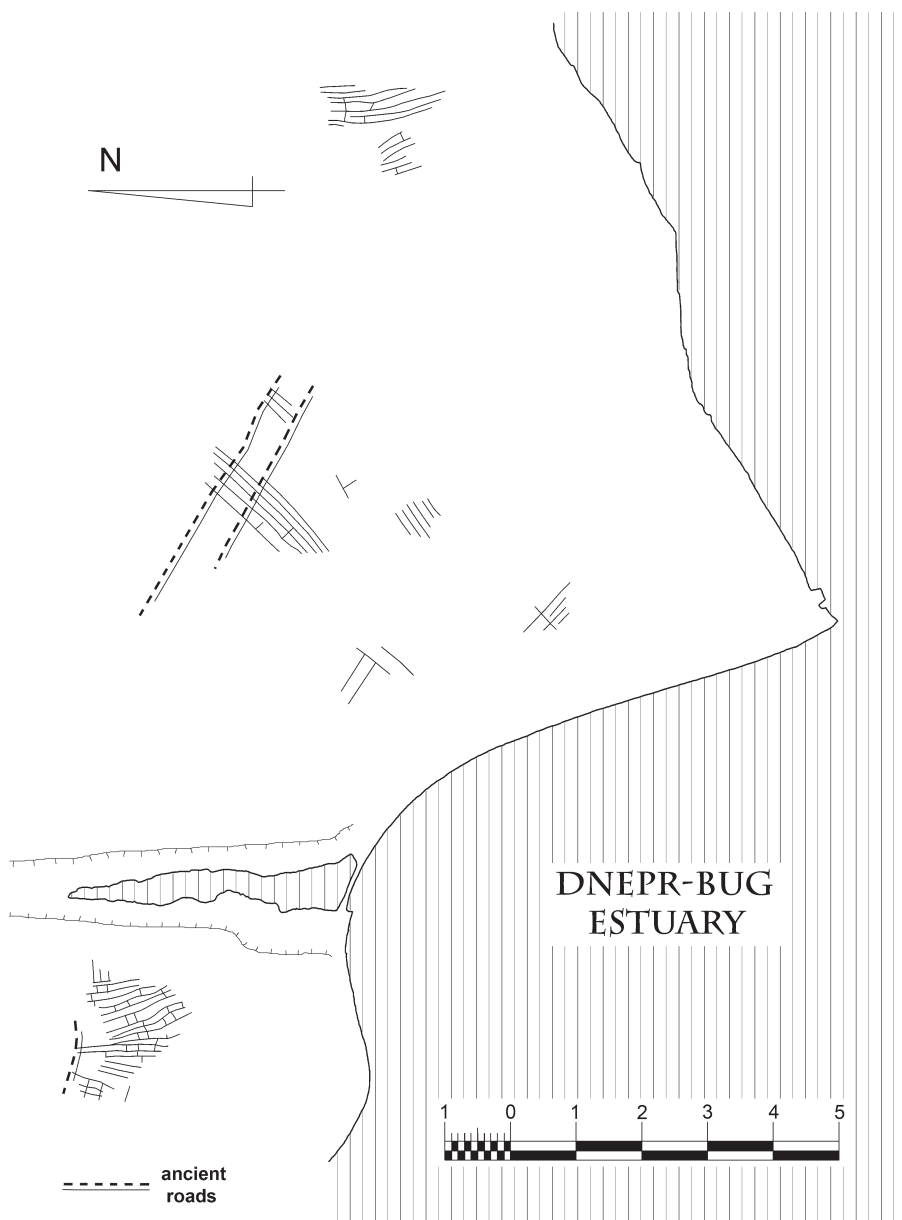


Fig. 6. Eastern part of demarcation system of the Olbian chora.

hand considered design. The cadastre system in the other areas seems more irregular and spontaneous when compared with the northern one.

The very eastern part of the field division system of the Olbian *chora* is poorly preserved (Fig. 6). Here we see the general contours of the distribution of fields on the opposite side of Bug Estuary 12 km SE from Olbia and in the southern part of the cape between Bug and the Dneper-Bug estuaries at a distance of 14.7 km (E-W) and maximum 5.3 km from the bench inland.

In the far western part of the Olbian *chora* west of the Berezan' Estuary, two areas of field divisions are found (Fig. 7). This is the region furthest

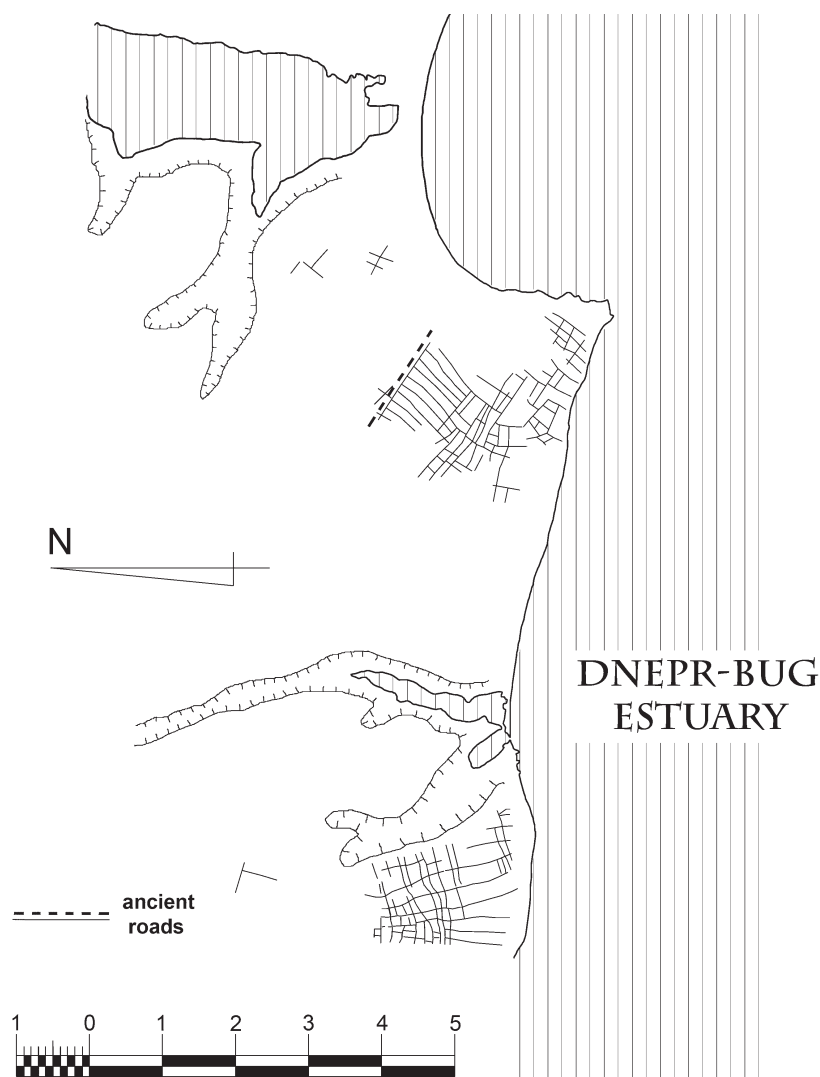


Fig. 7. Berezan' area demarcation system of the Olbian *chora*.

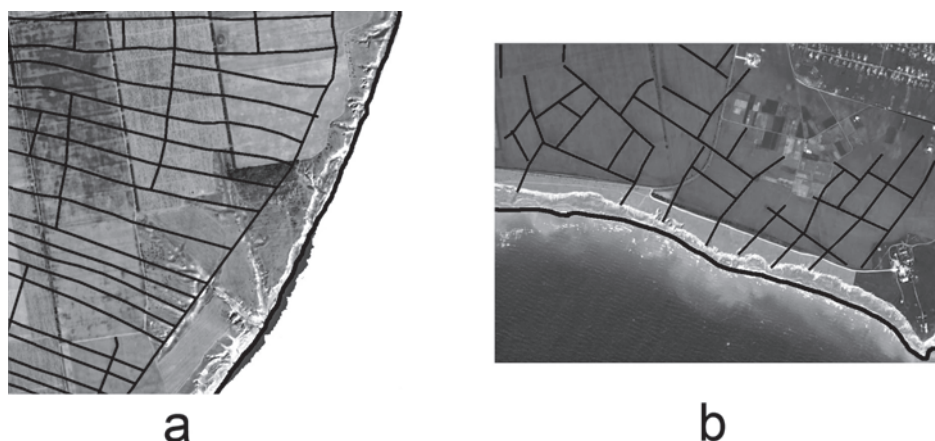


Fig. 8. Correlation of the demarcation lines of ancient fields and ravines. a) south close to Olbia; b) Berezan' area.

away from Olbia, and it seems self-dependent and isolated. Additionally in contrast to the ordinary field division of the very western sector, its eastern sector appears to be the most irregular and spontaneous of all other Olbian *chora* areas. The shape of its southern fields looks quite irregular and do not have the elongated proportions of the field lines usually found in the other Olbian *chora* areas. This sector is the closest to the Island of Berezan' where is one of the earliest Greek settlements in the Northern Black Sea littoral. This suggests that the area could belong to a *chora* of Berezan', and thus could be the earliest sector of ancient cadastre system in Black Sea littoral area. On the other hand, the western sector of the Berezan's area has a more regular character although there are traces of displacement of field lines to prevent the erosion.

The correlation of the direction of demarcation lines of ancient fields and the small ravines in the steep banks which they cut across is interesting. This is well represented in the area 2.40-5.27 km to the south of Olbia (Fig. 8a). Here even the transversal line which could be the limit of the area of fields was found. An analogous situation is found in the far western *chora* north-west of Berezan' (Fig. 8b). This correlation could be the evidence of original trenches which formed the ancient field borders with the purpose of draining superfluous water from the surface. Analogous trenches of field borders have already been found in Crimea.⁴

In a few places the cadastre system seems to have been changed. The most evident example of this is the large area approximately 17 km to the north of Olbia and the most remote western sector near the Tiligul' Estuary where the cadastre system was changed in Antiquity. Field boundaries were moved to stop the erosion of the surface which appeared, but the general system was

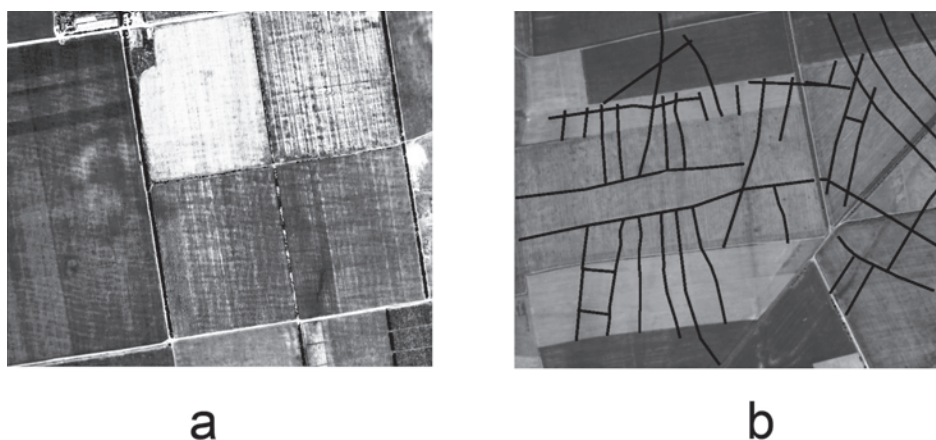


Fig. 9. Samples of replanning of the ancient cadastre system. a) displacement of field division lines with the the old demarcation lines still visible; b) full replanning of demarc ation system.

saved (Fig. 9a). Also east of the Adžigol' Estuary there was evidence for a full replanning of the cadastre system (Fig. 9b). This could only have happened in case of a complete disappearance of the previous demarcation system.

To sum up, the system of demarcation of ancient fields in Olbian and Be-rezan' *chora* can be characterized as a *grid system*. It consists of comparatively narrow, elongated fields cutting across ancient roads and often curved according to the natural relief and probably practical purposes. The system was developed and used for a long period of time, the Greek and Roman periods of the state of Olbia, which is confirmed by the examples of replanning of the cadastre system. Admittedly, the development of the Olbian cadastre was spontaneous at certain stages in the historical process confirmed by certain irregularities of the field lines in different places. This caused the cluster arrangement of separate parts of the cadastre system. Rectangular demarcation lines can be seen in the very northern part of the Olbian *chora* near the modern village Bol'saja Korenicha and ancient settlement Didova Chata only.

The general picture of the Olbian cadastre system is comparatively well preserved. The demarcation system is absolutely different in its internal organization when compared with the well-known field division system of Chersonessos, which had a strict rectangular structure.⁵ The Olbian system is much closer to the field divisions on the Taman' Peninsula.⁶

We have to underline that the above description of the cadastre system of the Olbian *chora* is the result of reconstructing the demarcation lines of the ancient fields on the basis of satellite and aerial photos. We cannot exclude the possibility that more detailed information may turn up or even of finding new field division areas in the future based on new archaeological, geophysical and other investigations.

Notes

- 1 Krizhitskij & Bujskich 1989.
- 2 Bujskich 1986, 2006.
- 3 Many thanks are due to the Danish National Research Foundation's Centre for Black Sea Studies for the accordance of aerial photos and help with preparation of these materials.
- 4 Kolesnikov & Jacenko 1999, fig. 14, 307-308.
- 5 Nikolaenko 1999; 2001; 2006.
- 6 Paromov 1990; 1992; 2000. Gorlov & Lopanov 1995, 121-137.

Bibliography

- Bujskich, S.B. 1986. Nekotorye voprosy prostranstvenno-strukturnogo razvitija Ol'vijskoj chory (VI-II vv. Do n.e.), in: A.S. Rusjaeva, S.D. Križickij & S.N. Mazarati, *Ol'vija i ee okrug*, Kiev, 17-28.
- Bujskich, S.B. 2006. Die *chora* des pontischen Olbia: Die Hauptetappen der räumlich-strukturellen Entwicklung, in: Guldager Bilde & Stolba (eds.) 2006, 115-139.
- Gorlov, Ju.V. & Ju.A. Lopanov 1995. Drevnejšaja sistema melioracii na Taman'skom poluostrove, *VDI* 3, 121-137.
- Guldager Bilde, P. & V.F. Stolba (eds.) 2006. *Surveying the Greek Chora, Black Sea region in a Comparative perspective* (BSS 5). Aarhus.
- Kolesnikov, A.D. & I.V. Jacenko. 1999. Le territoire agricole de Chersonèses Taurique dans la region de Kerkinitis, *Territoires des cites grecques. Actes de la Table Ronde Internationale, organisée par l'École Française s'Athènes 31 octobre-3 novembre 1991* (BCH, supplement 34), 289-321.
- Križickij, S.D. & S.B. Bujskich, A.V. Burakov, V.M. Otreško. 1989. Sel'skaja okrug Ol'vii. Kiev.
- Nikolaenko, G.M. 1999. Chora Chersonesa Tavričeskogo. Zemel'nyj kadastr IV-III vv. do n.e. Čast' I. Sevastopol'.
- Nikolaenko, G.M. 2001. Chora Chersonesa Tavričeskogo. Zemel'nyj kadastr IV-III vv. do n.e. Čast' II. Sevastopol'.
- Nikolaenko, G.M. 2006. The *Chora* of Tauric Chersonesos and the Cadastre of 4th-2nd century BC, in: Guldager Bilde & Stolba (eds.) 2006, 151-174.
- Paromov, Ja.M. 1990. Principy izučeniya evoljucii sistemy rasselenija na Taman'skom poluostrove v antičnoe I srednevekovoe vremja, *Drevnie pamjatniki Kubani*. Krasnodar, 56-69.
- Paromov, Ja.M. 1992. Očerok istorii archeologo-topografičeskogo issledovanija Tamanskogo poluostrova, *Bosporskij sbornik* 1, Moskva, 109-146.
- Paromov, Ja.M. 2000. O zemel'nyh nadelach antičnogo vremeni na Taman'skom poluostrove, *Archeologičeskie vesti* 7, St. Petersburg, 309-319.