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SOME ASPECTS OF RESEARCH ON MIDDLE NEOLITHIC AMBER IN THE LAKE LUBĀNS DEPRESSION

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The Lake Lubāns Depression, one of the most densely populated micro-regions in the central part of the East Baltic, lies 350 km from the major areas where amber is washed up, south of Liepāja. The fact that people inhabiting this micro-region in eastern Latvia did not have any amber source of their own, and had to obtain this material through distant or not so distant ‘expeditions’ did not affect their desire to obtain it and work it themselves.

The Lake Lubāns Depression, which covers an area of 100 000 ha, lies at the centre of the Lubāns Limnoglacial Plain of eastern Latvia. Neolithic sites, numbering 27, are located in marshes or on rises with mineral soil within these marshes, which cover 47 000 ha of the total area of the depression (Loze 2000, 109). Lake Lubāns collects the waters of nine rivers, and has only one outlet: the River Aiviekste, a right tributary of the River Daugava with a large basin. Neolithic settlements are located on the banks of Lake Lubāns and the river inlets, as well as in the system of the Aiviekste and its tributaries (Fig. 1). This suggests that the advantages of the geographic location of Lake Lubāns for the Neolithic inhabitants contributed in large measure to the development of an effective zone of economic contacts, with travel both upstream and downstream along the Aiviekste and Daugava.

The distribution of amber in coastal Latvia

The eastern limit of the distribution of amber passes through Latvia from the north along the coast

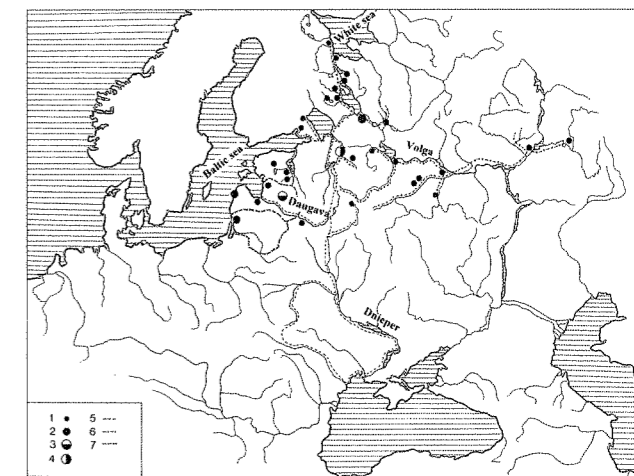


Fig. 1. The distribution of Middle Neolithic amber artefacts in the East Baltic and the East European Forest Zone: 1 – finds of amber ornaments from graves and settlements, 2 – major finds of amber ornaments, 3 – Lake Lubāns Depression, 4 – Konchanska cemetery, 5 – possible Late Neolithic ‘amber routes’, 6 – possible Middle Neolithic ‘amber routes’, 7 – national borders.

of Vidzeme to Riga and thence southwards to Vilnius and further on to Kiev (Катинас 1971, 28, Fig. 12). Along the southern and western shore of the Gulf of Riga, amber was washed up in much smaller amounts than is observable south of Liepāja. In spite of this, amber has been found in the dunes of the Litorina Sea. Evidence of this is seen not only in the amber found in the course of archaeological excavation on the sites of the Ģipka Lagoon and the coast of the Litorina Sea (Ģipka A un B) and nearby, but also by the fact that in the late 19th and 20th century amber was mined at certain locations, even quite far from the dunes, for example at Žocene in the Parish of Roja. The largest areas of amber distribution known so far are the Babīte, Kaņieris and Engure dune area between the former lagoons and the Baltic Sea. Recently, information has also appeared concerning finds of pieces of amber in the Evarži and Uši dunes on the north-west coast of Kurzeme.

This shows that people living in the Lake Lubāns Depression may have obtained unworked amber from a much closer part of the Litorina Sea coast than the distant stretch of coast south of Liepāja. Possibly, amber may have been collected in the vicinity of Lakes Babīte and Kaņieris or at the lagoons located further to the north-west. Such a possibility is suggested by finds relating to amber-working at a Middle Neolithic settlement on the land of the Romi and Kalniņi farmsteads on the north-west shore of the Babīte Lagoon and the Siliņupe settlement near Kaņieris Lagoon. That amber was present here in sufficient amounts is shown by the degree of skill shown in working the material, making not only ornaments, but also parts of anthropomorphic figurines (Ванкина 1983, 13, Fig. 1; Zagorska 1998, 22, Fig. 28).

Utilisation of amber resources in the Middle Neolithic in the Lake Lubāns Depression

In order to interpret the utilisation of amber resources at the settlements of the Lake Lubāns Depression, it is necessary first to consider the amount of amber and the efficiency of its utilisation at the more extensively studied Middle Neolithic amber-working locations: the settlements of Zvidze and Nainiekste.

The first mentioned site is located near the north-western shore of Lake Lubāns, several kilometres from the River Aiviekste and from the present shoreline of the lake. Zvidze Middle Neolithic settlement lies on a peninsula-like extension of a terminal moraine

precisely where it meets a terraced slope consisting of the deposits of Lake Lubāns and peats. The Zvidze settlement site covers an area of up to 0.6 ha (Loze 2000, 111). Amber processing took place in three dwellings here, with differing degrees of efficiency. One of these dwellings (A), in the central part of the site, was inhabited by people manufacturing Comb and Pit Ware, the other two (B un C) having been inhabited slightly later by people belonging to the indigenous Post-Narva Culture. The dwellings had floor areas not exceeding 40–50 m². Evidence of amber-working obtained from the dwellings on this site consists of unworked and flaked pieces of amber, pieces of amber and flakes with indications of the initial stages of working, and fine amber chips – waste from processing. Together, all this material weighs no more than 2.5 kg. Efficient amber processing had taken place at dwelling B, where partially flaked pieces of amber and flakes were found, along with processing waste consisting of fine amber chips.

Large quantities of amber did not accumulate at the settlement. The pieces that have been found are not large ones, though judging from the fragments of manufactured and broken ornaments, large flat pendants of up to 7 or 8 cm in length were made, as well as rings and discs of up to 6 cm. However, such pieces are few in number.

The site has produced 563 finished and 390 semi-manufactured amber items. Amber processing made use not only of flakes from lumps of amber, but also fragments of semi-manufactured ornaments broken in the course of working. Thus, special mention should be made of transversal breaks of blanks for cylindrical beads. In such cases, that part of the blank was used for further working which had not been damaged in the course of the unsuccessful perforation. This could still be used to make a short cylindrical or discoidal bead. These forms, however, were not produced *en masse*, priority being given to medium-sized cylindrical beads, the main type of tubular bead. Recording of bead blanks shows that they were broken both longitudinally and transversally, breaks along the longitudinal axis only being very uncommon. The number of broken bead blanks at dwelling B exceeded 150, more than twice the number of beads that had been finished, worn at the site and broken there. A considerably smaller number of blanks had been broken only transversely. Such evidence does not support the idea of a masterful technique for manufacturing cylindrical amber beads. Surprisingly, in certain cases the perforation of a small diameter bead blank had been made using too large a flint borer, when it

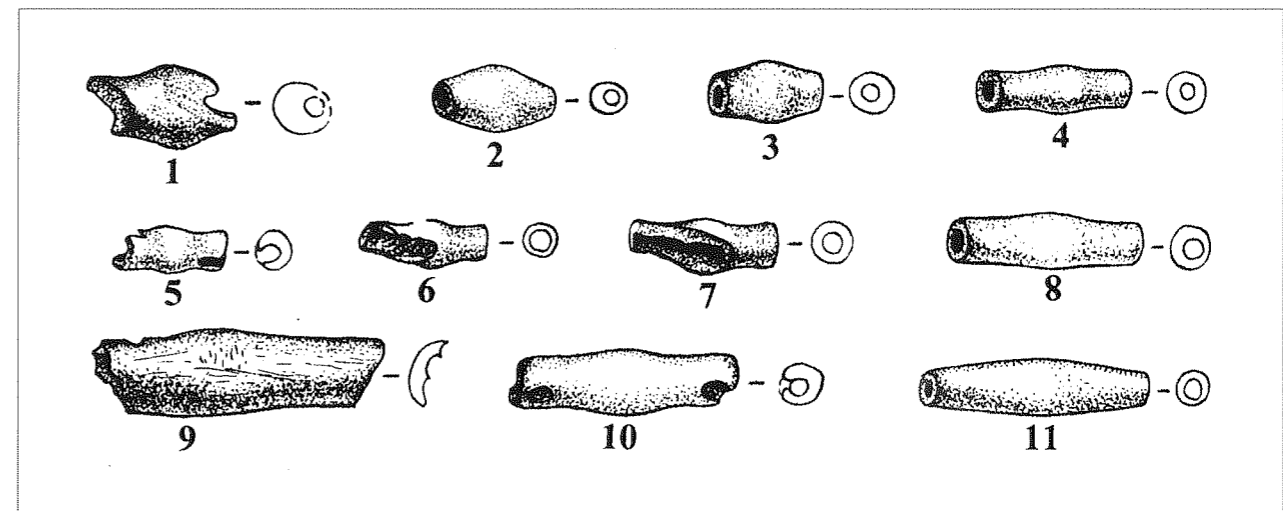


Fig. 2. Amber beads with a thickened mid-part from Zvidze Middle Neolithic settlement.

is obvious that a tool of very different size was needed.

On the other hand, tubular beads were made on the site that were particularly favoured. These are 2.5–4 cm long beads ground with a progressively thickened mid-part (Fig. 2). The technique of making these beads was specialised, and the recovered finished pieces are of surprisingly high quality. These include short, wide pieces with a sharp break in the thickened mid-part and a greater diameter than the rest (Fig. 2: 1–3), as well as delicate, smaller diameter pieces with a marked thickening in the middle (Fig. 2: 5–7) and longer examples with a less clearly marked thickening in the middle (Fig. 2: 4, 8, 10). A final group consists of longer and more robust beads with a hardly perceptible thickening of the middle (Fig. 2: 9, 11).

It should be mentioned that an efficient level of amber-working had been attained precisely with regard to the above-mentioned beads forms, and if such a level had been reached, then it is understandable that this was a 'competitive product' i.e. specially sought after.

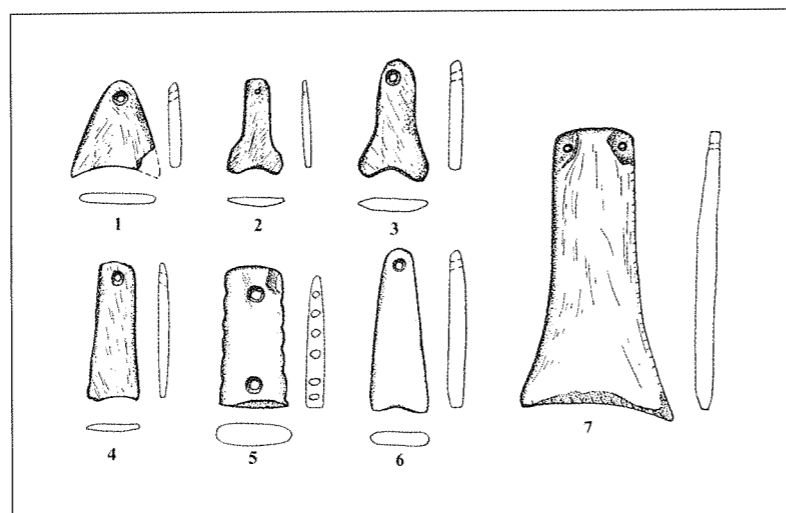
The manufacture of button-shaped beads required a lesser degree of amber-working skill. Such beads were made in considerably smaller numbers, compared with cylindrical beads. The number of blanks is almost three times smaller than the number of finished and broken button-shaped beads. The number of broken blanks was seven times smaller than the number of broken button-shaped beads. This is evidence of productivity in their manufacture. Along with circular and oval button-shaped beads, rectangular button-shaped beads with rounded corners were also produced. These were perforated transversally.

Trapezoidal amber pendants, made in large numbers at the Zvidze site, varied in form, almost any fairly thin and flat piece of amber being used for this purpose, regardless of size. This is shown by the occurrence of very small, featureless pendants that sometimes have only a distant resemblance to a long trapezium. Some new aspects come into the manufacture of this type of pendant. Namely, the form was only partially retained, with a symmetrical rounded, broadened lower margin, and in the finest tradition of manufacture of such pendants, the lower margin was made somewhat concave (Fig. 3: 2, 3).

Also worthy of note is a tendency, observed at both Zvidze and Nainiekste, of making splendid, well-finished trapezoidal pendants with a row of fine incisions along the two long edges, or else to form undulating edges (Fig. 3: 5). Also, there are non-standard flat pendants. The latter include a triangular pendant (Fig. 3: 1). Mention should also be made of rectangular pendants made of particularly fine amber of the bone-white kind. The long edges have incisions, and they even have two holes for suspension at opposite ends of the pendant (Fig. 3: 5).

The number semi-manufactured trapezoidal pendants from dwelling B was just over half that of intact and broken pendants. That the thin and small trapezoidal pendants were often broken is shown by the occurrence of twice as many broken pendants as intact examples. The latter included pieces with a polished surface, indicating that they had been worn at the site itself. In spite of the fact that trapezoidal pendants were comparatively much easier to make, pendant blanks could also break. The number of broken pendant blanks

Fig. 3. Flat amber pendants from Zvidze (1–6) and Piestiņa Middle Neolithic settlement (7).



was three times greater than that of intact blanks. The latter included examples with a retouched and with a ground surface.

This evidence indicates that amber processing productivity at the Zvidze site was, of course, dependent on the amount of raw material available and the form of finished artefact to be made. The manufacture of trapezoidal pendants and button-shaped beads required less work. On the other hand, tubular beads, cylindrical forms and particularly beads thickened in the middle, required not only more work, but also fine craftsmanship. This is particularly true of miniature tubular beads, which could have been made only by a young person with fine fingers and excellent eyesight, and with highly developed amber-working skills.

The second amber workshop, at the Nainiekste site, was on a peninsula or island at the shore of the now-overgrown former bed of Lake Lubāna, near the relict Lake Nainieks. The inhabitants, judging from the character of the cultural layer, lived here on a seasonal basis, indicated by the limited number of flint implements and potsherds. Amber had been intensively worked in the two dwellings discovered here. Whole lumps and broken amber pieces, along with chips, had a total weight of not more than 0.500 kg.

At this site, trapezoidal pendants, cylindrical and button-shaped beads were all manufactured. A total of 273 amber items and blanks were found at the site. Among the trapezoidal pendants, only 20% were intact, including pendants with the two longer edges undulating or decorated with fine incisions (Loze 1999, 134, Fig. 7). Intact and broken examples were equally common among the blanks.

Intact examples of cylindrical beads comprised a sixth of the total number of beads.

The only tubular bead thickened in the middle in this collection was a very miniature, finely worked example. Tubular amber blanks found at the site were those of cylindrical beads. 90% of these had been broken in the course of manufacture. There was no indication on the four intact examples, as on the semi-manufactured pieces from Zvidze, that these were intended for the manufacture of beads with a thickened mid-part. Evidently, these beads were subject to special working.

20% of the button-shaped beads were intact. On the other hand, the blanks had been broken in only two cases, indicating that they were easier to make than the tubular beads.

The amber workshops of the Middle Neolithic produced jewellery that not only for the needs of the makers. It is evident that a proportion of the finished products were used in exchange, establishing closer or more distant contacts with people living in neighbouring areas.

The Lake Lubāna depression – an intermediary in amber exchange

The Middle Neolithic inhabitants of the Lake Lubāns Depression made use of the opportunities provided by the location of this region. The establishment of close and more distant contacts was stimulated by the main waterway of the central part of the East Baltic: the River Daugava. The amber-workers of the Lake Lubāns Depression had assumed the role of intermediaries in the exchange of amber between the coast of the Litorina Sea and people living in areas further to the north and north-east. Evidently, it was the fact that the upper

course of the Daugava lay close to the Upper Volga Basin, the River Lovat, Lake Ilmen and the basin of the River Msta, waterways extending further eastwards, north-eastwards and northwards, and possibly to the north-west as well, that ensured for the amber-working centre at Lake Lubāns a stable zone of contact.

In the Middle Neolithic, amber products from the Lake Lubāns Depression, an intermediary in exchange, and from the East Baltic coast at Sārņate, Nida (south of Liepāja) and Šventoji lagoon could travel very far from their place of manufacture. This can be seen when the distribution of amber artefacts in the East Baltic and the East European Forest Zone is mapped (Fig. 1).

The mapping of amber finds at Neolithic cemeteries and single find spots in the East Baltic and the East European Forest Zone has a very long history. This work began as long ago as 1916 (Tallgren 1916, Vol. 80), and was continued in the 1920s, 40s and 60s (Europeus 1921, 15–34; Äyräpää 1945, 10–25; 1960, 235–247) and 1970s (Ванкина 1970, 113, Fig. 145).

Another attempt to map amber finds in the East Baltic and the East European Forest Zone was in the 1980s (Loze 1980, 73–80), when data on infrared spectrograms was first published. This material mapped in the 1980s has been covered in detail in an article published by M. Gimbutas (Gimbutas 1985, 233, Fig. 1).

So far, in mapping amber finds, attention has been given to the character of the geographical location of particular regions of the East European Forest Zone in relation to the areas where amber was washed up along the East Baltic shore of the Litorina Sea from the Sambia Peninsula to the Gulf of Riga (Loze 1980). A coastal zone is distinguished, and an inland zone, with various-sized rivers of the East Baltic that entered the Litorina Sea and the major inland lakes of the East Baltic (Lakes Lubāns, Burtnieks and Vörtsjärv), emphasising the advantageous geographical location of Lake Lubāns for amber-working and amber exchange. The basins of the major rivers of Eastern Europe, the Volga, Oka, Klyazma and others (Fig. 1) are considered separately.

The distribution of amber finds in the East European Forest Zone outside the East Baltic, with rare exceptions, is connected mainly with the grave inventories of cemeteries. This has been repeatedly emphasised (Никитин 1991, p. 82). The view has become accepted that amber artefacts in these graves come from the amber-working centres of the East Baltic. That amber could have been obtained from places where succinite is naturally washed up far to

the east is indicated by the first infrared spectrograms made by Vladas Katinas from amber in burial 75 of Konchanska cemetery, excavated by M. Zimina, burial 5 of Sahtysh VIII cemetery excavated by Dmitry Krainov and the unique burial with a stone structure excavated by Yuri Savateev at Zalavruga on the shore of the White Sea, where the amber artefacts were determined as succinite (Loze 1980, 75–76, Fig. 2, 3). However, the latest studies in the Msta River Basin show that amber may also have been worked outside the East Baltic. This is shown by roughly worked amber pendants reminiscent of blanks, found at Repishche IV settlement site in this River basin. One of these is described as having partially removed cortex and flaked, i. e. surface re-touch, normally the next stage in processing, had not begun (Зимина 1993, 72, Fig. 21). Separate finds of amber items have also been obtained at other settlements in the Msta Basin. This evidence – 33 finds of amber artefacts from Repishche IV and 19 from Repishche V – is not in doubt, and in one case a possible semi-manufactured pendant has been found (Зимина 1993, c. 71, 125). Such finds should be taken into consideration. Of course, no local amber workshop has been found, but it is possible that unworked amber was exchanged. But to what extent did this occur and who conducted it? For how long a period and how many generations did this go on?

At the present state of research, the largest concentration of Middle Neolithic amber artefacts in Eastern Europe comes from Konchanska cemetery (up to 10 000 pieces), obtained in the course of excavation between 1974 and 1980 (Зимина 1993, 222). At Sahtysh VIII cemetery in the Klyazma Basin the number of pieces of amber in 10 graves totalled 400 (Крайнов 1973, 50). It is concluded that the issue of amber and its possible obtainment through exchange is important not only for those studying the particular cemeteries, but also for those who have discovered the amber-working centres themselves in the coastal zone and an amber-working and exchange centre located closer to the above-mentioned areas, in this case referring to the Lake Lubāns Depression.

In this connection, we should critically discuss the distribution of particular types of amber artefacts in the East European Forest Zone, drawing attention to those that may have been produced at the amber workshops of the Lake Lubāns Depression. In this connection, we should mention types of amber ornaments that are not characteristic of the amber workshops of the Middle Neolithic settlements of the Sārņate and Šventoji

lagoons. Also, particular features of such amber artefacts should be highlighted, which permit them to be identified as products of a different amber-working centre, in this case the amber workshops of the Lake Lubāns Depression.

In this connection, attention should be given to in the first place to tubular beads with a symmetrical thickening of the mid-part, occurring at the Zvidze un Nainiekste amber workshops (Fig. 2). Beads of this type, whose length in the Lake Lubāns Depression does not exceed 3 cm, is a typical form in the grave inventories of neighbouring groups to the east, but beads of this type are not known among the examples produced at the amber workshops of the Sārņate and Šventoji Lagoons.

Beads of this type are found in the grave inventories of Konchanska (burial 232) and Repishche cemetery (burial 97) in the Msta Basin east of Lake Ilmen (Зими́на 1993, 217, Fig. 59: 11, 13, 218, Fig. 60: 16), in the cemeteries of Sahtysh settlements II-a and VIII (burials 15 and 9 respectively) on the bank of a former channel of the River Koika (a tributary of the Klyazma) (Крайнов 1973, 52, Fig. 4) and burial 17 of Jazikovo cemetery in the basin of the River Medveditsa in the Upper Volga area (Сидоров 1992, 64, Fig. 25: 42–44). The most distant find spot of this bead type known so far is burial 6 of Tuzozero cemetery in the dune area of the shore of Lake Onega, where the number of such beads is in excess of 20 (Иванишев 1996, 33, Fig. 17: 14–30).

These latter beads are 3.5–5 cm long, and it is these beads in particular that resemble, in terms of the technique of manufacture, the beads made at the Zvidze amber workshop. They had even broken in the same way as the examples from the Zvidze site. It is hard to say whether this remarkable similarity also applies to the beads found in graves in the other five previously mentioned cemeteries, because they do not have such a distinctive form or else are not illustrated to such a high standard in the publications. This type of amber bead is found in closed assemblages in the Upper Volga area together with trapezoidal pendants, circular and rectangular button-shaped beads, rings and discs.

Among the types of amber ornaments found in areas to the east, which may also have been made specifically in the Lake Lubāns Depression, we may include excellently worked medium-sized trapezoidal pendants of regular geometrical form, the long edges of which are undulating or else decorated with particularly deep incisions. These are known among

the pendants made at the amber workshops of Zvidze and Nainiekste (Loze 1999, 134, Fig. 7: 1–3) (Fig. 3: 5). The first of these pendant types have been found in graves of the Konchanska and Repishche cemeteries in the basin of the River Msta, which are so well provided with amber artefacts (Зими́на 1992, 128, Fig. 174, 1984, 66, Fig. 3: 18) and in the inventory of the Zalavruga burial with stone structure on the lower course of the River Vyg at the shore of the White Sea (Савватеев 1977, 183, Fig. 90: 3).

Attention should also be given to flat pendants made in the Lake Lubāns Depression with a symmetrically broadened, concave lower margin (Fig. 3: 2, 3). These occur in the cemetery of Sahtysh VIII settlement site on the bank of the River Koika in the Upper Volga Basin (Крайнов 1973, 52, Fig. 4).

Also, mention should be made of large trapezoidal amber pendants (up to 7–8 cm long) with two symmetrically arranged perforations on the upper face, opposed edges being decorated with fine incisions, and with a concave lower margin. Pendants of this size and width were made at the Piestiņa settlement in the Lake Lubāns Depression (Fig. 3: 7) (Zagorskis 1965, 46, Fig. 5: 23.), and judging from fragments, these were also made at Zvidze settlement (collections of the Archaeology Department of the Latvian Institute of History, Collection 188, No. 2596). This form of pendant occurs in the inventory of Tuzozero cemetery near the southern shore of Lake Onega (Иванишев 1997, 33, Fig. 14: 3). Large pendants of this type also occur among the finds from burials of the Konchanska cemetery (burial 97) (Зими́на 1992, 128, Fig. 60: 17–19).

The fact that types of ornaments so closely resembling those of the amber workshops of the Lake Lubāns Depression occur in the inventory of Tuzozero cemetery near the southern shore of Lake Onega, is possible evidence that this complex of ornaments reached the southern shore of Lake Onega from the Middle Neolithic amber-working centre of Lake Lubāns. The 'Amber Route' in this case may have passed from the upper Daugava along the River Lovat or Kunya, Lake Ilmen, the River Volkhov, Lake Ladoga, the River Svir and Lake Onega to the settlements of Lake Tuzozero in the zone of dunes between the two lakes.

Mapping of sites with amber as grave-goods in the East European Forest Zone, conducted in 1980, suggested a possible direction for the flow of amber from the East Baltic up the Daugava and eastwards through the Upper Volga Basin to the mouth of the River Vetluga, as well as along the Rivers Lovat and Volkhov further to the north and north-east (Лозе 1980). Now

it has been established that the people buried with amber grave-goods at Konchanska cemetery were much more richly provided with amber than the burials at Zvejnieki cemetery on the shore of Lake Burtņieki in Latvia (Zagorskis 1987). Attention should be given to other pertinent facts, namely it is impossible to prove that the series of ornaments found at Konchanska cemetery were all 'transported' from Lake Lubāns or from some other amber-working centre on the coast of the Litorina Sea. Among the grave-goods at Konchanska cemetery are a variety of exceptional ornaments, which are entirely absent among the material from the East Baltic amber workshops. These include distinctive thick trapezoidal pendants with perforations of two different diameters in the central part and with decoration of incisions not only along the opposed long edges, but also along the lower edge. Such pendants were first discovered already in the excavations by Nikolai Rerikh (Рерих 1902, Table I: 31) Other unique forms include angular flat pendants, a hand-shaped pendant with five marked fingers etc.

Of course, it may be considered that the products from the Lubāns amber-working centre, like the products from the amber workshops of the Sārņate and Šventoji Lagoons, may have influenced the quality of amber-working over a wide region. It should be borne in mind that the semi-manufactured amber pendant at Repishche settlement site in the basin of the Msta (Зими́на 1993), is indirect evidence that amber raw material may also have been used in the organisation of amber exchange. However, it is unclear where this material was obtained.

The high technical level of Neolithic flint implements and figurines in the Middle Neolithic can be taken as possible evidence that a small proportion of the amber ornaments – simplified trapezoidal pendants and roughly worked button-shaped beads, might have been made not only within the East Baltic region, but also in areas populated by more distant neighbours. The amber-working centres of the Lake Lubāns Depression, like the amber-working centres of the Litorina Sea coast, dictated the fashion for manufacture of amber ornaments, and such ornaments were particularly in demand in high-ranking social strata. This last aspect is clearly underlined by the burial structure at Zalavruga on the lower course of the River Vyg at the shore of the White Sea, built of stone blocks with a burial having a set of splendid ornaments.

Various views might be taken regarding the role

of amber artefacts in stabilisation of exchange values for a particular period of the Middle Neolithic. It should be emphasised that coordination of exchange values is not a simple, easily resolved matter. Here we have to deal with possible exchange of raw materials and possible exchange of finished products within the exchange system. This question should also be viewed from a different aspect: we should ask, when and where can amber artefacts be regarded as items of prestige? This has already been discussed in Scandinavian archaeological literature (Taffinder 1998, 91). We cannot equate the social status of the individual buried in the Zalavruga burial with stone structure with the status of the large number of individuals at Konchanska cemetery who were buried with series of amber button-shaped beads used to decorate the dress. The possibility cannot be excluded that the population of the basin of the River Msta were themselves intermediaries in exchange between the amber-working centre of the Lake Lubāns Depression and the Upper Volga, as well as areas further north and north-east, possibly also north-west. That this is the case is suggested by the geographical location of Lake Ilmen and the basin of the River Msta, very advantageous for the establishment of exchange contacts in these directions.

Dating and synchronisation of series of amber ornaments

In relation to amber exchange and the volumes and directions of such exchange, it is important to establish the time of manufacture and use of these products. Such a chronology should be an absolute one. In this connection, attention should be given to the absolute age of finds of series of amber ornaments at the amber-working centres of the East Baltic and the East European Forest Zone. Also, it is necessary to try to develop the possibility of synchronising series of amber finds. Amber exchange can be dated by radiocarbon only if a database of a particular laboratory or several related laboratories is used, using samples of the same material and conducting series of test datings from a number of laboratories.

Radiocarbon datings for amber-working in

the Middle Neolithic of the Lake Lubāns

Depression

Site	Lab. Index	¹⁴ C BP	Cal. BC*	Calibrated age, Cal BC one sigma
Nainiekste	TA- 2253	4270±60	2909	2921–2784
Nainiekste	TA- 2254	4470±60	3263, 3246, 3102	3335–3036
Piestiņa	LE- 867	4250±50	2897	2916–2782
Piestiņa	TA- 2252	4490±60	3301, 3239, 3173	3342–3042
Zvidze	TA- 675	4370±80	3023, 2994, 2928	3097– 2913
Zvidze	TA- 674	4540±60	3338, 3213, 3203	3361– 3104

* Calibrated using the University of Washington Quaternary Isotope Lab. Radiocarbon Calibration Programme. REV. 2.0. Calibration file: ATM20. ¹⁴C.

The interval of radiocarbon dates given here is 170–240 years, corresponding to the dates for certain burials in cemeteries of the Upper Volga area. These include the date for burial 9 at Sahtysh VIII settlement, 4400±60 BP (LE-1427) (Крайнов 1987, 13). The inventory of this grave includes the tubular amber beads with a thickened mid-part discussed here, trapezoidal pendants, a disc and ring, as well as button-shaped beads. Burial 18 of Sahtysh II settlement site has been dated considerably later, to 4080 BP (ГИН-5239) (Уткин, Костылева 1996, 306). Much closer is the dating for the ritual shrine at Sahtysh II settlement, 4430±250 BP (ГИН-6555) (Крайнов, Костылева, Уткин 1994, 127). These and other still unpublished data will help to determine the time-span of exchange of East Baltic amber in the Middle Neolithic in terms of radiocarbon age.

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