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SETTLEMENT AND CULTURE STRUCTURES IN THE EAST BALTIC ZONE OF THE BRONZE AND EARLY IRON AGE

Distinct mutual connections linking Baltic and West Finnish peoples, settled along the eastern Baltic coast, between the Vistula river and the Finnish Gulf, in the period of Roman influences and the Early Middle Ages, caused historians to consider the mentioned area as a homogenous culture zone.¹ There was, however, no tradition of elaborating earlier formed settlement, economic and culture structures during the Bronze and early Iron Age, and studying their mutual relations. Yet the outstanding cultural unification in the so called epoch of “Roman influences” embracing vast areas, in spite of a zonal differentiation of culture,² was no doubt the result of long-lasting processes that had occurred earlier.

The East Baltic zone is particularly interesting in the last millenium B. C. due to the chance of studying changes occurring here in economy, settlement and culture systems at a slacken rate. Traces of former structures are noted to last exceptionally long here, and the strange civilisation impulses are relatively easy to observe. Those features are characteristic not only of the mentioned area, but also of all the forest zone of North-Eastern Europe. In South and West Europe the fast rate of settlement, economic and cultural changes obliterated completely traces of successive structures. Developmental processes occurring violently or in short space of time in other regions of Europe, in the eastern Baltic coast were protracted over whole centuries, if not even millenia.

A specific feature of the East Baltic zone in prehistory was the considerable isolation from main cultural and demographic currents of Central Europe. Only small fractions of various migrations were reaching here, accumulating without to destroy former demographic systems. This allowed the principal stock of an Early Holocene population as well as small groups of newcomers settling here in various periods, to survive relatively long. Still in the Middle Ages, according
to written sources, whole regions of population ethnically different from the Balts and Finns were possible to be distinguished. Earlier that demographic variety may have been even more complicated. Investigators have since long been interested in the problem of those human groups' persistence along the Baltic coast, whereas their original European and Asiatic populations were most frequently completely assimilated by following ethnic waves. This circumstance was for historians and linguists an occasion to rise a number of theories. There prevail opinions, based on the signs of culture continuity in particular subregions, of the local development, from the very beginning, of the Baltic and Finnish ethnic complexes. A starting point for these considerations are first of all archaeological sources, approached in general without an exact analysis of economic and environmental phenomena. Those are conditioning the character and direction of development of particular settlement assemblages, having occurred here at different times and on different bases of civilisation achievements. Therefore it is very important, with the help of archaeological sources, to indicate economic, social and culture bases of settlements, placed along the eastern coast of the Baltic Sea, connected owing to written sources with Balts and Finns.

The first traces of human groups along the eastern coast of the Baltic Sea are linked with the times following the withdrawal of the glacier and the expansion of tundra vegetation to the north-east. On the basis of scarce fragments of reindeer’s antlers with traces of their working, it can be stated that in the period of the Older Dryas the limit of wanderings of reindeer herds and hunting nomads reached to the river Niemen. In the Allerød period the climate got considerably warmer, which brought about changes in the vegetation — the arctic tundra retreated, making place to a forest-tundra and a forest-steppe, and consequently moving out far to the north. On the Masurian Lake-land and in the left side of Niemen Basin we find traces of camps from that time, and relics discovered in them indicate close relationship with those occurring more to the south in Swiderian, Ahrensburg and Lynghby Cultures. This suggests the arrival of population coming here from Central European regions and the western coasts of the Baltic Sea. Their economic activity was based on the exploitation of reindeer herds, turning however gradually to fishing, and hunting also other kinds of game. In the following climatic period (the younger Dryas), and in the beginning of the Holocene, the penetration borderline of reindeer hunting groups moved to the east, occupying the left side of the West Dwina Basin.
The first settlement concentrations noted in the Masurian and the Vilnius Lakelands should be dated to the Preboreal and the Boreal periods. The main economic activity of human groups forming these concentrations was fishing, which was a factor of settlement stabilization. The steadily increasing yearly mean temperatures favored an intense development of the vegetation, with leaftrees prevailing. Slowly the whole territory got covered by dense forests, rich in game and birds, numerous rivers and lakes abundant in fishes. The population distinctly increased and the character of relics from that time allows to determine the main penetration route leading here mostly from the south-western Baltic coasts. There occurred here a culture complex, nowa particularly visible in the Masurian and Vilnius Lakelands, connected with Danish style variants of Maglemose Culture of Gudenaas-Oldesloe type, with distinct signs of Swiderian basis and permanent culture influence flowing in here from th Vistula basin.

Nearly at the same time the appearance of human groups in northern Norway and on the Kola Peninsula can be observed; those have left traces of their presence in the form of relics, typical of the arctic Komsa Culture. Its distinct feature are tools made in quartzite, unknown in the Central European Mesolithic; their range of occurrence to the south does not step over the northern coasts of the Finnish Gulf and the region of the Onega Lake. At the meeting of Arctic and Central European cultures of post-Sviderian character, there formed along the eastern Baltic coasts, in the 8th-7th millenia B.C., a Mesolithic settlement represented by a so called Kunda Culture. In the oldest assemblages of this culture there appear, next to each other, flint and quartzite tools and also bone and horn implements, indicating a distinct style influence of Maglemose type Cultures.

In the Atlantic period the sphere of Kunda Culture distinctly grew, including areas from the Finnish Peninsula up to the Pregola Basin and the Sambian Peninsula. The influence of that culture reached farther south to the belt of the Masurian and Vilnius Lakelands, where, however, persisted local culture traditions of a Central European character (the so called Niemen Culture).

Advantageous climatic conditions and the far north border of leaf-tree forests offered basic circumstances for an ever steadier camps stabilization on water reservoirs. There occurred a specific economic structure pattern of settlement groups, characteristic of the whole forest zone of Eastern Europe and remaining unchanged during several following millenia. The economic base of these settlement concentrations became fishing, gathering and hunting, and the basis of culture
integration were the natural environment conditions, similar in the whole forest zone.

The first legible in archaeological sources culture alteration, to which were subjected Mesolithic settlement concentrations, falls to the 4th millenium B.C. It was connected with the appearance of pottery in some of the inhabited sites. At the same time there were no changes in the structure of settlement and in the basis of economy: working tools were the same, excepted perhaps developing their technical perfection.\(^{13}\) Only the number of sites increased. The "Neolithic revolution," which had at the time played an important role in the economic development of Central Europe, advancing to a productive economy based on soil cultivation and livestock breeding, never reached either the eastern coast of the Baltic Sea, or its background. It can be assumed that the basic reason of this situation was here the natural ecological border, marked out by a dense Holocene forest, inaccessible for the economic activity of farming and breeding. In the forest zone of Eastern Europe were growing, perfectly isolated, Neolithic Culture groups in fully stabilizated settlements, situated always on water reservoirs. Their economic activity was based on a very intensively developed network fishing and gathering, and their settlement structure on Mesolithic population — settlement systems.

The knowledge of pottery making taken over from their neighbours — the Baltic Western coasts settlers (Ertebølle Culture), from north (Stenbäcke Culture) or even from the South-East (Cultures of the Dnieper and Donietz area), did not necessarily have to be connected with a permanent settling of this territory by newcomers flowing in from those regions although our hitherto elaborated archaeological materials do not exclude such a possibility.\(^{13}\) At any rate the increase of settlement points dated to the 3rd millenium B.C. was not big enough to make this an indispensable condition. Yet the regions of very intense settlement can be well distinguished from the areas quite deprived of the colonisation. The first region of increased settlement and economic activity is to be observed along the southern coasts of the Finnish Gulf, where arose a culture complex producing early pottery of Narva type, based closely on the Mesolithic Kunda Culture.\(^{14}\) Very similar culture basis had the settlement concentrations developing along the eastern coasts of the Baltic Sea, between the Riga Gulf and the mouth of the Niemen, represented by pottery forms of Sarnate type.\(^{15}\) Another settlement region developed in the north-eastern area of Mazuria, where pottery of Serovo type\(^{16}\) (former Zedmar) is found in disclosed settlements. Probably similar settlement concentrations occurred in the Vilnius Lakeland, as indicated by the discovery of settlements with
early pottery of Dubičai type, and also in the right side of West Dvina Basin, or more exactly in the region of the Lubana Lowland, where Osa type vessels have been noted, the style of which reminds the above mentioned Sarnate variation. The bases of economic activity of these early Neolithic settlement groups are always the same: fishing, gathering and hunting.

During the 3rd millennium B.C. ever more distinct processes of culture integration can be observed, embracing at that time the whole forest zone of Eastern Europe. The vast complex of Comb-and-Pit Pottery Cultures developed here, covering an area from the Baltic Sea to the Ural Chain. A common feature for all the cultures in this complex and for the forest zone only is a specific structure of non-productive economy based on the exploitation of the natural environment's resources. Elements differentiating the culture aspect of this circle proceed from Mesolithic and early Neolithic local systems. The Baltic Sea south-eastern coasts are included in the evolution of one of the cultures from this complex, the so-called culture of Comb Pottery.

In the end of the 3rd millennium B.C. there arrived in the southern regions of the Mazurian Lakeland (the neighbourhood of Morąg, Ostróda, Szczytno and Mrągowo) groups of population connected with the Central European Globular Amphorae Culture, bringing for the first time to the westernmost peripheries of the forest zone — a model of farming and breeding economy. It was probably at that time that had occurred the direct confrontation of two different economic structures: the Central-European one based on farming and breeding and the northern forest zone one supported by fishing, gathering and hunting. A possible reason of the expansion of Globular Amphorae Culture tribes to the East could have been their lively interest towards the deposits of amber occurring over the Baltic coasts and in the Lakelands.

The new model of productive economy brought here by Globular Amphorae Culture tribes failed to be accepted by the local settlement of Comb Pottery Culture. In archaeological sources can be observed a growing number of points belonging to the earlier formed settlement concentrations of this culture, which may, however, have been the result of a partial, at least, removal to the north of former inhabitants of southern lands, due to their taking over by newly coming settlers.

In the beginning of the 2nd millennium B.C. the tribes of Cord Ware Culture penetrated to the eastern coasts of the Baltic Sea. In the coastal zone from the Puck Gulf up to the mouth of the Niemen grew a local culture group — Rzucewo; further to the north-east a settlement concentrations of the Battle-Axes Culture Baltic group,
related to the former, was developing. The settlement concentrations of these culture groups makers, coming probably from the southwestern Baltic coasts, were situated over the Baltic Gulfs, on the narrow sand bars separating shallow lagoons from the open sea, and on the islands. Their economic base was the cultivation of corn and livestock breeding as well as fishing in the sea and the rivers. The aspect of economic and culture development of the coastal settlement of Cord Ware Culture stands in distinct contrast with the traditionally living local tribes of Comb Ware Culture, pushed somewhat back into the land. There appeared then two regions with quite different economic and cultural structures (fig. 1).

The process of acculturation of the settlement in all the coastal zone of the eastern Baltic Sea began with the decline of economic and settlement activity of the Rzucewo group and the Battle-Axes of Cord Ware Culture. The reasons of the dispersion of these culture groups are not clear. One of them might have been the alterations in the coast line of the Baltic shore, due to the last transgression of the Litorina Sea, forcing the settled population to move their sites far back into the land. This stage of the settlement development distinguish oneself by its much more uniform style in pottery (a degenerated 3rd phase of Comb and Cord Ware style) in the types of horn and stone implements and by an equalization of the economy. Farming and breeding economy did not become widespread, therefore in the strata of excavated settlements the remains of domestic animals either do not occur or hardly exceed the level of 4%. The traditional model of non-productive economy, standing on fishing, hunting and gathering, became indispensable for all tribes existing in these regions. There were no means then of conquering the ecological border and to fix further north into the forest zone of Eastern Europe a more progressive form of economic structure. The basic reason of this lack of success was probably the very slow technical development of implements; it would have required such a tremendous effort in mastering the natural environment, as to make it completely unprofitable.

The traditional model of settlement economic structure became the basic reason of deterioration in the development processes of settlement and culture in the eastern basin of the Baltic Sea. The interest of the inhabitants of Central Europe towards this region disappeared; it caused the isolation of this zone, without any civilization influence from outside. The lack of impulses for economic development caused a slackened rhythm of cultural changes and in the light of so far known archaeological sources, no successive phases are possible to be detected in the 2nd millenium B.C. Only single bronze relics originating
Fig. 1. Structure of land occupation in Late Neolithic and Early Bronze Age
1 — Tribes of mixed culture of Comb-Marked Pottery with Corded Ware components with non-producing structure of economy; 2 Tribes of Corded Ware Culture (Rzucewo and Battle Axes groups) with the economy based on soil cultivation and livestock breeding.
from different European regions, seems to point the sporadical penetration of these territories by small human groups.

The first signs of the approaching changes can be observed in the last centuries of the 2nd millennium B.C. The south-eastern coasts of the Baltic Sea and particularly the settlements of the Sambian Peninsula, became slowly drawn into the orbit of economic interests of Central European and Pomeranian Culture complexes, and, indirectly through Pomerania also to the Unetice and Nordic ones (fig. 2). An economic spur towards developing exchange contacts, carried out probably by coast-maritime way, was the demand of amber, appearing abundantly in the Sambian Peninsula and the region of Memel. The bronze products began to inflow here in exchange and further also raw material to their manufacture, which became a steady base of development for local smelting production. In the light of very scarce archaeological sources, only long distance exchange and the arising of smelting production are the concrete proofs of an economic juncture for settlement on the Sambian Peninsula and around the mouth of the Niemen river, closely connected with it. During the III and IV period of the Bronze Age, a separate complex with its own culture specimens appeared in this area distinctly related to the early Lusatian, Pomeranian Group and Nordic civilization centres. The influences of these centres did not exceed the region of the Peninsula and the maritime zone around Memel and Kretzinga. Further inland, in the regions of the Mazurian and Vilnius Lakelands, the settlement and culture structures remained nearly unchanged in the II and III period of the Bronze Age. In the light of scarce archaeological sources, one can supposed the persistence of settlement concentrations formed in the preceding years, dispersed over the shores of rivers and lakes, separated from each other by dense forests, weakly linked by mutual contacts and not susceptible to any economic spur.

The culture and settlement structure remained mostly the same in the whole East Baltic zone at the decline of the 2nd millennium B.C. The very few objects of that time noted by archaeological investigation, are concentrated in the regions of an old, early Neolithic and also later settlement, showing no other specimen of culture, besides some evolitional changes. The economic bases of human groups settled here were likewise traditional; the knowledge of bronze tools and ornaments, widely expanded in Central Europe, was very scanty here. These objects arrived here only owing to the mediation of Nordic inhabitants of Middle Sweden and Gotland who penetrated into these regions, probably seeking precious pelts. At the same time the eastern Baltic coasts became an attractive area for trappers expeditions of
2. Structure of land occupation and cultural groups in the Late Bronze Age

1 — Boatshaped stone burials; 2 — Bronze artifacts of Nordic types; (1 and 2 marking the Nordic influences zone in the East Baltic region); 3 — Sambian type barrows; 4 — Sites of Mazurian-Warmian group of Lusatian Culture; 5 — Bronze artifacts of Sambian and West Mazurian types; (3–5 showing the zone of Central European influences)

the eastern regions of forests zones, which is marked by the presence of relics of Seim-Turbino type, brought over here from the lower Kama
Basin. These few bronze objects had no great importance for the economy of local inhabitants of the eastern Baltic coasts, deprived of raw material resources, and cut off from the mining centres.

Essential settlement and economic alteration occurred here only at the beginning of the last millenium B.C. In archaeological sources their distinct symptoms are the shift of settlers, the appearance of new sites in the regions either quite void of inhabitants or being at all not distinguished by any intense settlement and economic development. At the same time the regions of rather permanent settlement — become deserted. Also basic culture signs of the new settlement centres get gradually changed indicating often bonds with very distant countries. The analysis of archaeological sources from the first four centuries of the last millenium B.C. indicates the appearance here of new culture areas showing far advanced variability in the bases of economic activity and direction of culture relations.

One of them can be distinguished in the Sambian Peninsula and the region around the mouth of the river Niemen. The culture of Sambian tumuli appearing here from the III period of the Bronze Age (about 1300 B.C.) was stimulated by the intense exchange contacts with inhabitants of Pomerania and owing to their mediation also with Central Europe. Local bronze foundries developed here on a large scale, based on raw material imported from the south, first copying Pomeranian forms of tools and ornaments, beginning later to elaborate individual types and variations. Bronze specimens of Sambian origin began to be widely demanded and dispersed over the whole eastern zone of the Baltic Sea, particularly along the shore and into the basins of Lielupa and West Dvina. The culture of Sambian tumuli was making up for its specific perception of Central European and Nordic style, keeping, however, to the traditional elements of its own. The acting of this culture creative centre is distinctly legible over all the east Baltic zone, as far as to the Finland shores, especially in the range of pottery products and in certain elements of funeral rites.

A second culture region began to form in Mazuria where at the turn of the III and IV period of the Bronze Age, and owing to direct connections with inhabitants of the Vistula Basin, a local Mazurian-Warmian group of Lusatian Culture could be observed. Dense settlement of this culture did not reach east to the Great Mazurian Lakeland or to the Pregola Basin north. The distinct manifestations of this culture group are the vast flat cemeteries with cremation graves in ash urns, surrounded by stone constructions of different type, and seldom great stone tumuli with cremation burials, placed in layers of stone embankments. The population of the Mazurian-Warmian group
of Lusatian culture dwelt in large settlements localized in naturally defended places, and base of its economic development was the cultivation of corn and livestock breeding. There appeared here also local bronze foundries and their products got spread over the whole East Baltic zone.

Both the above described culture regions became formed in close connection with the settlement and cultures of Pomerania, Central Europe and the middle Vistula basin. They drew the impulses for their development from the mediation in far-extended exchange carried out along the Central European amber track. They therefore represent the culture systems of north-western most advanced Lusatian type settlement.

A third culture region owed its formation to the influence of quite different economic and culture impulses. It embraced the Estonian islands (Saaremaa-Osel), the eastern coast of the Riga Gulf, the region of West Dvina's mouth and a narrow space along its course. The characteristic culture elements of this region are the defence settlements, stone cemeteries with cremation burials, gradual passing on to animal breeding, and metallurgical production — both of them becoming a base of economic activity. A detailed analysis of archaeological sources leads to the conclusion that this specific region became formed on the area, through which led the track of far-reaching trade between Scandinavia and the copper mining centre in the Volga-Kama region. The track could have been organized about the 10th cent. B.C. It led through the easiest way in difficult conditions of the forest zone — from South Sweden (the region of the Mälar Lake), through Gotland, the Saaremaa island, the Kurland Peninsula and further along the West Dvina and Volga rivers up to the mouth of Oka river; here started its south branch further along the Volga river up to the mouth of Kama river (fig. 3). The highly developed economy of the Nordic circle created possibilities for bronze artifacts production. The lack of local raw material and the probably "expensive" sources of importing it from Central Europe, turned the attention of the inhabitants to the possibility of obtaining copper from Eastern Europe.

The organizing and keeping of a permanent long distance exchange along the north-eastern copper track, had tremendous influence on the economic and culture development of the territories not only directly interested in the exchange, but also those through which the exchange was tranzit-wise passing. We are informed about its character and duration owing to the concentration of relics from Scandinavia (particularly those of a Nordic type) just in the final part of the mentioned way i.e. the Volga and Kama region. Those areas were
Fig. 3. North-eastern copper route

1 — Axes of Mālar type; 2 — Presumable course of the far outreaching exchange route; 3 — Pozdniakovo Culture; 4 — Cirkovo-Setma Culture; 5 — “Nadjazanskaja” Culture
at that time developing the settlement under the influence of two centres: “Nadkazanskaia” and Pozdniakovo Cultures. Both these cultures as well as the Ananino Culture following them in the 8th cent. B.C. are proof of a highly developed society whose existence was based on soil cultivation, livestock breeding, the exploitation of copper and finally on well developed metallurgy proved by smelting and casting of bronze objects. The Ananino Culture became the leader of the whole East European forest zone in the last millenium B.C., its influence reaching out from the Ural up to the Dnieper and from the Arctic zone down to the steppe-and-forest areas. In the strata of defence settlements and in cemeteries one finds quantities of products coming from contemporary Nordic ateliers in South Sweden, particularly the weapons and ornaments. In the compass of cemeteries such as Volosovo, Murom, Akozino there are found burrials arranged according to Nordic ritual, quite strange in these lands. All these facts indicate the existence here of small groups of population of strange origin, living among the local inhabitants; they were most probably the merchants managing the exchange. The object of trade was, first of all, copper, perhaps also hides and pelts. It is difficult to determine in the light of so far achieved discoveries what used to be obtained in exchange, besides weapons and ornaments; neither is it possible to present the organization of exchange, nor the limits of participation of the inhabitants of the areas through which passed the trading way. The examination of all contemporary sources coming from the West-Dvina and higher Volga basins would considerably add to the solving of this problem. The till now published sources allow to conclude, that some defence settlements placed over the higher Dvina and Volga course, being active between the 10th and the 6th cent. B.C., were directly connected with that track. A detailed analysis of archaeological materials, coming from the Baltic coasts and appearing along the lower Dźwina course, inform us about distinct settlement regroupments and new concentrations forming in places, supposed to have been trade’s stopping points. Such a first point can be assumed to have been found on the Saaremaa island, in a lively defence settlement of Asva. The population living in its compass, besides mediation in far distant trade, was fishing and breeding domesticated animals, working, moreover, also in bronze smelting, horn, stone and amber. There develops also the pottery production on a large scale, represented in relic material by two different style currents: a traditional one with the vessels having surfaces covered by hatching in various directions or with impressions of canvas, and another
one remaining under the influence of the Sambian Peninsula Culture. It therefore seems that the inhabitants of Asva had been directly engaged not only in trade carried out along the north-eastern copper route, but had also connections with the population living along the Baltic Coast up to the mouth of the Niemen river, or even further south to the Sambian Peninsula. The confirmation of relations existing between the inhabitants of the island and Scandinavia is the cemetery of the Sörve Peninsula, contemporary to the settlement of Asva, with long boatshaped graves. The construction of the graves found here, as well as the equipment of the dead, allows to suppose their close relation to analogous graves, discovered on the continent and containing likewise boat-shaped burials, on the south-western shores of the Riga Gulf (the Kurland Peninsula). Investigation of these cemeteries has been conducted since the 19th cent. and their presence on the eastern Baltic coasts was interpreted as a proof of a Nordic invasion. Some local features, however, applied in the burial rites here and unknown in the Nordic area have convinced the investigators that the cemeteries are proving a considerable concentration of local settlement, with a possible share of a small number of Nordic merchants, dealing directly in far-reaching trade. It seems quite probable also, that the population of these settlement concentrations kept exchange of goods along the Baltic coasts, which is proved by the accumulation of bronze artifacts from Sambian Peninsula, some features in burial rites, e.g. ashurn graves inside the case stone embankments, and the general type of the culture. Particularly expressive has been the discovery of a boat-shaped grave in a vast tumulus cemetery of Sambian type, in the Pregola Basin, former Drusker Forst, reg. Znamiensk. We may therefore assume that the far-reaching, as well as local exchange along the coast line of the eastern Baltic Sea, had been intense and durable.

The further course of the north-eastern copper route is marked by settlement concentrations, rised in the period of its activity along the lower course of the West Dvina river pointed by the defence settlements and tumulus cemeteries. Among them the sites established in the region of the Dole island on the Dvina river and on its both coasts (Vinakalns, Klangukalns) show the largest development activity. They used to be built on the slopes of single standing territorial elevations with primitive defence lines, quite sufficient in the existing conditions. The artifacts discovered in their strata proved an active share of the inhabitants in the long distance barter, among them by the presence of imported objects from North and by the first bronze foundries. These localities had arised on the territories having a long settlement tradition; its direct continuation is proved by the use of
earlier laid cemeteries (Reznes, Kivutkalns), with gradual changes of ritual elements and culture.\textsuperscript{47}

Three more archaeological sites show the activity of the northeastern copper route. One of them is the defence settlement in Mukukalns, reg. Stučkas laid on the right West Dvina bank, where no larger settlement concentration had earlier been noticed.\textsuperscript{48} Another similar settlement was found in Dignaje, reg. Jekabpils and one more on the other West Dvina bank in Jersika, reg. Preil. The two last mentioned sites have been investigated at the beginning of this century, but no full picture of their buildings and defence constructions has been acquired; only individual relics have been eliminated, certifying the time of their origin and their bonds with the Nordic Culture area.\textsuperscript{49} Yet, the settlement of Mukukalns investigated in the last years, confirmed the existence of foundries and of stone and horn workshops within its boundaries, and also a very interesting complex of relics.\textsuperscript{50}

These settlement concentrations situated along the eastern Baltic coasts are represented by a specific culture, formed on the basis of local traditions but with distinct bonds and influence of distant creative culture centres: — the Nordic one and from the region of Volga and Kama rivers. The economic development of this culture area, widely depended on the intensity of exchange carried out between those centres. A certain part of Russian copper passing by this way, fell into the hands of local mediators; it was the basis for the local foundriers' developing. The inhabitants of those defence settlements living till then on hunting, fishing and gathering, began to breed domestic animals, which is proved by their osteous remains found in the settlements culture strata.\textsuperscript{51} This leads to a distinct alteration of the economic structure and to social and cultural changes. Between the settlement concentration points rising along the copper route there ran a lively current of local exchange favouring the spread of inter-cultural elements and equaling the economic and cultural level.

At the same time to the north of West Dvina course, and over the whole northern part of Latvia and Estonia, the archaeological sources, which could indicate the settlement and culture character in this region are unknown. This area certainly lay outside the range of influences, acting along the main roads of far-reaching trade. The woodland character of the natural environment and probably very scanty and isolated settlements in these regions, have till now not been sufficiently investigated. Presumably the lack of internal and external spurs of economic development caused a slow process of culture alterations in particular settlement complexes, impossible to be detected in archaeological material. Loose findings and the possibility of shifting
the dating of particular objects beyond the first half of the last millenium B.C. proved that this area was not completely uninhabited, but culture differentiation in particular phases must have been very feeble. Human groups settled here since centuries and living according to the oldest traditions on hunting fishing and gathering never changed their dwelling places. They exploited territories well known to them and did not come into contacts with their neighbours neither near nor distant ones.

A somewhat different rhythm of settlement and economic alterations occurred probably on the southern coasts of the Finnish Gulf and was connected with the changes occurring among the inhabitants of the Finnish Peninsula. In spite of modest source premises, it can be accepted that just at this time appeared the first tumuli cemeteries with burials hidden in stone chests similar to those noted in Finland. Whether the changes of funeral rites observed among the contemporary inhabitants of the Estonian coast had been connected with settlement and economic alterations, will be possible to explain only by well investigated archaeological sites.

It is impossible — at present — to attempt a characteristic of settlements that had existed in the wide watershed of Niemen-West Dvina Rivers in the first centuries of the last millenium B.C. North to the sphere of the Mazurian and Warmian group of Lusatian Culture, there probably spread a wide uninhabited area covered by dense, badly soaked forests. The Niemen river was at that time an unimportant water road and settlements placed over its lower course reached only the regions nearest to its mouth. Loose bronze objects, coming from Sambian or West Mazurian foundries pointed the direction of local exchange, or small settlement concentrations lost in the impassable forests of the middle Niemen Basin. These small settlements are supposed to have been inhabited in the last millenium B.C., but very few investigations of these territories and only small fragments of pottery wind up all attempts to present some exact chronological and culture aspects.

The above presented settlement and culture situation of the eastern Baltic zone is seen to last up to about the 6th cent. B.C. Sharp climatic changes occurring then acted in a lively manner on the settlement structure, economy and consequently also on the culture of the local population. The cooler Atlantic climate caused the retraction of leaffree forests to the south and brought other alterations in the vegetation attire and the animal world. The lowlands became swampy, settlements removed on to higher parts of the country. Natural resources fell down to a very low level and settlers were compelled to alter the
traditional economy, and pass on to the more evaluated forms to assure their livelihood. Climatic changes in various North European territories provoked worse economic life conditions and brought about manifold consequences. These consequences acted in a very strong manner on Scandinavian societies, particularly on the rich centres of Nordic Culture. The well developed farming and breeding economy ceased to turn to good account, there occured a breakdown of the whole economic and settlement structure and in consequence the depopulation of this region. It was quite different in the east Baltic regions, where the deficiency of natural food resources created the necessity of finding new economic bases in production economy, so far not applied. From that time on the animal breeding began to play a decisive role. The attestation of these changes in the archaeological materials can be observed in the new settlement structure; the sites were concentrated now in earlier deserted regions, but offering convenient natural conditions to tend the herds. In the economy of European populations iron began to be the basic raw material in the production of tools and weapons and simultaneously all centres of mining copper and of bronze smelting lost their economic importance. This is probably one more reason of the fall of Nordic foundries and of the end of exchange along the north-eastern copper route. Settlement on the south-eastern coasts of the Saaremaa island became disintegrated and the Asva centre stopped all activity, cemeteries with boat-shaped graves along the Kurland coasts, got deserted. The above mentioned defensive settlements on the West Dvina river changed their locality. The dwelling buildings and new defence constructions were built on the top of the elevations; no more imported Nordic subjects have been found in disclosed culture strata; they were substituted by local products. New cemeteries with cremation and skeleton burials placed in stone chests, were placed now within stone and earth tumuli. They have been noted in the Saaremaa island, all along the southern coast of the Finnish Gulf in the lower Gauja course, over the West Dvina river and the middle Lielupe Basin (fig. 4). Their appearance was connected with the expanding of oecumene on the areas presenting convenient breeding conditions. The cultural picture of these settlement concentrations, on a large territorial space, is very homogenous; only slightly differentiating elements of funeral rites, building systems and grave forms, tools, weapons, ornaments and pottery can be observed. The culture of tribes settled here appeared in the literature under the name of Baltic Stone Ciste Graves Culture and its steady evolution can be observed in the archaeological sources up to the first centuries A.D. Several more developed regions may be distinguished in its
Fig. 4. Structure of land occupation and cultural groups in the last two ages B.C.
1 — West-Balt Tumuli Culture; 2 — Brushed Pottery Culture; 3 — East Baltic Stone Ciste Graves Culture

compass. Here belongs the area along the course of the West Dvina river, having ancient settlement traditions, where the bases of economic development had been formed in the previous period of favourable juncture, connected with the far-extended trade. The changes in the function of this track after the withdrawal of Nordic partners from the barter certainly exerted some economic repercussions; they did
not, however, resulted in the dispersion of the settlement. The new bases of economic activity are proved by the transferring of settlements from slopes to the highest points of the elevations (Mukukalns, Vina-
kalns) and also the appearance of new ones in the neighbourhood of existing sites with similar space-defence constructions. The inhabitants were interested, besides animal breeding, in bronze smelting, using the raw material coming in from the Volga-Kama regions, and the scrap. The confirmation of contacts with the inhabitants of Eastern Europe's forest zone is the spreading of their production in the form of bronze small spangles of Ananino type.64

Another culture creating centre appeared on the Saaremaa island, basing its economic development on natural conditions good for animal breeding. Also smaller islands (Muhu, Hiuma) became inhabited and their culture developing in agreement to the rhythm observed in the settlements on the Dvina coasts and along the southern coast of the Finnish Gulf. The connection of these groups with the population of the Scandinavian Peninsula and Gotland finds far less source con-
firmation than it had in the previous period, which seems to indicate the substantial alteration of the character and range of mutual contacts.

The population settling at that time along the eastern coast of the Riga Gulf and on the Gauja shores, remained in direct and steady bonds with centres placed on the Saaremaa island and on the West Dvina river. They probably lived on animal breeding and their grave equipments, containing objects produced in foundries over the West Dvina, indicate the existence of local exchange.

Relic materials found in settlement concentrations forming at that time in the middle Lielupa Basin show ancient local traditions, as well as culture influences from Mazuria, from the mouth of the Niemen and the Dvina Basins. The scarcity of sources does not allow a com-
plete characterisation of this settlements culture, nevertheless it de-
veloped in clear relation to the above presented culture centres.

Settlement, economic and culture changes in the Niemen Basin, the Sambian Peninsula and in Mazuria were subjected at that time to a somewhat different impulses. They were directly linked with the transformations occurring in all the area of Lusatian Culture on the ground of local changes of settlement and economic structure. The scanty archaeological sources do not allow the correct reconstruction of these processes, which brought about the rising of new culture complexes against the Lusatian background. Similarly unclear is the origin of Pomeranian Culture; also difficult to explain are phenomena which led to the development of the uniform culture of West-Balt Tumuli.65 In the period of its prosperity, falling to the 4th-3rd cent.
B.C. the West-Balt Tumuli Culture embraced the former area of the Sambian Tumuli Culture, the Mazurian and Warmian group of Lusatian Culture, the northern part of Mazovia and eastern Mazuria, as far as the region of Suwałki. Besides undoubtful Lusatian genetic features, it shows connections with cultures of the Dnieper Basin, particularly with the Milograd Culture. The basis of the population’s economic development was first of all animal breeding founded on forest pasturage, the metallurgy depended upon Lusatian traditions of bronze smelting and a well-developed local exchange trading, in the main with settlements of European eastern forest zone. Over all the area of West-Balt Tumuli Culture there occur settlement concentrations, composed of few sites, separated from one another by a desert region, with small defence settlements, that were centres of economic and cultural life.

A detailed analysis of archaeological sources shows that during the second half of the last millenium B.C. along the south-eastern and eastern Baltic coasts, two contemporary, but different culture complexes appeared: the Baltic Culture of Stone Ciste Graves and the Culture of West-Balt Tumuli (fig. 4). Between these two areas was a wide, relatively blank region cut through by several tracks of contact, along which local products of smelting ateliers of the both complexes were carried. The range of the influence of the West-Balt Tumuli Culture is pointed out by the complex of cemeteries with ash urn burials in the Liepaia region and the middle Niemen Basin.66 In spite of steady exchange contacts, particularly animated in the region of Baltic coasts, the principal features of both cultures never became obliterated, neither did any relative culture integration occurred here.

During the two last centuries B.C. there appeared on the eastern periphery of both these complexes, particularly in the region of the Vilnius and Letgal Lakelands (relatively uninhabited), a new settlement of dense character, represented by a number of small defence settlements established in cruda radice with scanty culture stratum.67 These sites seem to have been temporal camps, transferred after short use to new places; our knowledge is still far from undertaking a general attempt at characterisation of their material culture. It is impossible to trace the origin of people building these settlements back to the earlier local population, because of their appearance in previous blank regions, especially in those separating the Baltic Stone Ciste Graves Culture from the Culture of West-Balt Tumuli. Some culture elements, particularly the pottery, allow to connect this settlement with some complexes of the higher Dnieper course, still very
weakly—elaborated, known under the name of "Brushed Pottery Culture." The so far accepted dating of this culture to the 7th-6th cent. B.C., not supported by source data, may be valid for the complexes disclosed in the higher Dnieper course. The complexes of this culture appearing in the middle Niemen and West Dvina course can be synchronized only with the so called Early Sarmatian period in Eastern Europe.

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Following the here presented processes concerning settlement's structure and culture development of the East Baltic zone, some general conclusions may be formulated.

1. In the transformations of successive settlement structures (from the ancient ages up to the decline of the last millenium B.C.) local processes had always prevailed over the foreign ones. Particularly beginning from the end of the 2nd millenium B.C. no large migrations from beyond the discussed zone, can be observed.

2. In the whole weakly inhabited area of Eastern European forest zone it is possible to observe fairly distinct internal migrations, connected with either local or zonal transformations of settlement's and economic structures.

3. In the period directly preceeding the beginning of soil cultivation and animal breeding the movement of the population, dispersed among forests and on the shores of river and lakes, into regions situated on the axis of far-reaching trade routes can be noticed. They certainly found here better conditions of economic development and had an assured share in profitable trade. The main profit was to seize a part of the transported raw material and also a certain quantity of objects designed by the contracting parties for exchange.

4. It is a general historical regularity that the larger settlement concentrations act favourably on the acceleration of social and economic development, on the forms of life and culture. This is particularly noticeable in the Sambian Peninsula and on the axis of the copper road. In the former case there arrived here intensive influences of Central European civilization, in the latter — the impact of highly developed culture of the Bronze Age from Scandinavia and from the Kama-Ural centre in Russia.

5. Results of these influences and rapid development of local settlement concentrations are visible only in the following period when in consequence of climatic and natural environment changes the passing on from hunting, fishing and gathering economy to soil
cultivation and animal breeding, became necessary. Simultaneously the former connections with Scandinavia and the Volga-Kama regions gradually disappeared and the contact of the Sambian Peninsula settlement with Central Europe declined.

6. A natural tendency to the general alteration in social groups and the establishing of new settlement structures became visible. Local population shifts and also further settlement migrations accompanied those changes. Particularly typical was the growing density of sites in regions so far nearly uninhabited and the stepping into till now inaccessible forests.

7. In the East Baltic zone, in the period between 500 and 200 B.C. the settlement and culture situation became stabilized and lasted through the following millennium when the ethnic and linguistic belonging of particular population groups became evident. It is therefore possible to formulate careful hypotheses and conclude that a population group of Stone Cists Grave Culture rising in the 5th-4th cent. B.C. corresponded to the initial formation of the West Finnish ethnic group (Finnish, Estonian and Livian tribes). In the West-Balt Tumuli Culture we may suggest the germ of a complex of West Balts (Prussians, Galindians, and Sudovians perhaps also Kuronian people) and in the latest appearing here Brushed Pottery Culture — a fraction of the East-Balt population may be supposed (Lithuanians, Letgaliens, Selians and Zemgalians).

NOTES

2 K. Godłowski, Strefy kulturowe w okresie rzymskim w Europie środkowej [Culture Zones in Central Europe During the Roman Period], in: Kultury archeologiczne i strefy kulturowe w Europie środkowej w okresie wpływów rzymskich, Kraków 1976, p. 12 fol.
4 Cf. J. Okulicz, Pradzieje ziem pruskich od późnego paleolitu do VII w. n.e. [The Prehistory of Prussian Lands from the Late Paleolithic to the 7th Cent. A.D.], Wroclaw 1973, p. 26 ff. with detailed literature.
5 R. Schiold, Paleolit końcowy i schyłkowy [The Decline and the End of the Paleolithic], in: Materiały do prehistorii ziem polskich, Part I: Paleolit i me-


7 Rimantiené, op. cit., p. 98 ff.


11 Okulicz, op. cit., p. 52.


16 Okulicz, op. cit., p. 69 ff. with earlier literature included.


18 Kempisty, op. cit. p. 233 ff.


20 Okulicz, op. cit., p. 97 ff.

21 Okulicz, op. cit., 1973, p. 110 with all earlier literature.

22 Jaanits, Poselenija..., p. 299 ff.

23 Okulicz, op. cit., p. 301 ff.


25 Loze, Pozdnij neolit..., p. 26 ff.


27 Dąbrowski, op. cit., p. 184 ff.

28 Jaanits, Poselenija..., p. 167 ff; Loze, Pozdnij neolit..., p. 27 ff.

31 Dąbrowski, op. cit., p. 44 ff.
32 Meinander, op. cit., p. 68 ff.
36 Chalikov, op. cit., p. 240 ff.
44 J. Graudonis, *Latvija v epocho pozdnej bronzy i rannego železa*, Riga 1967, p. 65 ff; W. Gaerte, *Urgeschichte Ostpreussens*, Königsberg 1929, Fig. 95.
45 Graudonis, op. cit., p. 162 ff.
46 Graudonis, op. cit., p. 249 ff.
54 Rimantiené, op. cit., p. 28.
56 V. Lougas, Ašva linnuse..., p. 89 ff.
57 Graudonis, Latvija..., p. 67 ff.
59 Ozols, op. cit., maps.
60 Schmiedehelm, op. cit., p. 34 ff.
61 Ozols, op. cit., p. 3 ff.
63 Ł. Okulicz, Kultura kurhanów zachodniobaltyskich we wczesnej epoce żelaza [West-Balt Tumuli Culture in the Early Iron Age], Wrocław 1970, passim.
64 Graudonis, Latvija..., map.
65 V. Daugudis, O klassifikacist vostočno-litovskich gorodišč, "20 let," Vilnius, 1968, p. 27 ff.