

THE LARGE-SCALE RESCUE EXCAVATION OF A MULTI-PERIOD SITE AT KVIETINIAI SHEDS LIGHT ON THE SO FAR LITTLE EXPLORED BRONZE AGE IN WESTERN LITHUANIA

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Keywords

southeast Baltic, Bronze Age settlements, archaeological formation processes, pottery, crop cultivation, cremation graves

Abstract

The article presents the results of investigations at Kvietiniai archaeological site. Large-scale excavations carried out as part of the implementation of an infrastructure development project have provided very important new data on prehistoric settlement in western Lithuania. The excavations revealed a multi-period archaeological site that contains traces of activity spanning from the Mesolithic to the Early Iron Age. Significant data have been obtained on Bronze Age pottery which is almost unknown to date. The Bronze Age is represented at Kvietiniai by a number of previously unknown or undescribed pottery types. The typology of this pottery is still somewhat problematic, due to the small quantity of it and the lack of similar finds from other sites, as well as the absence of material suitable for secure dating. We managed to define in detail and date one of them: the most abundantly found Kvietiniai-Tojāti Ware, dated to ca 1300–1100 cal BC. In addition, excavations at Kvietiniai have provided important data on the beginnings of agriculture. The earliest cereal grains in the east Baltic to date, i.e. barley, dated to ca 1400–1200 cal BC, were found here. The low amount of cereals and other data indicate just the beginning of agriculture rather than its developed stage. Meaningful data were also collected from discovered graves from the middle of the 1st millennium BC. Traces of rituals previously unnoticed anywhere in this culture, such as putting into graves pottery sherds left by the site's earlier inhabitants, were found at Kvietiniai as well.

Introduction

The Bronze Age and the Early Iron Age can be labelled as the least-researched period in the prehistory of Lithuania. This situation has evolved as a result of insufficient attention given to the period by archaeologists, as well as other reasons, including the low representation of the Bronze Age and the Early Iron Age in the archaeological record. The same is especially true in the case of open settlements, of which very few have been discovered, and the number of finds from them is low, even in large-scale excavations.

Contributing to this is the fact that most larger-scale investigations at these sites were carried out quite a long time ago, and the quality of data is inadequate, due to out-of-date excavation methods which do not match contemporary standards.

As the high costs of large-scale excavations make it practically impossible to carry them out for scientific purposes today, a particular significance in gathering qualitatively new data should be attached to development-led excavations at infrastructure objects. Considering the annually

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growing number of archaeological investigations, it would seem that there should be large amounts of newly accumulated research data. However, the reality is entirely different. The outright majority of current investigations take place at sites with no archaeological value, while rare excavations of significant sites are conducted by contractors who do not prioritise research quality. Larger infrastructure projects, such as roads, pipelines and quarries, are usually implemented with only a minimal archaeological survey being done. They do not develop into large-scale excavations, both because of the shortcomings in the heritage management system, and because of the investigators' unwillingness or incompetence in identifying new archaeological objects when carrying out preliminary surveys (Piličiauskas 2012b; Vengalis et al., 2016).

Against this background, the importance of the Kvietiniai archaeological site located in the valley of the River Minija (Minge in German) in west Lithuania is significant (Fig. 1). In 2015, large-scale excavations, precisely in connection with infrastructure development, the construction of a gas pipeline, were conducted there. Excavations in an area of approximately 2,000 square metres revealed traces

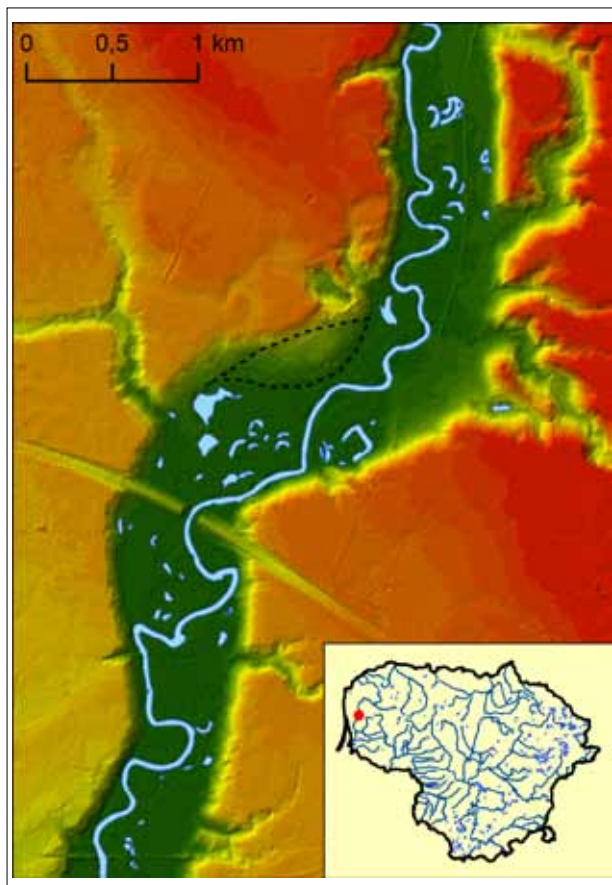


Figure 1. A relief map of the Kvietiniai site and its surroundings. Digital elevation model interpolated from LiDAR data (SEŽP_0,5LT © National Land Service under the Ministry of Agriculture of the Republic of Lithuania, 2009–2010) (drawing by R. Vengalis).

of occupation from the Mesolithic to the Early Iron Age, as well as graves from the 1st millennium BC. In addition, a large assemblage of ceramics and other finds was collected, and samples were taken for various laboratory analyses. These results place Kvietiniai, as one of the most researched open settlements, among the most important investigated Bronze Age sites in Lithuania. To date, only settlements dating from the very beginning of the Bronze Age (1800–1600 BC) had been discovered and excavated in west Lithuania (e.g. Šventoji, Daktariškė 5), while there were essentially no data on open settlements from the middle or the second half of the Bronze Age. Thus, lifestyle, economy and material culture patterns during the period were completely unknown until now.

The relevance of data collected at Kvietiniai is well illustrated by the numerous references to it in literature made by various authors shortly after the excavations (Muradian 2017; Griķpēdis and Matuzaitė Matuzevičiute 2018; Piličiauskas 2018; Robson et al., 2019). These articles make use of information published in the newsletter 'Archaeological Investigations in Lithuania' (Kontrimas 2015; Vengalis et al., 2016). However, it should be noted that publications in this newsletter contain only short preliminary information, which has to be submitted immediately after the investigations, and before all the data are conclusively systematised and laboratory analyses are conducted. In this instance, the laboratory analyses and close examination of data from Kvietiniai quite substantially altered the previously published preliminary conclusions. Therefore, it is very important to publish detailed generalised and systematised data from this archaeological site.

This article presents the results of investigations at Kvietiniai in 2014, 2015 and 2017. Some of the results from laboratory analyses have already been covered in another paper (Piličiauskas et al., 2020), whereas here the context of the site itself is presented in more detail, along with an examination of the cultural layer, the features and a typological analysis of the pottery. The aim of the article is not merely to publish data from the investigations, but to pay substantial attention to its interpretation in a broader context.

The earliest information about the site and the problem of barrows

Until 2015, the Kvietiniai site was thought to contain only a barrow cemetery dating from the 1st millennium BC (Merkevičius 2014, pp. 83–85). The terrain of the area where the mounds, presumed to be barrows, are situated is greatly transformed by various pits, small sand quarries and roads. Even though the area is overgrown today with trees and shrubs, it is apparent that the terrain was influ-

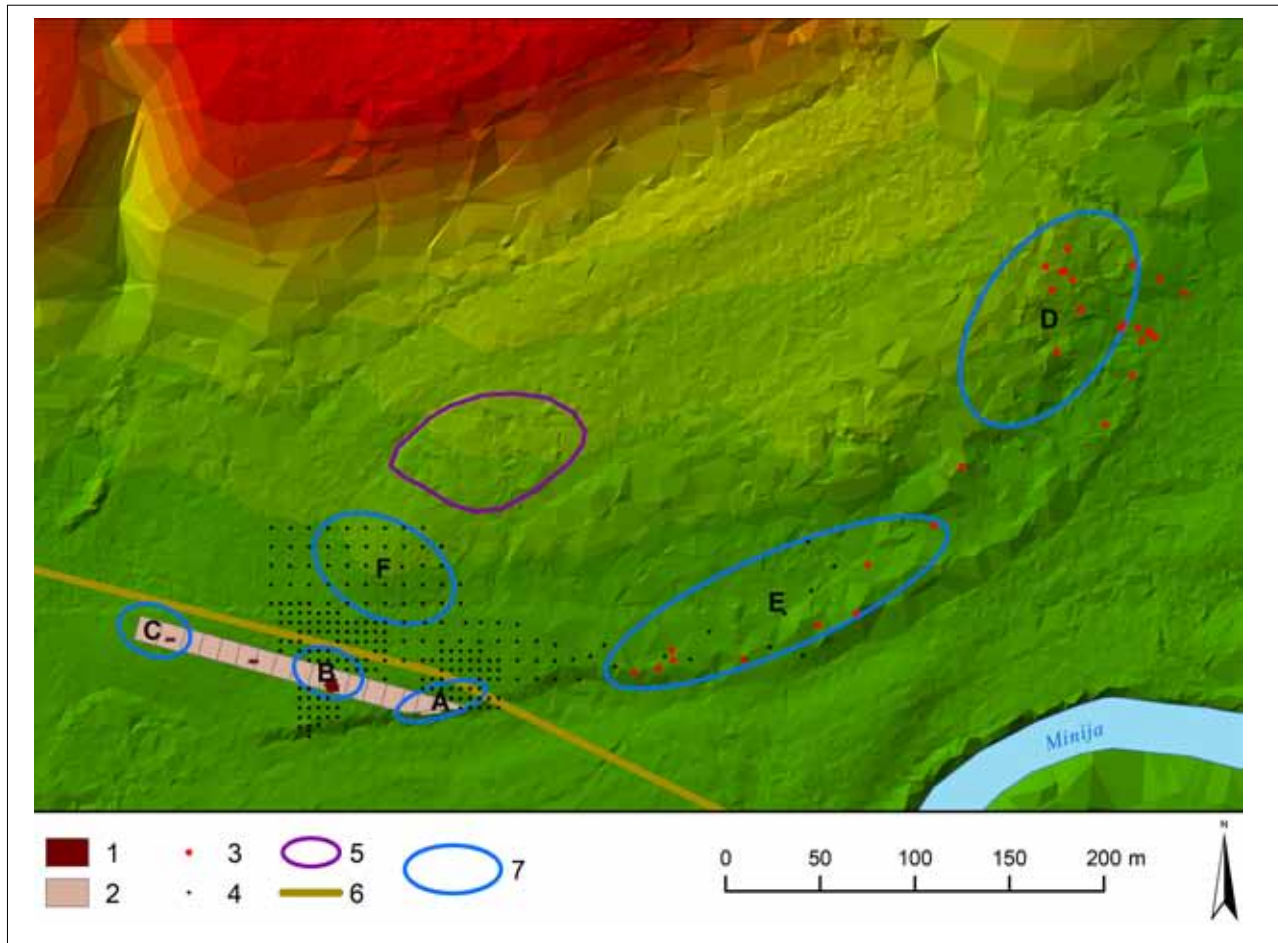


Figure 2. The topography of the Kvietiniai site: 1. 2014 excavations; 2. 2015 excavations; 3. 2017 shovel-tests and test-pits; 4. 2017 boreholes; 5. village cemetery from the 19th and early 20th century; 6. the 1968 pipeline; 7. the zones of the site mentioned in the text. Background: digital elevation model interpolated from LiDAR data (SEŽP_0,5LT © National Land Service under the Ministry of Agriculture of the Republic of Lithuania, 2009–2010) (drawing by R. Vengalis).

enced by earlier aeolian activity. Heritage management officials count up to a total of 11 mounds with a diameter of seven to 15 metres and a height of up to one metre (Dakanis 1983, p. 51). The mounds are of uneven shape and not circular, and some are difficult to distinguish in the terrain. For this reason, it is uncertain whether these mounds are actual barrows; the possibility of them being modern features or dunes cannot be excluded.

Suspensions about the actual existence of barrows increased after a more detailed analysis of how it attracted archaeologists' attention. The earliest information on the archaeological site in this area was recorded in the 1930s. The files of the State Archaeological Commission (SAC) contain a record about a cremation cemetery in the village of Kvietiniai, on the right bank of the River Minija. A local resident unearthed two urns with cremated bones while digging pits for storing potatoes. Stone axes were also found at the site (Merkevičius 2014, p. 84). The SAC files do not mention any barrows or man-made mounds; therefore, the pits for storing potatoes were most likely dug in the flat field exactly where they were discovered in the area excavated in 2015, and also where the graves

were clustered (Zone B and its vicinity in Fig. 2). Some information about the site is presented in the periodical press of 1927. It makes a reference to the sandy hillocks east of Kvietiniai village cemetery, which, according to the villagers, are haunted by a buried church (Pleškys 1927). We should note that even though the author writes on the topic of archaeology, he does not mention any finds or stones found in the hillocks. The term 'hillocks' (*smilčio kalvos*) probably suggests that the features of the terrain described were dunes rather than barrows.

Regardless of the information recorded in the files of the SAC, the Kvietiniai site was included neither on the archaeological map of Lithuania compiled by Petras Tarasenska (Tarasenska 1928), nor in the archaeological atlas published by the Institute of History (Rimantienė 1974). Heritage management officials were the first to recognise the site, for it was declared an archaeological monument in 1972, and called Kvietiniai barrows. However, the declaration was based exclusively on archival sources, because the site had not yet been inspected by an archaeological expedition (Lietuvos 1973, p. 246). The archaeological monument's certificate was the first document to men-

tion the barrows at Kvietiniai. Therefore, it appears that the first information regarding the existence of barrows is not supported by archival data or by survey, and its origin remains obscure.

The first documented visit to Kvietiniai by archaeologists took place as late as 1981. Bronius Dakanis, who led the survey expedition, was reluctant to declare straightforwardly the examined site to be a barrow cemetery, and instead described it as 'mounds, similar to barrows'. Meanwhile, he also assigned it to the category of uncertain monuments requiring further investigation (Dakanis 1981, pp. 3, 13; 1983, p. 51). It should be pointed out that Dakanis did not make use of the mounds at the site to back the argument for the existence of barrows at Kvietiniai, but rather the cremated bones discovered in the ploughed flat field next to them and the mistaken assumption that the Mižeikiai (Miszeiken) barrows investigated by Adalbert Bezzenberger at the end of the 19th century should be located at Kvietiniai (Dakanis 1983, p. 51). The site of the widely publicised Mižeikiai barrows was forgotten after the Second World War, and only as late as 1995 was it revealed that they are actually about 12 kilometres southeast of Kvietiniai (Tamulynas 1997).

Ignas Jablonskis, who visited Kvietiniai a few years later, came up with different conclusions. He claimed that it is the village cemetery which is referred to as 'barrows' by the locals, while the real barrows, already completely destroyed, used to be on the slightly elevated sandy ground southwest of the cemetery (Zone F in Fig. 2), where cremated bones and small sherds of pottery are occasionally exposed on the surface. Jablonskis identified the mounds in the wood to the east of the cemetery simply as dunes, and stated that they were erroneously assumed to be barrows when recording the old village cemetery in the register (Jablonskis 1986, pp. 29–30).

Subsequent to these survey expeditions, the Kvietiniai barrows remained on the register of protected heritage objects. However, they disappeared from archaeologists' view for a long time until the 2010s. In 2014, after a survey, even though no new data had emerged, Gintautas Zabiela stated that there were definitely nine barrows, and that there had originally been more, as other barrows were already deformed and rendered unidentifiable (Zabiela 2014, p. 11). In recent years, Kvietiniai barrow cemetery has been mentioned in archaeological literature, where, probably because of the trust in the register of heritage objects, no questions about the actual existence of barrows are raised (Merkevičius 2014, pp. 83–85; Muradian 2017, p. 54). All in all, based on everything that is presented here, the only apparent facts regarding the barrows are that some irregular mounds exist in terrain that was extremely altered in the 20th century, and that archaeological finds were recovered from cremation graves in the

flat field to the southwest of the mounds. A connection between these objects is not supported by any data. For this reason, until archaeological investigations are carried out on the mounds, their archaeological nature seems very questionable.

Field excavations in 2014, 2015 and 2017

The excavations carried out in 2014 and 2015 were connected to the construction of a gas pipeline. The pipeline was to be laid next to an older pipeline constructed in 1968, and across the same field, from which earlier surveys have recovered archaeological finds, such as cremated bones and pottery sherds (Fig. 2). A preliminary survey was conducted in 2013, in order to identify the area where detailed archaeological excavations would be required. The survey was carried out by Zabiela, who considered the area crossed by the pipeline to be part of a barrow cemetery, where the barrow-mounds had been destroyed as a result of earlier earth-moving activity. Nevertheless, he did not make any archaeological finds during the visual evaluation (Zabiela 2014, p. 11). The large-scale excavations carried out during the next stage were influenced decisively by the boundaries of the archaeological site as identified by Zabiela. He specified the boundaries of the site merely on the basis of the area's topography, and thus defined a 180-metre-long stretch of land bordered to the east by the substantial edge of the valley terrace, and to the west by what he saw as a lower-lying wetter area (Zabiela 2014, pp. 11–12). Two cores obtained by Zabiela to the east of this delimited zone retrieved samples of alluvial loamy sand, which he regarded as deposits of the old river bed of the River Minija. Meanwhile, no coring or other surveys were conducted to the west of the delimited zone.

In 2014, an archaeological survey was carried out across the route of the future pipeline. It was led by Darius Kontrimas, who excavated three exploratory trenches (a total of 70.5 m²), and conducted metal-detecting and visual surveys over an area of 890 square metres. The excavations revealed the cultural layer of a prehistoric settlement with ceramic artefacts, as well as intact and partially destroyed urn graves. Nearly all the finds were clustered in the easternmost trench, while in the other trenches only isolated sherds were found (Kontrimas 2015). The main issue relating to the survey was that it was aimed solely at evaluating whether detailed excavations were at all necessary in the area delimited by Zabiela, but not at identifying the boundaries of the area. As a consequence, the survey was restricted to the area defined by Zabiela, and the possible existence of archaeological features outside it, especially across the questionably defined western boundary, was neither investigated nor ascertained.

In 2015, Rokas Vengalis and Vytautas Juškaitis carried out large-scale excavations, during which they investigated an area of 1,958 square metres. Additionally, they surveyed an area of 0.72 hectares using a magnetometer, and took two core samples (Vengalis et al., 2016). A continuous area was investigated by excavating a 12-metre-wide trench along the route of the planned pipeline. According to the conclusions of previous surveys, a 167-metre-long stretch was excavated. However, after it became evident that the boundary of the prehistoric settlement was not reached on the western side, the excavated area was expanded by another 12 metres, making the total excavated area 179 metres long. Since archaeological structures and finds were unearthed in the expanded area, it became clear that the settlement extends even further to the west. Unfortunately, it was not possible to expand the excavations any more, as the construction of the pipeline was already being carried out just next to the excavated area. Judging by the terrain, the archaeologically important zone here could have extended further for roughly 150 metres, but this whole stretch of land was destroyed without any excavations, because the investigators who conducted the preliminary surveys did not delimit any buffer zone in their heritage protection conclusions, even though they defined the boundaries of the site without any excavations. In the course of excavations conducted in 2015, a rich cultural layer and archaeological features of prehistoric settlement with Mesolithic, Neolithic and Bronze Age finds, as well as 1st-millennium BC cremation graves, were discovered.

In 2017, more investigations were carried out at Kvietiniai, this time driven by scientific purposes as part of the research project 'The First Indo-Europeans in Lithuania. Corded Ware Culture 2900-2400 BC', funded by the Research Council of Lithuania (LIP-011/2016). New investigations of the site were triggered by both the significance of the results of the 2015 excavations and by the goal of answering questions that have emerged since. The aims were to determine more precisely the extent of the previously discovered cultural layer, to expand the assemblage of Corded Ware pottery for isotope and biochemical analysis, to achieve a more exact dating of Neolithic and Early Metal period find complexes, and to look for new archaeological sites to the northeast of the identified settlement area (Piličiauskas and Pilkauskas 2018). An area of 1.26 hectares was surveyed visually and with a metal detector, 217 cores were obtained, and 17 shovel test pits and 13 test pits were excavated. The excavations revealed a cultural layer containing few finds under the deposit of aeolian sand in the area of the supposed barrow cemetery, and a rich cultural layer on the higher terrace, 50 metres to the northeast of the boundary of the protected site.

To sum up, in the course of the three fieldwork seasons, a total area of 2,029 square metres was excavated, 13 test pits

and 17 shovel test pits were dug, 221 cores were sampled, and a magnetometer, metal detector and visual surveys were conducted. The excavations resulted in the discovery of archaeological features continuing along a stretch of at least 600 metres, and dated to the period from the Mesolithic to the Late Bronze Age. Thirteen cremation graves and 100 other subsoil features were identified, and over 4,000 archaeological finds were collected. All the finds from the excavations are kept at the History Museum of Lithuania Minor.

Topography and taphonomy

The Kvietiniai site is located in western Lithuania, in the Klaipėda district, approximately 20 kilometres from the Baltic Sea. The settlement and burial site are in the valley of the River Minija, on its right bank (Fig. 1). The floodplain and two terraces can be distinguished visually in this part of the valley. The floodplain rises four to five metres above the current water level. It occupies the largest portion of the valley, and in some places reaches the valley slopes. The river meanders through the floodplain, frequently changing its course, a fact that is evidenced by numerous depressions of oxbow lakes that stand out in the terrain. The first and second terraces above the floodplain survive only in parts along the valley. The first terrace is discernible near the Kvietiniai archaeological site in a 1.2-kilometre-long section. It is 50 to 150 metres wide, and rises two to three metres above the floodplain, separated from it by a prominent steep slope (Fig. 2). The second terrace is visible only in a 500-metre-long section. It is of a semi-circular shape, 180 metres wide, and slopes evenly towards the 1st terrace. It is separated from the first terrace by a five to six-metre-high slope, albeit very gradual.

Traces of a settlement's cultural layer were discovered in a 600-metre-long segment along the edges of the terraces. For the more convenient naming of the different locales of the site, they are referred to in the text as subjectively defined zones: their locations are given in Fig. 2. It is important to stress that these zones do not describe the actual boundaries of the archaeological site, but merely the areas on which some data were accumulated. It is almost doubtless that the area of the site should extend further: judging from the area's terrain, it is very likely that traces of different prehistoric activities could be discovered on the entire surface of the terraces above the floodplain (Fig. 1).

Potential archaeological features on the floodplain are more questionable. If any activity was carried out there at all, signs of it were probably destroyed by the changing riverbed. We also need to consider that the current topography differs from that in the prehistoric period. The course of the river at that time is unclear: it may have run immediately next to the first terrace, or perhaps the

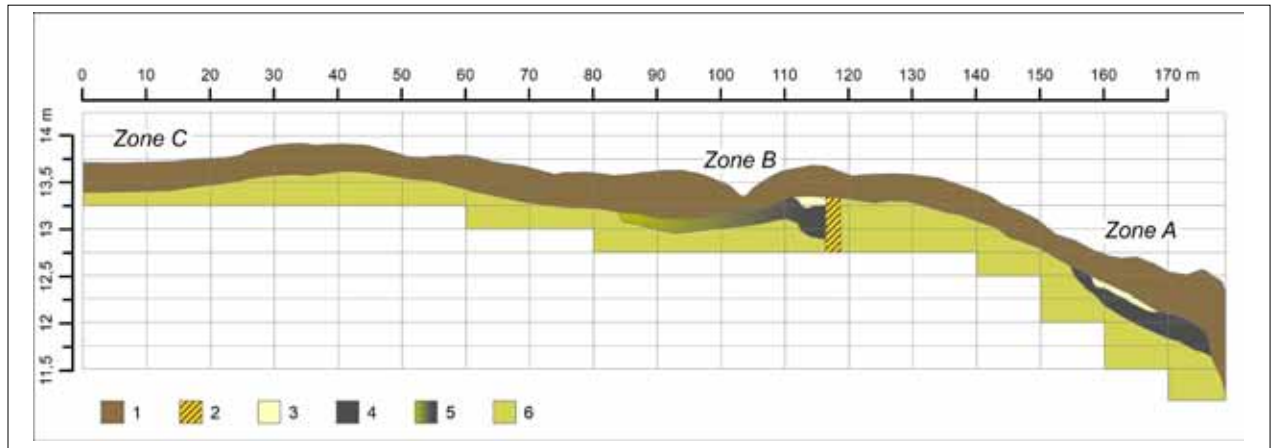


Figure 3. North profile of the 2015 excavation plot (W–E direction): 1. plough zone; 2. the 20th-century disturbance; 3. aeolian sand; 4. an intense cultural layer; 5. a cultural layer of varying intensity; 6. sterile sand (drawing by R. Vengalis).

first terrace even extended further south, and was washed away in later times.

Thus, it is only possible to justifiably discuss traces of pre-historic activity and their distribution in the excavated area, which is almost entirely located in the eastern part of the first terrace, along a 600-metre-long section. However, considering the extent of traces of activity identified during the excavations, it is also important to bear in mind the rather extensive modification and destruction of the site in recent centuries. From the 19th to the beginning of the 20th century, it served as the site of the village cemetery, which occupied an area of roughly 90 by 80 metres (Fig. 2). Great damage to the site was done in the first half and the middle of the 20th century, when many pits for storing potatoes were dug here. In the middle and the second half of the 20th century, most of the site was ploughed. As a consequence, the cultural layer in some places was destroyed as deep as the sterile subsoil, and stone constructions relating to the graves were cleared away. In 1968, a gas pipeline was laid across the archaeological site through the area where the rich cultural layer and the graves were concentrated. The surface was mostly disturbed in Zone E, the location of mounds assumed to be barrows. As was mentioned, this area was modified by aeolian activity, and sand extraction pits are also visible in the terrain. Natural processes have modified the surface in other places too: in the course of excavations, layers of aeolian sand covering the older surface were frequently found.

The trends in the formation, preservation and destruction of the cultural layer are best revealed in the continuously excavated area (zones A, B, C); hence, it is worth describing them in detail. Although archaeological finds and features were discovered in the whole excavated area, the cultural layer that was undisturbed by ploughing in his-

torical times was found to be restricted to two areas with a relatively small diameter (Fig. 3).

The first area was uncovered in Zone B, its diameter from west to east is 34 metres. The cultural layer is homogeneous, unstratified, its thickness more or less uniform, varying across the whole area from 20 to 30 centimetres. The colour intensity and richness of the layer differ strongly across the area. In the western part, the cultural layer is light, yellowish or light grey, and is difficult to distinguish from the sterile sand. Eastwards, the layer gradually gets darker, until it becomes almost black. The density of finds (pottery sherds, pieces of fire-cracked rocks, charcoal and other artefacts) is directly related to the colour intensity of the layer: only isolated finds have been discovered in the western part, while their density increases progressively in an eastern direction.

Considering the preservation of the cultural layer in Zone B, the conclusion can be drawn that its original southeast boundary was destroyed by ploughing (Fig. 4). The line at which the layer was destroyed goes across its most intensely coloured section. Meanwhile, the layer's western boundary should be considered original, because here the layer fades gradually and its boundary is indistinct. The layer disappears not by reducing in thickness, but due to a reduction in the amount of organic matter towards the edges. The preservation of the cultural layer is mostly attributable to its partial covering by the layer of aeolian sand, which protected the layer from the destructive effects of ploughing.

The other area with an unploughed cultural layer was recorded in Zone A, approximately 40 metres east of Zone B. The diameter of this area of cultural layer is 23 metres. The layer's thickness is fairly uniform, and varies from 20 to 30 centimetres; henceforth it corresponds to Zone B. The layer's richness is not so different: its colour through-

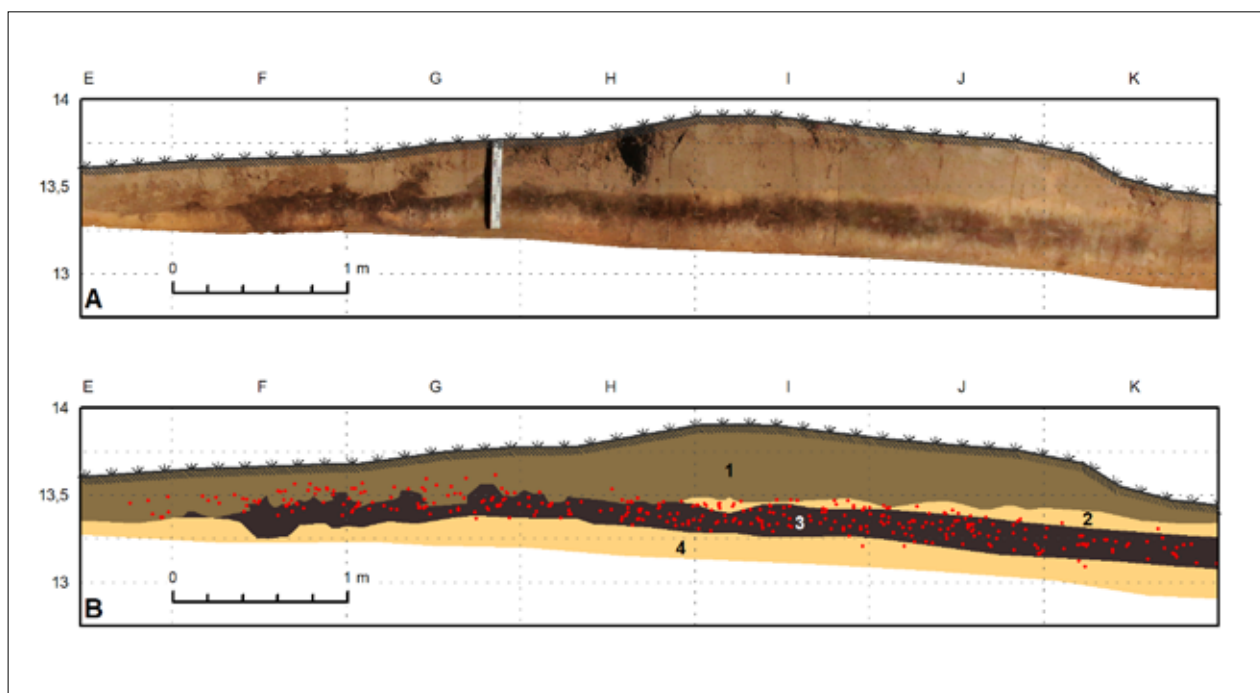


Figure 4. The profile of the cultural layer in Zone B (trench 14, part of the west profile): A. orthophotography; B. interpretation. A thin aeolian layer (2) covers the organic-rich cultural layer (3) in the northern part of the profile (right side), thus protecting it from destruction by ploughing. As the elevation of the cultural layer slightly increases southwards, the damage of ploughing simultaneously deepens: at the southern end of the profile, the plough zone (1) is directly in contact with sterile soil (4) as the aeolian and cultural layers are completely destroyed. Note the simultaneous decrease in the intensity of the cultural layer and the density of the pottery finds (red dots) northwards (drawing by R. Vengalis).

out the whole of Zone A remains an intense, dark grey, and only begins to lighten in a narrow section along the western edge. The cultural layer is homogenous, its soil being composed of dark grey sand containing numerous finds.

An analysis of the preservation of the cultural layer in Zone A showed that only its southern boundary was intact. It coincides with the edge of the terrace, and the trench profiles reveal that the cultural layer terminates naturally on reaching the slope. On the western side, the layer begins to rise in the profile, and is cut by the ploughed layer there, as with the southeast boundary of Zone B. In this area, the cultural layer was also covered by an aeolian sand deposit.

Thus, having determined that the western edge of Zone A and the eastern edge of Zone B were destroyed by ploughing, we can make the assumption that in the past the cultural layer might have formed a continuous area there. In the middle section of the continuous profile of the excavated area, a slight elevation can be seen (Fig. 3), which was the likely reason for the greater destruction. The destruction of the cultural layer by ploughing in this area is also supported by the more numerous finds in the ploughed layer in this place than elsewhere. At the same time, the preserved subsoil features and partly disturbed graves demonstrate that the disturbance did not go very

deep, and its effect probably extended to just the upper part of the sterile soil horizon.

An unploughed cultural layer was not discovered anywhere west of Zone B: sterile sand was revealed immediately beneath the ploughed layer. Some finds were recovered from the ploughed layer, but there were very few. Also, a rather apparent reduction in the density of subsoil features is evident: only ten features were discovered in a 50-metre-long section between zones B and C. This leads us to assume that little activity was carried out in this area during the period of the settlement's existence, and if the cultural layer was destroyed by ploughing, it was slight from the beginning. However, such a reduction in traces of activity cannot be linked to the boundary of the settlement site, as a significantly higher number of subsoil features is seen again in Zone C. An unploughed cultural layer has not been preserved there, although it was certainly formed and only subsequently destroyed. This is demonstrated by a number of organic-rich inclusions of bioturbational and illuvial origin found in the upper part of the sterile layer. They indicate that the cultural layer, now destroyed, would have originally been above the sterile layer.

The excavations in 2015 revealed the distribution trends of archaeological features, but the question how far north they extend from the edge of the terrace remained unan-

swered. For this purpose, investigations were conducted in 2017, when 182 cores were sampled to the north of the area excavated in 2015. The cores showed that an organic-rich cultural layer is preserved ten to 20 metres to the north of the excavated area, to the point where the route of the 1968 gas pipeline lies. No cultural layer of intense colour was identified to the north of the soil disturbances created during the construction of the pipeline. Unfortunately, in this instance, data from the cores did not allow for the determination of the extent of the lighter-coloured cultural layer less rich in organic content. Since the soil was very dry during the period of survey, archaeologists were unable to clearly distinguish the less organic-rich cultural layer from the sterile sand. For this reason, the extent of the cultural layer in this area remains unknown. Jablonskis marked a find spot of cremated bones and pottery inside Zone F (Jablonskis 1986, pp. 29–30); hence, there can be no doubt that more graves, or even the cultural layer of a settlement, must exist in this area.

Investigations conducted in 2017 also aimed at identifying the extent of the cultural layer in Zone E. This area was surveyed by sampling cores, and excavating shovel test pits and test pits. In nearly all the examined locations, a 20 to 30-centimetre-thick paleosol, usually overlaid by a 20 to 60-centimetre-deep layer of aeolian sand, was detected. The paleosol everywhere was of a rather intense dark grey colour. However, finds in the 14 shovel test pits and seven test pits excavated were scarce, even though the soil was sieved: in total, just a handful of flint and ceramic finds. Subsoil features were also unearthed in two test pits. The very low number of finds does not permit us to define the paleosol layer buried by aeolian deposits as a cultural layer formed in a settlement area, but its thickness indicates that this is not a naturally formed soil A-horizon (Volungevičius et al. 2019). Thereby, we may guess that prehistoric agricultural fields were located here. Although the prehistoric ploughing most likely did not reach as deep as 20 or 30 centimetres, we can assume that the tilling of just the upper part of the soil could have encouraged the integration of organic material to a greater depth.

In 2017, Zone D was also surveyed. Here, after excavating three shovel test pits and five test pits, a rich, 20 to 40-centimetre-thick cultural layer with numerous finds was discovered, over a roughly 50-metre-wide area. Around 400 pottery sherds, a few burnt bones and flint finds were collected, and three subsoil features were detected.

To sum up, traces of settlement were identified essentially almost everywhere where excavations were carried out. They should definitely be spread over a wider area, and perhaps even encompass the whole surface of the prominent terraces above the floodplain. The second terrace, investigated only in parts, but containing the most concentrated cultural layer, seems very promising in this

regard. At the same time, graves or related artefacts were discovered over a much more restricted space: in Zone B and to the east in an area roughly 50 metres wide. This locale is situated on the edge of the first terrace. The graves should certainly extend from this area to the north too, at least to Zone F. Meanwhile, in Zone E, where mounds assumed to be barrows are located, no finds connected with burials have been discovered so far.

Pottery

Pottery assemblages are usually the best indicators of chronology and the differing intensities of activity that took place in various periods at continually inhabited settlements with unstratified deposits. Unfortunately, in this case, the issue is more complicated, mainly due to the fact that, so far, very little is known about Bronze Age and Early Iron Age pottery, both in Lithuania and across the wider region. A comprehensive typological sequence for this period has not been defined, even the more distinct types are very loosely tied to the absolute chronology. Limited by these circumstances, we cannot aim at a clearer identification of the phases of settlement at the Kvietiniai site by analysing the pottery assemblage. So in the current situation, the more rational approach is to build the typology itself. However, because the analysis carried out here covers pottery from just a single site, only a few of the more commonly represented pottery types can be clearly defined. The majority of types are represented by very few sherds; hence, they will be distinguished only hypothetically. Nevertheless, we hope that this classification will prove helpful in the future, when the gaps in Bronze Age pottery typology eventually begin to be filled.

It is evident, at first sight, that the pottery found at Kvietiniai is very varied, represented by different types. Of all these, only Neolithic Corded Ware has been more thoroughly previously analysed, and its characteristic attributes and dating have been established (Piličiauskas 2018). Another two pottery groups, Post-Corded Ware and Fine-Rusticated Ware, are mentioned in the literature, but have not been described in detail. Other types that we distinguished here were so far unknown. Some of them were encountered at other archaeological sites, but were not identified or described; for others, no identical examples can be found elsewhere. Although this pottery assemblage, which contains some previously unidentified types, is one of the most meaningful results of the excavations at Kvietiniai, its analysis is quite problematic. First of all, the collected pottery sherds are highly fragmented. Only a small number of larger sherds, out of a multitude, are suitable for typology. Consequently, different types have to be described based on a low number of sherds, and it becomes impossible to define all the attributes of a type,

except for just a few of them. Without similar finds from other sites, the question of type/style variation remains problematic as well, i.e. we do not know whether the newly distinguished type included only strictly standardised, uniform vessels, or if they could vary. While classifying the vessels according to clay fabric, the decoration, or the profile of the neck, we do not know if the various identified attributes indicate different functions or the chronology of the vessel. With only very fragmented sherds, we cannot tell whether different ornamental motifs and compositions could have been made on different parts of the same vessel, or if differently decorated sherds belong to different types. We were able to distinguish specific types based on the distinct fabric, e.g. when red granite was used as temper, which was an uncommon feature in other types. However, having thus distinguished the type, and not having any similar pottery from other assemblages, it is not possible to determine whether this particular fabric may be regarded as dictated by the cultural tradition, or if it is an exclusive feature of a single settlement or a single potter, or merely a single episode of clay fabric preparation. While classifying the pottery from Kvietiniai, we sought similar examples at other sites. In doing so, we have not reexamined all the ceramic finds from this period kept in museums. Only pottery databases compiled during previous research in museums, as well as publications, were used, and a few assemblages were reviewed.

For the reasons listed above, the definition of new types based solely on an analysis of the pottery assemblage from Kvietiniai is somewhat risky, as for this purpose, pottery assemblages from different sites should be analysed and compared. We believe, however, that it is possible to distinguish definitely one type, which is represented by a sufficient number of sherds that belong to different vessels. We also managed to find a similar pottery assemblage at another site. Based on the first sites with finds of this pottery type, we named it Kvietiniai-Tojāti Ware. In other cases, we provide descriptions of the pottery groups identified. They are important, first of all, for revealing the variety of pottery from Kvietiniai, but should also be of benefit in the future for the creation of a detailed typology of Bronze Age and Early Iron Age pottery. We only provisionally label these pottery groups as types, and only the future will tell if they actually correspond to a category of type: not until a much greater number of representative sherds are discovered in several different sites.

The pottery assemblage from Kvietiniai consists of around 4,200 sherds, which are attributed to the Neolithic, the Bronze Age, and the Early Iron Age. The majority of sherds are very small, 66% are smaller than two centimetres, weighing in total just 11 kilograms (excluding the urns). The pottery was analysed visually by examining the fabric (its hardness, colour and type, size, and amount of inclusions), ornamentation, and the shape of the neck. The

texture of the fabric was determined as hard or soft, based on whether it could be scratched by a fingernail. Sherds belonging to the softer fabric group were also often distinguished by the much more substantial post-depositional wear.

Corded Ware (further CW). This is the most abundant pottery type. More than a third of the total pottery assemblage can be ascribed to CW. However, it is important to stress that this abundance results not only from the actual number of finds, but also from the simple identification of sherds belonging to this type. The unique fabric, which contains grog temper, makes it possible to identify even very small CW fragments. CW sherds were distributed over the whole excavated area. Most of them were collected in Zone A, where CW was the prevalent type. Numerous sherds were also found in zones B and D. CW is a pottery type that has already been comprehensively investigated, defined and dated (Piličiauskas 2018); and, regarding the Kvietiniai assemblage, we can only confirm that it matches classic CW attributes. Its main characteristic is the yellowish-brown fabric tempered with grog and fine sand. Very fine, up to one-millimetre, pores left by burnt organic inclusions are visible. The fabric is soft, and this caused a high level of post-depositional wear, mostly evident as rounded fracture edges and rodent tooth marks.

The surface of the walls is either smooth or horizontally brushed, a few sherds have a rusticated surface (Fig. 5.14). Two traditional vessel types, i.e. beakers and short-wave moulded pots, are assigned to CW. The beakers are characterised by five to eight-millimetre-thick walls, slightly everted necks, and tapered rims. A herringbone motif clearly predominates in the ornamentation of the beakers (Fig. 5.1–5): 45 sherds displaying this motif were found. A total of 25 sherds were decorated with incised lines (Fig. 5.6–7, 9–11), which were arranged in a number of ways: horizontally, concurrently, or in a hatched triangle pattern; but in most cases it was not possible to reconstruct the larger composition due to the small size of the sherds. Cord ornament was encountered in merely five instances (Fig. 5.8, 13). Another vessel type is a short-wave moulded pot (Fig. 5.15–17). Around 50 sherds of this type were identified. Interestingly, the distribution of sherds from the two types is different, as beakers were almost exclusively found in the northwest part of Zone A, while short-wave moulded pots were found in equal proportions in both Zone A and Zone B.

Fine-Rusticated Ware (further FRW) is the 2nd most prevalent pottery type at Kvietiniai, also described previously (Vasks 1991, pp. 30–31; Grigalavičienė 1995, pp. 224–225). All the FRW found in 2014 and 2015 is related to burials: it comprises urns from cremation graves. Three intact urns and roughly 240 dispersed sherds from an undetermined number of vessels were uncovered. Urn

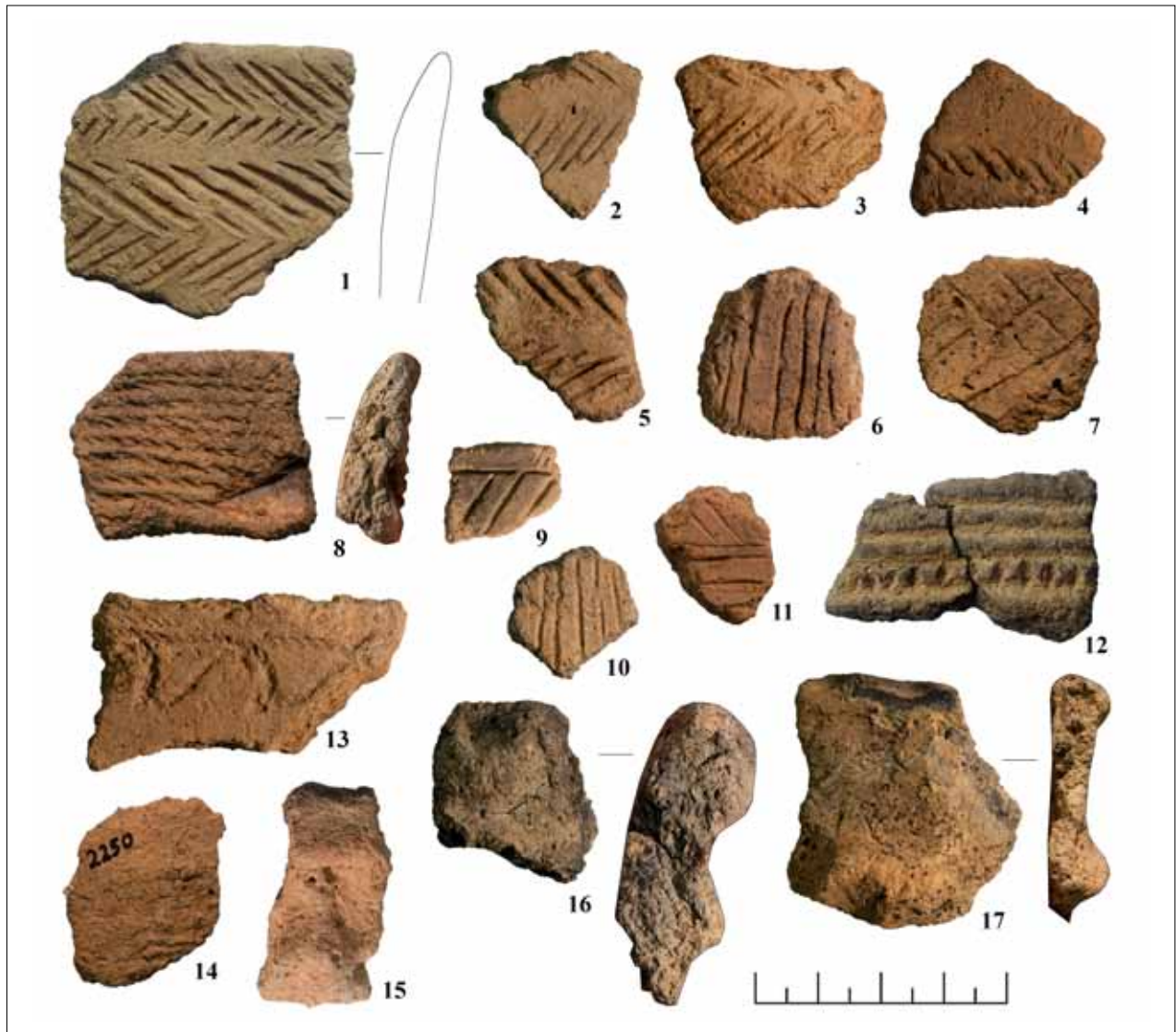


Figure 5. Corded Ware from Kvietiniai. MLIM: 1. 1613; 2. 2058; 3. 1746; 4. 2290; 5. 2137; 6. 1742; 7. 1540; 8. 3119; 9. 2065; 10. 842; 11. 1714; 12. 1961; 13. 154; 14. 2250; 15. 2299; 16. 824, 825; 17. 2676 (photograph by R. Vengalis).

sherds were found only in Zone B. However, FRW sherds unearthed in Zone D come from the settlement's cultural layer. In this zone, ten identifiable sherds, which displayed certain differences to the pottery from the graves, were collected.

The fabric of FRW urns is reddish, prepared by adding medium-sized (ca 3 mm) crushed rock temper. Red granite was used more often, although not as a strict rule. The outer fine-rusticated surface was created by applying an additional layer of clay. Its fabric is different from the fabric of the vessel walls, tempered with much more abundant, but finely crushed granite inclusions. Sometimes evidence of flattening, such as traces of brushing with the fingers or with a tuft of grass (?), is seen on the finely rusticated surface. The interior surface is very uneven, and in places also finely rusticated, similar to the outside surface. The thickness of the walls is from seven to 13 millimetres. All the vessels are of a similar shape, narrowing towards

the base, with a slightly convex body; the necks are slightly carinated, and end in upright or slightly everted rims. In one case, in grave 4, several fragments from a bowl-shaped vessel were recovered. As some of the urns found were intact or reconstructable, we also obtained some data on vessel dimensions and proportions (Fig. 6, Table 1).

The settlement's FRW is characterised by similar outer surface treatment and neck profile, but features different fabric and interior surface treatment techniques. The fabric was distinguished by finely crushed granite temper, and the interior surface was burnished (Fig. 7). Such attributes of the pottery from this period are usually explained in terms of functional rather than chronological differences: fine-grained ware is assumed to have been used as tableware, and linked to a higher social status (Lang 2007, pp. 230–232).

FRW is widely found in 1st-millennium BC burial sites, as well as hilltop and open settlements in the region settled



Figure 6. Fine-Rusticated Ware urns from the Kvietiniai burial ground: 1. grave 1; 2. grave 9 (photograph by R. Vengalis).

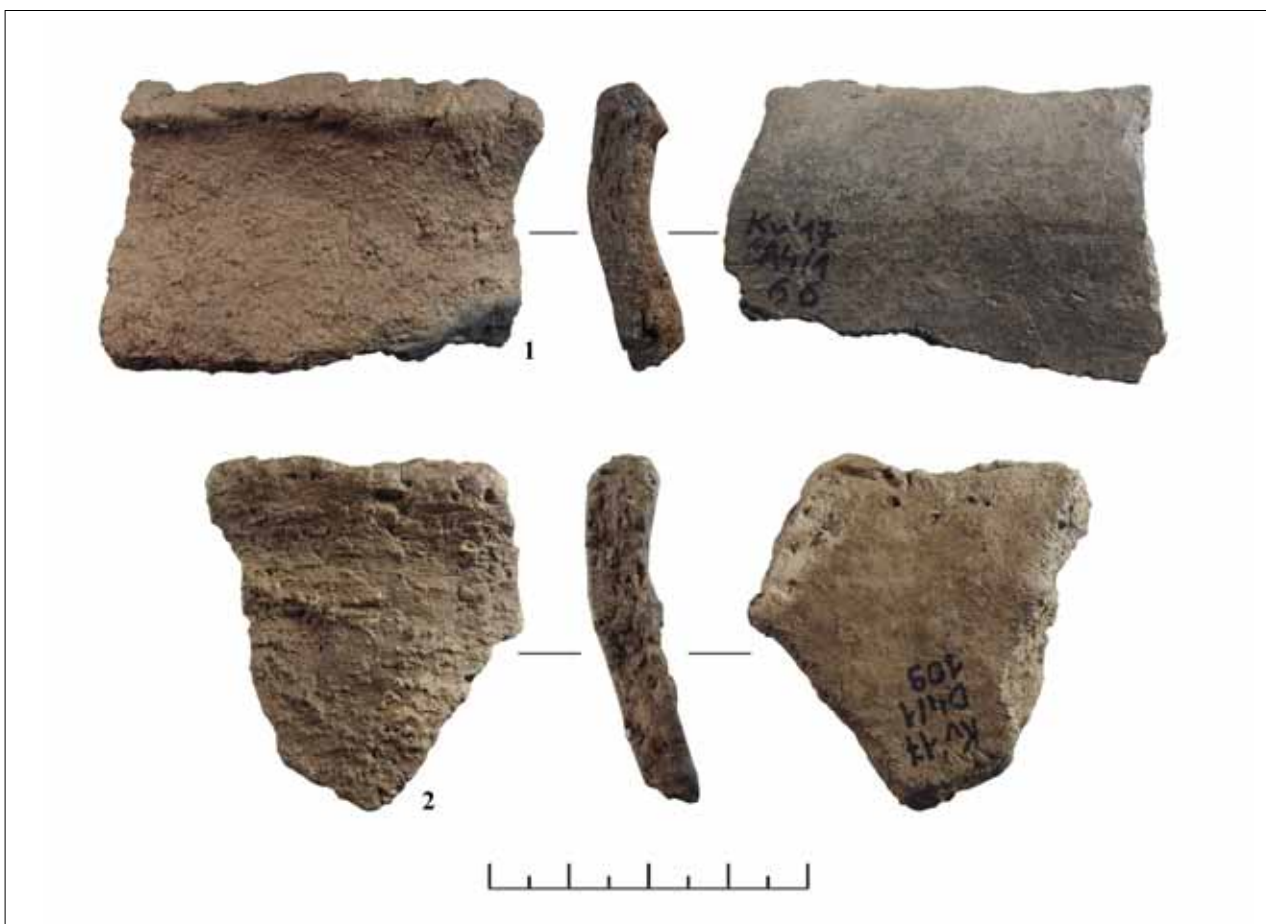


Figure 7. Fine-Rusticated Ware from the Kvietiniai settlement site. MLIM: 1. 2017/66; 2. 2017/109 (photograph by G. Piličiauskas).

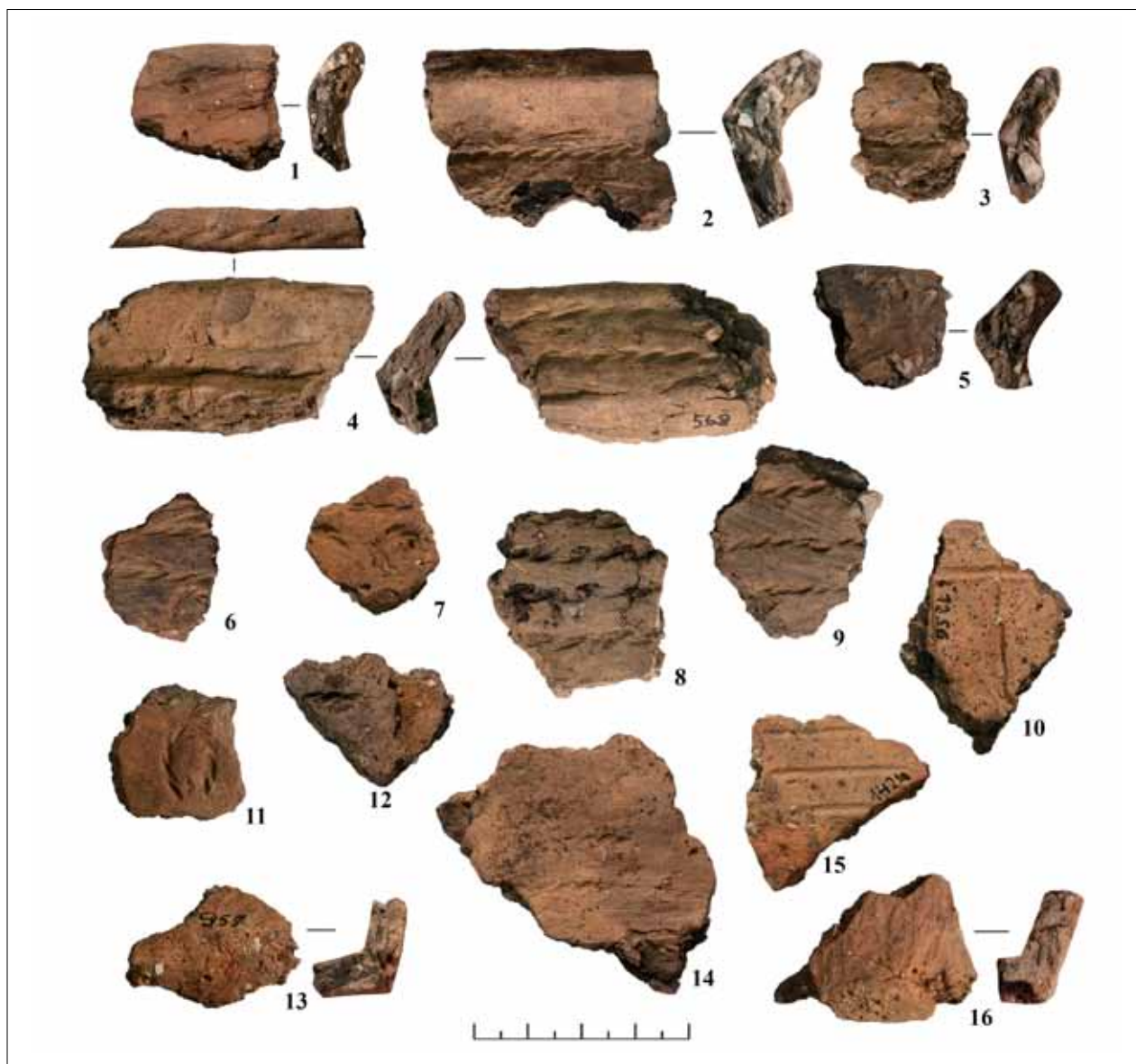


Figure 8. Kvietiniai-Tojāti Ware from Kvietiniai. MLIM: 1. 727; 2. 1155; 3. 1127; 4. 568; 5. 1046; 6. 905; 7. 1013; 8. 1298; 9. 1083; 10. 1256; 11. 748; 12. 806; 13. 955; 14. 1007; 15. 1424; 16. 913 (photograph by R. Vengalis).

by the West Balts. However, it has not been analysed in detail. Even though FRW is not homogenous, geographically and chronologically significant variants of it have not yet been defined. FRW identical to the graves at Kvietiniai was found at Ėgliškiai (Eglishken) barrow cemetery (Kanarskas 2006), as well as in Kukuliškiai hilltop settlement (Minkevičius et al., 2019), both of which are located about 20 kilometres northwest of Kvietiniai. Pottery similar to FRW from the Kvietiniai settlement was found in the Žardė open settlement (Masiulienė 2012, p. 54). FRW sherds are often discovered in the first-millennium BC burial sites and hilltop settlements of western Lithuania, but the pottery is usually poorly preserved; hence it is difficult to compare vessel shapes. The dating of FRW varies: some researchers place it in the period from the 1st half to the end of the 1st millennium BC (Vasks 1991, pp.

115–116), and others just from the end of the 1st millennium BC (Daugudis 1966, pp. 55–57; Grigalavičienė 1995, pp. 224–225). Recently, more reliable data on the dating of FRW in Lithuania have emerged. AMS ^{14}C dates obtained from cremated bones from urns with a fine-rusticated surface in the Lower Nemunas and Trans-Nemunas (Užnemunė) regions revealed that this pottery was used in the second and third quarters of the 1st millennium BC (Piličiauskas et al., 2011; Piličiauskas 2012a). AMS dates from the cultural layer with FRW of the Kukuliškiai hilltop settlement encompass the period from circa 800 to 400 cal BC (Minkevičius et al., 2019).

Kvietiniai-Tojāti Ware (further KTW). The third most common pottery group from Kvietiniai was unknown until now. Around 80 sherds were assigned to this type,

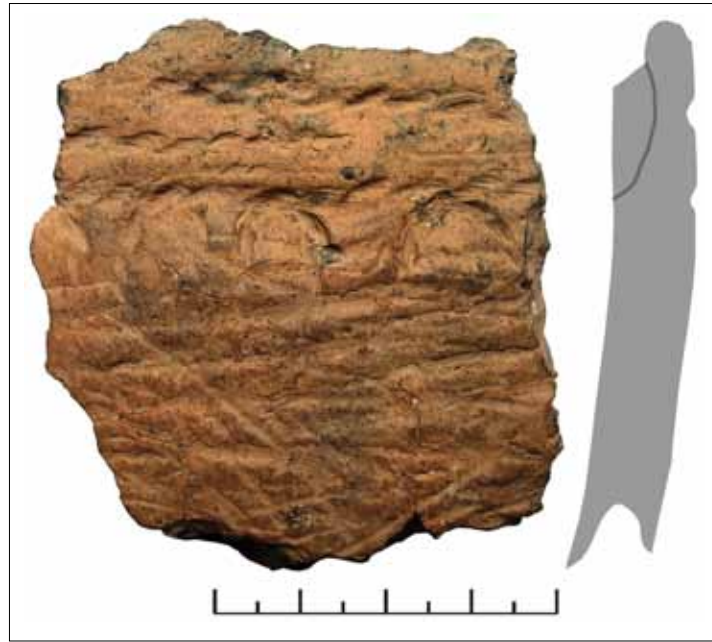


Figure 9. A Kvietiniai-Tojāti Ware potsherd from the Nendriniai site, southwest Lithuania. LNM: Nnd-EM2047:69 (photograph by G. Piličiauskas).

most of them concentrated in Zone B, but some were also found in Zone A. This pottery is characterised by a hard, brown fabric, tempered with coarse (3–4 mm) crushed white granite. The surface of the walls is either slightly brushed or smooth. A distinguishing feature is the shape of the rims, which are abruptly and sharply everted, sometimes almost at a right angle, thus forming a carinated corner point on the inside of the mouth (Fig. 8.1–5). The lip is usually rounded, sometimes almost flat. The angle between the base and the body is perpendicular, the body is slightly convex. The majority of the identified vessels were quite small, with rim diameters of 12, 17, 19 and 24 centimetres. The vessels are abundantly decorated, a cord imprint being the most common element of decoration. These imprints were formed using a tightly twisted cord, and impressed quite deep. Type Z twisted cords were used exclusively (Fig. 8), which distinguishes KTW from CW and Post-Corded Ware, where this type of twisted cord is very rare (Piličiauskas 2018, p. 148). The ornamental compositions consist of parallel horizontal lines spaced about five millimetres apart on the upper part of the vessel, and a row of one to 1.5-centimetre-wide horseshoe-shaped cord imprints below (Fig. 8.6–9, 11, 12). The lower part of the body is sometimes decorated with short (about 1.5 cm) straight cord imprints (Fig. 8.12, 14). Cords were occasionally imprinted on the inside of the everted rim and on the lip. A few sherds decorated with incised lines were also ascribed to this type, based on the similarity of their fabric (Fig. 8.10, 15). However, not a single sherd bearing both cords and lines has been found; therefore, this attribution may be false.

Although this pottery type has never before been defined, some identical examples exist in previously collected assemblages. A particular pottery assemblage, which can undoubtedly be attributed to the same type, was collected in western Latvia at the Tojāti site (Piličiauskas 2018, pp. 147–148, Fig. 93), although these sherds were never identified as a separate type, but regarded as CW (Loze 1992; Vankina 1980; Vasks 1991, p. 170). No other KTW complexes were previously identified in Lithuania. A single unquestionably identical find that we were able to uncover is one sherd from Nendriniai in the Trans-Nemunas (Užnemunė) region (Fig. 9). Isolated sherds that could only possibly be ascribed to this type were found at the Kubilėliai (Juodagalvis 2019, Fig. 2) and Paveisiejai (Juodagalvis 2019, Fig. 19) sites, also located in the Trans-Nemunas region. Certain affinities can be traced in the pottery from Visėtiškiai in eastern Lithuania, ascribed to Trzyniec culture, but it also displays significant differences (Piličiauskas 2018, Fig. 99).

Shallow-Impressed Post-Corded Ware (further SIPCW). Roughly 50 sherds of this pottery were found. Most of them were clustered in Zone A, and only a handful were unearthed in Zone B. This type of pottery has a light, reddish-yellow fabric with scarce, coarse (3–4 mm) crushed rock temper fragments. The temper was made exclusively from red granite, and grog was possibly used as well. The fabric is soft, similar to CW, exhibiting high post-depositional wear and rodent tooth marks. The pottery was decorated with cord imprints arranged in horizontal lines at 0.5-centimetre-wide intervals. S-twisted cords are used, but, unlike those commonly used in CW, they are thin and



Figure 10. Shallow-impressed Post-Cordded Ware from Kvietiniai. MLM: 1. 2445; 2. 2780; 3. 1603; 4. 2599; 5. 2033; 6. 2609; 7. 2792 (photograph by R. Vengalis).

very loosely twisted. Cord imprints are shallow, in some places not impressed at all, and the ornament is discontinuous (Fig. 10.1, 3, 4). Cord decoration occurs on about half the sherds assigned to this type, and a few more are decorated with incised lines. The vessels are thin-walled, and the walls are usually six to eight millimetres thick. The vessel necks are straight, and the lip itself is rounded and slightly thickened (Fig. 10.1–2).

Parallel horizontal cord decoration is common in Neolithic–Early Bronze Age Post-Cordded Ware; similar sherds are found in most investigated sites from the period. This pottery is rather varied, and should lend itself to being divided into several distinct types. However, until now, it has not received researchers' attention, neither has any attempt been made to establish its typology (Piličiauskas 2018, p. 155). Among the Post-Cordded Ware ceramics found in the Daktariškė 5 settlement, there were sherds recovered from the layer dated to 2400–1600 BC that were very similar to SIPCW.

Each of the other groups distinguishable in the pottery assemblage from Kvietiniai are represented by just a few sherds, which often belong to the same vessel. Nevertheless, their most problematic aspect is that neither of these groups can be assigned to any of the previously described and at least approximately dated pottery types. In this context, descriptions of some of these groups are presented below, highlighting only cases where the sherds provide at least some detailed information on vessel attributes.

Type A. About 30 sherds, all from Zone B, were assigned to this type. Most of the sherds were found in or near feature 43, and may all be from a single vessel. Type A has a light yellowish, slightly reddish fabric tempered with poorly sorted, one to four-millimetre crushed white granite (Fig. 11.1–2). The pots have quite thin walls (~8 mm), and they are well fired. The surface is brushed with rather distinct striations, arranged horizontally in the upper part, and vertically in the lower part. The neck narrows upwards, and the rim is vertical. Judging from the fragment near the base of the pot, the profile of its body was strongly convex. The neck is decorated with vertical 30-millimetre-long incisions. We were not able to find similar pottery in Lithuania's archaeological record.

Type B. The pottery is made from a yellowish-brown fabric with few and fine inclusions of crushed white granite. The outer surface is slightly brushed. The walls are roughly ten millimetres thick. The profile of the neck is S-shaped. One ornamented sherd was found decorated with imprints of a type Z twisted cord (Fig. 11.3). The composition consists of alternating upward and downward-facing horseshoe motifs. A total of 18 sherds were assigned to the type, all retrieved from Zone B. Similar finds in other sites are not known, but the ornamental motifs and the similarities of fabric suggest that this type might be associated with KTW, or is perhaps a variant of the latter.

Type C. The pottery is of a hard yellowish-brown fabric with unsorted crushed white granite inclusions of different sizes (1–3 mm). The outer surface is slightly brushed. The walls are eight to ten millimetres thick. The pottery



Figure 11. Various types of pottery from Kvietiniai. Type A (1–2), Type B (3), Type C (4–6), Type D (7), Type E (8–10), Type F (11), Type G (12), Type H (19), other types (13–18, 20–23). MLIM: 1. 1129; 2. 1134; 3. 53; 4. 54; 5. 1321; 6. 509; 7. 435; 8. 2525; 9. 1593; 10. 2420; 11. 1564; 12. 2017/88; 13. 646; 14. 893; 15. 618; 16. 1186; 17. 979; 18. 1197; 19. 109; 20. 1315; 21. 2927; 22. 1350; 23. 747; 24. 752 (photograph by R. Vengalis).

was decorated with five-millimetre-wide and two-millimetre-deep pits, but their arrangement remains unclear (Fig. 11.4, 6). The rims are almost identical to those of KTW vessels: abruptly everted, with a sharp corner point on the inside of the mouth (Fig. 11.5). A total of 15 sherds were assigned to this type, all found in Zone B. Pit-impressed decoration is common in a lot of different Bronze Age pottery types (Vasks 1991; Grigalavičienė 1995, p. 217). However, the exclusive and rare shape of the rims suggests that this type is related to KTW, or it is even a variant of it.

Type D. The pottery has brown fabric which contains poorly sorted (1–5 mm) crushed white granite inclusions, as well as sand. The walls are nine to ten millimetres thick. The surface is smoothed, decorated with 15-millimetre-long vertical streaks that resemble cuneiform (Fig. 11.7). The neck has an S-shaped profile, and the lip is rounded. The angle between the base and the body is obtuse, at ~130°. A total of 18 sherds were assigned to this type, all found in Zone B. No examples similar to this type were found elsewhere.

Type E. The pottery has a greyish-brown fabric with abundant fine one-millimetre-thick crushed white granite inclusions, and very few coarser fragments, about three millimetres in size. The neck is everted, the lip is rounded. The walls are six to nine millimetres thick. The surface is either smooth or slightly brushed, decorated with narrow lines incised in an unclear arrangement (Fig. 11.8–10). A total of 17 sherds were assigned to this type, all recovered from Zone A. No similar examples were found elsewhere.

Type F. The pottery has a soft reddish-yellow fabric tempered with abundant coarse crushed granite inclusions. The walls are eight millimetres thick. The surface is decorated with horizontal rows of ‘caterpillar’ motifs (Fig. 11.11). The shape of the neck remains unclear. Only two sherds of this type that fit together were found, both inside feature 57, between zones A and B. Similarly decorated sherds were recovered at the Daktariškė five settlement, from the layer dated to 2400–1600 cal BC (Piličiauskas 2018, Figs. 25, 26).

Type G. The pottery is a dark grey colour, fired in reduced conditions. The fabric is mostly tempered with sand; a few inclusions of fine crushed granite also occur. The vessels are thin-walled, with six-millimetre-thick walls, the necks are slightly inverted, producing a slight carination. The rim is thickened (Fig. 11.12). The outside surface is burnished. Four such sherds were discovered, together with fine-grained FRW finds, all in Zone D. Fine-grained ware with a burnished surface and fired in a reduced atmosphere, dated to the 1st millennium BC, was found in Lithuania at the Ėgliškiai (Eglischken) and Stanaičiai burial sites (Grigalavičienė 1995, pp. 227, 232), and at Kukuliskiai hilltop settlement. Finds of this pottery are more frequent in neighbouring regions, East Prussia, Latvia and Estonia

(Vasks 1991, pp. 31–32; Grigalavičienė 1995, p. 227; Lang 2007, pp. 128–129), but the pottery is highly varied, and needs a more detailed internal typology.

Type H was distinguished based on the sherds of an urn with a brushed surface from grave 2. This pottery is well fired, of a dark brown colour, the fabric contains fine sand and one to two-millimetre crushed red granite inclusions. The wall thickness varies from eight to ten millimetres. The surface is vertically brushed. Only sherds from the body were found; therefore, the shape of the vessels remains obscure. Overall, 20 sherds ascribable to this type were found, all of them probably from the same urn.

Even after distinguishing a significant number of types, a lot of sherds still remain in the assemblage that should represent other types which have not been described here. The differences in fabric, rims and decoration show that the variety of pottery here was very large (Fig. 11.13–18, 20–23). However, the remaining types are hard to define, due to the small size of the fragments, the low number of sherds attributable to different types, and, probably, the fact that some types do not have clearly distinct or specific attributes, such as unique fabric or decoration.

Other finds

Flint finds were very scarce, totalling only 84 (15 in Zone A, 55 in Zone B, 2 in Zone C, 1 in Zone D, and 3 in Zone E; the rest were isolated finds from between different zones). High-quality, grey translucent, mottled or opaque Cretaceous flint was used. Its nearest sources are in the middle and upper reaches of the River Nemunas. Only a single blade was produced from Silurian flint, which is found as pebbles locally in western Lithuania. This proportion of flint material used differs significantly from the Neolithic and Sub-Neolithic settlements in western Lithuania, where mostly local flint was used. It also indicates either that the Mesolithic societies at Kvietiniai were highly mobile, or they developed exchange contacts with flint-rich regions. The flint artefact complex suggests at least two different chronological stages: Late Mesolithic and Neolithic-Early Bronze Age. The finds attributed to the Late Mesolithic were more numerous, and included seven regular blades, an end-scraper, and two microliths (Fig. 12.1–5, 8, 9, 11). The finds most indicative of the Neolithic-Early Bronze Age are two flakes from ground axes, and two knives with flat retouch (Fig. 12.6–7, 10, 12).

A total of ten items of **stone tools** or parts of them were found (1 in Zone A, 5 in Zone B, 2 in Zone C, and 1 in Zone D), the most notable among them being an adze made from an unidentified type of fine-grained rock. One side was carefully ground, while the other side was only slightly ground, and retained the original shape. A total of six artefacts are interpreted as grinding stones. They are

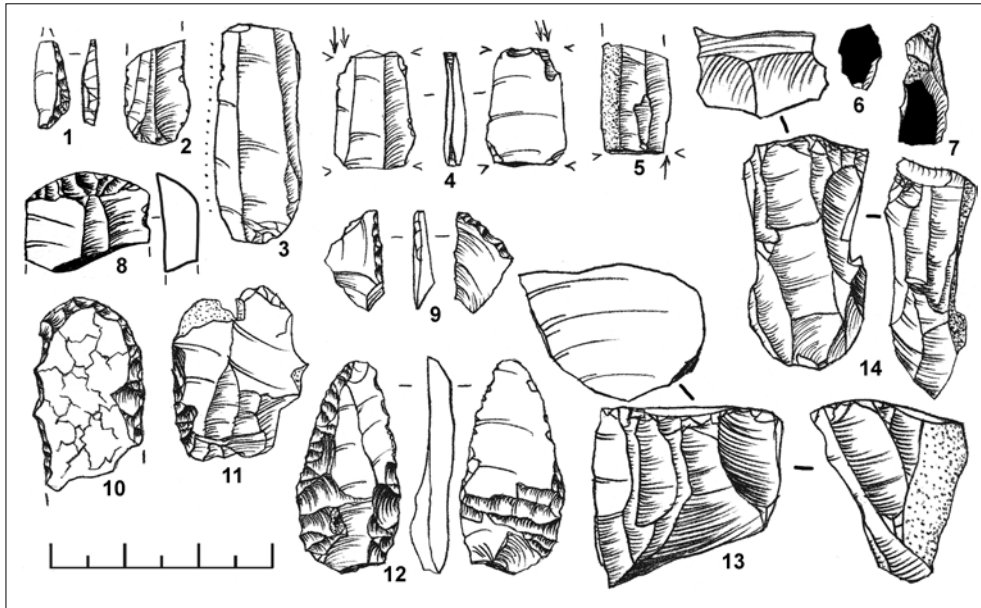


Figure 12. Flint artefacts from Kvietiniai: triangular microliths (1, 9), blades (2–5), flakes from ground axes (6–7), scraper (8), scraper-knife (10), retouched flake from bipolar core (11), knife (12), unidirectional cores (13–14). MLIM: 1. 3200; 2. 3160; 3. 3157; 4. 3183; 5. 3136; 6. 3175; 7. 3164; 8. 2017/20; 9. 3166; 10. 3142; 11. 3156; 12. 3030; 13. 3195; 14. 3190 (drawing by G. Piličiauskas).

from various fine-grained rocks: three from sandstone, two from quartzite, and one from dolomite. The grinding stones were of large dimensions (only parts of them were discovered), one side of these objects was heavily ground, and the other sides were fractured. Only one specimen, made from dolomite, was smaller, and could fit into the palm of the hand. It was in the shape of a brick, and measured 90 by 40 by 20 millimetres, with three ground sides. In addition, three quern stones, probably used to grind cereal grain, were found. These rather massive tools, measuring 15 centimetres in diameter, and weighing about 2.5 kilograms, must have been used with both hands.

A total of 26 **metal finds** were collected during the investigations, comprising seven bronze and 19 iron artefacts. However, they are very fragmented and unidentifiable. Only a handful of these finds can be unquestionably attributed to the archaeological period, the rest are probably from the Early Modern Period. While the two bronze objects, rod-shaped fragments, found in feature 43 can undoubtedly be regarded as related to the settlement's cultural layer, they are unidentifiable. Among the bronze finds discovered in the ploughed layer, two should belong to the period of the settlement: the first is a fragment of a socketed axe, the second (a rod with incised decoration) is a piece of an unidentified object. Only three iron artefacts can be more justifiably interpreted as archaeological finds based on their context. One iron object, a rod-shaped fragment, was found inside grave 12. Two artefacts, fragments of a knife and of an unidentified object, were discovered in feature 18.

In addition, 24 **amber finds** were recovered. All of them, without exception, were found in Zone B. The amber objects were very fragile, and almost always fell apart straight after being retrieved from the ground. Only a single find has retained its somewhat original shape. It is half a short, cylinder-shaped bead with chipped edges that were not carefully worked. The hole was drilled from both sides, and joined in the middle. The number of small amber fragments in the cultural layer must have been much greater than the number of amber crumbles actually found. A macro-botanical analysis showed that the soil from graves 5 and 9 (which were inside the distribution area of the amber finds) contained abundant microscopic amber fragments.

Only burnt **osteological material** has been preserved in the cultural layer. In addition to the cremated human bones from the graves, roughly 300 burnt animal bones were discovered. They are attributed to the context of the settlement. All the bones are very small (0.4 g on average), and the species cannot be identified. They were distributed in the cultural layer in various zones. Like the bones, only charred **organic matter** has been preserved. Small charcoal fragments and hazelnut shells were found in the cultural layer of zones A and B. Even though just slightly over a dozen hazelnut shells were discovered during the excavations, soil flotation has shown them to be numerous, as they were detected in almost all the samples: in some of them up to four fragments per litre. The grains of barley (*Hordeum vulgare*) found in subsoil features 43 and 76 were very important finds. Apart from these, a few

seeds of wild plants were retrieved from flotation samples (Piličiauskas et al., 2020).

A mere 40 fragments of **clay daub** were recovered. All of them were very small, and did not form any apparent clusters. Besides the groups of finds listed above, the cultural layer also contained numerous **fire-cracked rocks**. They were distributed over the whole area of the cultural layer, and their number correlated with the intensity of the colour of the cultural layer. Larger rocks were fewer, usually small fragments measuring a few centimetres in diameter, or just crumbs of rocks were found. They were spread evenly; no discrete concentrations were identified.

Features

A total of 93 subsoil features, related to settlement in different periods, were noted during the excavations. The features were scattered over the whole of the excavated area, but in varying densities. Two distinct concentrations could be discerned in the area excavated in 2015 (Fig. 13). The largest concentration was in Zone C, where 37 features were discovered. The other concentration was in Zone A, where 28 features were found. In the remainder of the excavated area, the density of features was lower, but evenly distributed, with about two to three features per 100 square metres. Zone B was sparsely populated with features, with a total of ten features detected within its boundaries. A few features in both Zone D and Zone E were discovered in the test pits excavated there.

Features identified as postholes number 25. Pits of smaller dimensions up to 0.5 metres in diameter were assigned to this category. None of the postholes contained any stone constructions or finds. Most of the postholes were concentrated in Zone C; however, no clearer arrangement pattern can be discerned. In the remaining part of the excavated area, only a handful of isolated postholes were identified.

About 40 features can be defined as household pits of unclear function. These circular and oval pits are larger than the postholes, and filled with soil from the cultural layer. The majority of the pits are very indistinct, made up of a homogenous light grey fill (Fig. 14). Only 20 features contained finds, and in almost all cases these were just isolated, small pottery sherds. Very few of the features of this type deserve a more detailed description.

Feature 3 was an oval pit measuring 2.7 by 1.8 metres with a V-shaped profile, revealed in Zone C. Its fill was made up of light grey, and in some areas, darker sand. A total of 11 CW sherds that belong to the same vessel (Fig. 5.12) were found in the fill at different places and depths. No other artefacts, except some charcoal, were found.

Feature 18 was uncovered to the east of Zone C. It was a two-metre-long, 1.1-metre-wide and 0.7-metre-deep

oval pit, with a V-shaped profile, filled with grey sand. The finds in it were few, but from very different periods: a flint blade and a flake, a CW sherd, two sherds with crushed granite temper, and two fragments of iron objects. Unless the latter finds entered the fill due to post-depositional processes, we can assume that the feature post-dates all of the settlement stages identified in this area. It could be contemporary with or more recent than the graves.

Feature 22 was revealed to the west of Zone B. This was the largest of all the features. The pit measured 3.2 by 2.7 metres, and was 0.7 metres deep. It had an almost circular shape with a U-shaped profile. The fill consisted of several stratigraphic layers. On the bottom, an approximately 15-centimetre-thick layer of light grey sand was recorded. On top of it lay dark grey sand, which made up most of the pit's fill. The middle of the upper part of the pit was filled with sterile yellow sand. The finds were discovered in the layer of dark grey sand. A total of 13 fragments of clay daub and seven small pottery sherds were collected. One sherd belongs to CW, the others are of an unidentified type containing crushed granite temper. The structure of this feature strongly resembles a tree-throw, but despite its natural origin, the pit still provides important information. Here, the cultural layer on the surface was completely destroyed by ploughing. However, the soil which fell into the tree-throw, together with artefacts before ploughing started, is an indication that a cultural layer, although not rich, had existed before.

Feature 43 was discovered in Zone B. It was a circular 0.15-metre-deep pit, measuring 0.8 by 0.75 metres. The pit was filled with homogenous, almost black sand, rich in charcoal. The colour of the fill was deeper than that of the cultural layer above it, but the outline of the pit only became discernible at the horizon of sterile soil. The charcoal-rich fill suggests it was possibly a hearth. No stone constructions were found in it, just some small fire-cracked rocks. This feature clearly stood out from others by its number of finds. A total of 24 pottery sherds, one flint flake, two fragments of bronze objects, and 15 small burnt animal bone fragments were recovered from the fill. Additionally, the floated soil sample yielded 35 hazelnut shell fragments and eight cereal grains, one of which was identified as barley, while the remaining grains could not be determined precisely (they were either barley or wheat) (Grikpēdis and Motuzaitė Matuzevičiūtė 2018). The pottery was from multiple periods: eight sherds belonged to CW, two to KTW, seven to Type A, two to Type D, and six fragments were of an unidentified type containing crushed granite temper. This demonstrates that the fill of the feature was formed from the soil of the surrounding cultural layer, together with the intermixed artefacts from earlier periods that it contained. Nevertheless, the Type A pottery sherds can indeed be related to this feature. Only isolated sherds of this type were discovered nearby, much

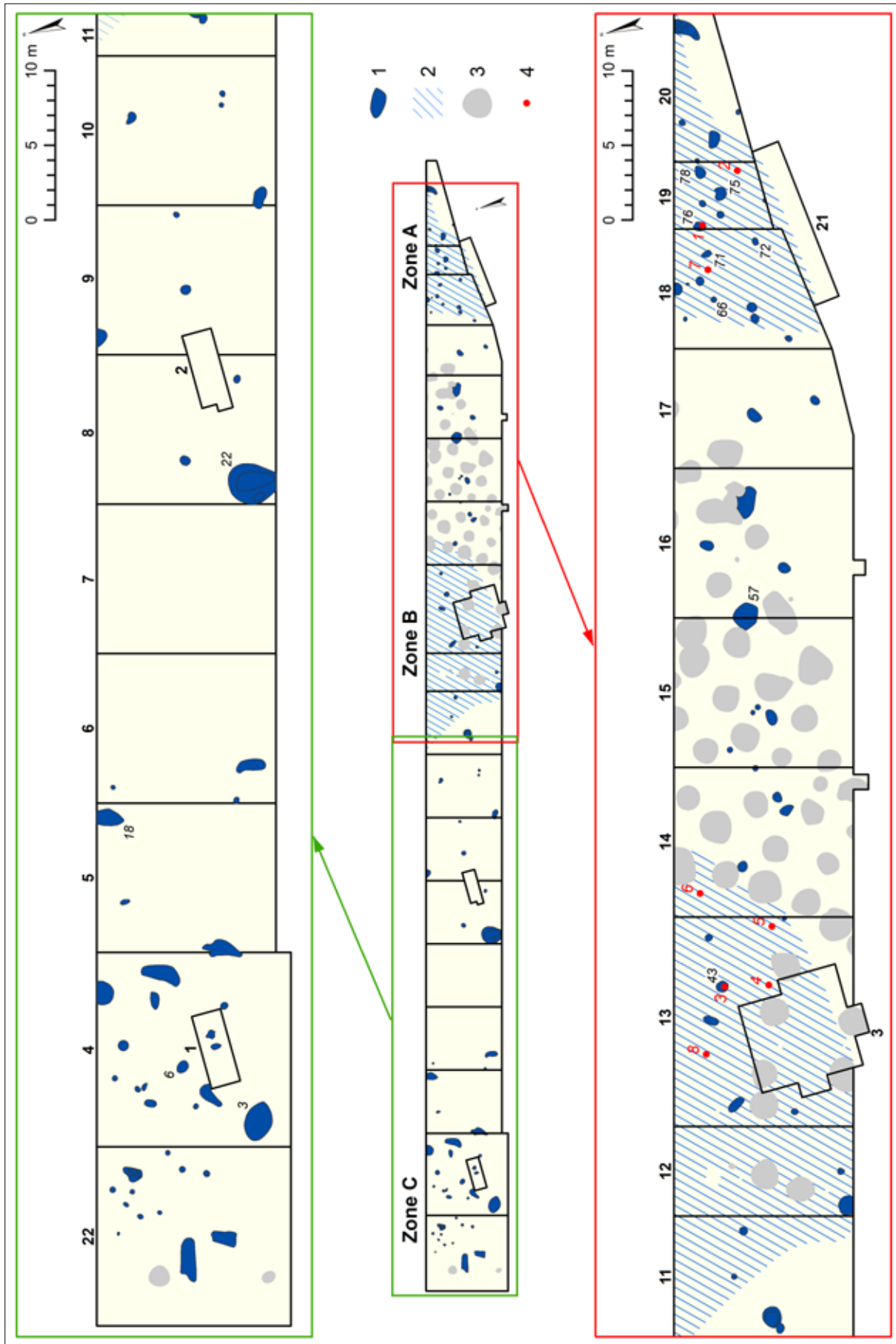


Figure 13. The distribution of subsoil features and locations of samples for AMS radiocarbon dating in the 2015 trench: 1. subsoil features; 2. the area of the undisturbed cultural layer; 3. 20th-century pits; 4. AMS samples (drawing by R. Vengalis).

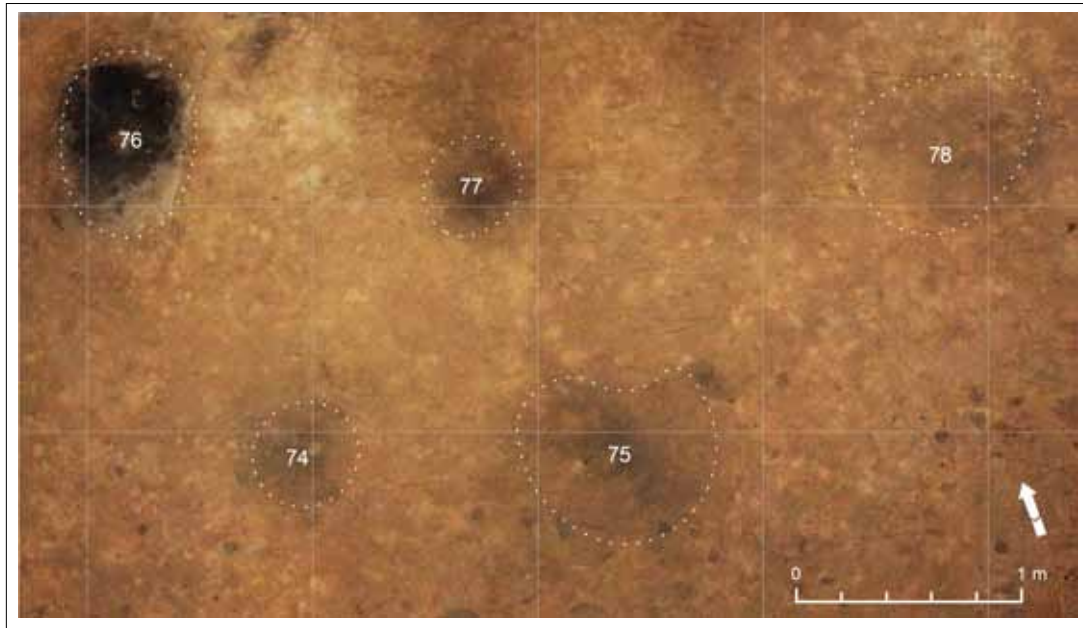


Figure 14. Features under the cultural layer in Zone A, ortophotography (part of trench 19) (drawing by R. Vengalis).

fewer than in the feature itself. Besides, the sherds found in the feature were larger. Therefore, they should be interpreted as having been deposited in the feature directly, and not as intrusions from the surrounding cultural layer.

Feature 76 was very similar to feature 43, although it was detected in Zone A. It was a slightly oval 0.3-metre-deep pit, measuring 0.85 by 0.6 metres. Its fill consisted of homogenous, charcoal-rich, almost black sand (Fig. 14). This feature could also be interpreted, with some caution, as a hearth. Inside, a few fire-cracked rocks, 40 small pottery sherds, and two burnt animal bones were found. In addition, flotation yielded three cereal grain fragments, one of which was identified as barley (Piličiauskas et al., 2020). The pottery was likewise from different periods: eight CW, one SIPCW, one KTW, three Type E and 27 crushed granite tempered sherds belonging to an unidentified type were found.

Because archaeological finds were discovered in only a small number of the features, their dating remains unclear. Nevertheless, it is possible to recognise certain patterns that occur in the different zones. In Zone A, pottery was found in six features, and five of them contained solely CW, with only feature 76 not fitting into the above context. In Zone C, pottery was found only in two features, and is all attributed to CW. Meanwhile, in Zone B and in the space between the zones, pottery was discovered in ten features. In all of them, pottery of an unidentified type with granite inclusions prevails.

A further 25 features are questionable. They were identified from patches of darker soil that probably do not indicate the spots of former pits. Instead, they would have formed as the result of washing out particles of organic matter from the existing (or pre-existing) upper layers, and their infiltration into the sterile soil occurring simultaneously with bioturbation processes. The profile depths of these features reach only a few centimetres. They can be interpreted as the bottom parts of ploughed-out features, or former denser concentrations of organic matter in the cultural layer above. What matters here is that these features were also discovered in places where the cultural layer was not preserved (beyond zones A and B). Thus, they show that a cultural layer had existed, but was subsequently destroyed by ploughing.

We attempted to determine the spread of archaeological structures beyond the excavated area with a magnetometer survey. An area of 0.7 hectares was surveyed using a dual-sensor fluxgate gradiometer Bartington Grad 601. The survey was carried out with a resolution of 0.01 nT, with 0.5-metre distance between transects and a 0.25-metre sample distance. A magnetometer survey was conducted prior to the 2015 excavations, while also including the area that was to be excavated later. Unfortunately, the survey did not yield the hoped-for results. No magnetic anomalies were detected in the locations of features that were discovered later during excavations. Neither were any anomalies that could be more clearly related to archaeological structures detected beyond the excavated area.

Chronology

From the Neolithic until as late as the Early Iron Age, small open settlements with weak cultural layers covering just a few hundred square metres were most prevalent in the east Baltic (Lang 2007, pp. 22–24, 54–55). Although the site at Kvietiniai is far larger and has a rather rich cultural layer, we could argue that it does not contradict this settlement model. The pottery assemblage is comprised of many different types, each consisting of only a small number of sherds (and vessels). It indicates that the archaeological site at Kvietiniai should be perceived as a palimpsest, composed of numerous different inhabited periods, all of which were unintensified. The impression of intensity is created merely by the overlap of many of these periods in one location.

Even though the archaeological site is a vast area, activities that left more visible traces in an archaeological context, in a certain period in time, could have been carried out inside much smaller zones. These activity zones could, in theory, be located in different areas of the site in each period. Hence, by conducting extensive excavations in only one place, we cannot expect the finds discovered to reflect all the periods of activity at the site. Pottery assemblages recovered from the closely situated zones A and B significantly differed from each other. Therefore, we may expect that if excavations were carried out at another location, different pottery would be found again. It should be borne in mind that missing periods in the excavated archaeological record do not necessarily mean that the site was abandoned during this time. Activities could simply have been concentrated in areas not yet excavated. This is something to bear in mind when analysing which chronological periods stand out in the current archaeological record from Kvietiniai.

The earliest traces of activity at the Kvietiniai site date from the Mesolithic period. However, the excavated area did not include zones used for flintknapping or the discard of debitage, as few flint artefacts were found. Even though flint in western Lithuania is rare and of low quality, numerous flint artefacts are usually found even during small-scale excavations at Mesolithic-Neolithic settlements, e.g. on the shores and islands of Lake Biržulis, or on river banks and paleolagoon shores at Šventoji (Rimantienė 2005; Piličiauskas and Peseckas 2018; Butrimas 2019).

Of all of the pottery types found at Kvietiniai, CW is the only one that is reliably dated. Despite the fact that establishing its internal chronology is difficult due to the plateau in the calibration curve, it is nevertheless clear that CW was used in Lithuania from ca 2800 to ca 2400 cal BC (Piličiauskas 2018, pp. 168–180). The dating of SIPCW and Type F pottery can be approximately defined based on the dating of the Dakariškė 5 site. There, very similar

pottery was found in the layer dated by AMS to ca 2400–1600 cal BC (Piličiauskas 2018, pp. 39–64). However, such dating only narrows down the chronological boundaries between which we should look for the existence of these types. This does not indicate precisely when these types were used. FRW is dated by different authors to various centuries in the 1st millennium BC (Vasks 1991, pp. 115–116; Grigalavičienė 1995, pp. 224–225). Meanwhile, until now, no data have been available on the dating of all other pottery types found at Kvietiniai. Their chronology cannot be established more precisely than between the 2nd and the 1st millennium BC, and it is not even clear what their order in the chronological sequence is.

This problem could only have been solved with new AMS dates, but the possibilities were greatly restricted by the lack of reliable links between the samples suitable for dating and the pottery types that needed dating. The cultural layer is unstratified, and the features are either empty of finds, or contain solely CW or a mixed find complex. Only the undisturbed graves were regarded as reliable contexts. Grave 9, found in an intact urn, was protected from any earlier or later intrusions. Some small wood charcoal fragments were retrieved from among the cremated bones inside the urn. One of them was dated to 728–388 cal BC (2 σ) (Fig. 15.8). This date also establishes the dating of Kvietiniai FRW. The date falls into the Hallstatt plateau in the calibration curve, hence its interval is very large. However, there is a 90.8% probability that it can be confined to a period half as wide: 542–388 cal BC.

The direct dating of pottery by sampling food crusts was also very restricted by the available finds. A sufficient amount of food crust was found on as few as 33 sherds, 20 of which were small and belonged to unidentifiable pottery types. The organic residue analysis conducted on the identifiable sherds determined only one sherd with a food crust from a terrestrial source, while for all the remaining sherds, an aquatic component was identified, together with terrestrial (Robson et al. 2019). The sherd with terrestrial food remains was assigned to KTW. Although it was not decorated, its fabric and the brushing on the surface were similar to the ornamented sherds of this type. The date received was 1257–1012 cal BC (2 σ) (Fig. 15.4). Having no other potential dating material contextually related to pottery types, we also dated food crusts with traces of aquatic biomarkers from three sherds. However, an analysis of modern fish from the River Minija (Minge) showed that the freshwater reservoir effect is significant for the ¹⁴C dates from food crusts containing an aquatic component. As a result, these dates have not provided additional information for the chronological definition of pottery (Piličiauskas et al., 2020).

In addition to the aforementioned dates, six more were obtained by dating organic matter retrieved from the cul-

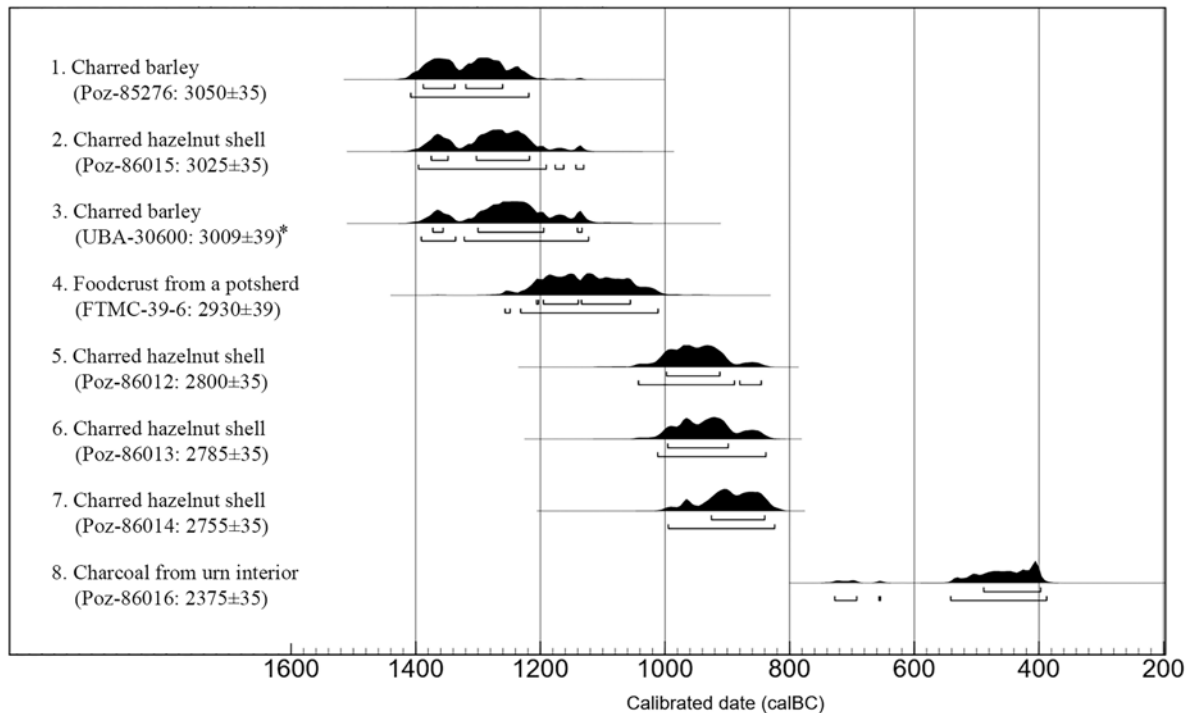


Figure 15. Diagram of calibrated AMS ^{14}C dates of the Kvietiniai site. Dates of charred organic remains affected by freshwater reservoir effects are not included. The locations of the samples are displayed in Figure 13. Contexts of samples: 1. feature 76; 2. cultural layer, sample No 3334; 3. feature 43; 4. cultural layer, potsherd No 732; 5. cultural layer, sample No 3308; 6. cultural layer, sample No 3314; 7. cultural layer, sample No 3319; 8. grave 9. A * denotes data first published in Griķpēdis and Matuzaite Matuzevičūtē 2018. Calibrated by OxCal v4.3.2 (Bronk Ramsey 2017) and IntCal13 atmospheric curve (Reimer et al., 2013).

tural layer, and not directly related to particular pottery types (Fig. 13). We dated two charred barley grains found in features 43 and 76, which were located in zones B and A respectively. In both the features, mixed pottery from different periods was found. Consequently, the features cannot be viewed as closed contexts, and their fill should be interpreted as soil from the surrounding cultural layer containing artefacts from all earlier periods of activity. The dates of the cereal grains from both features are very similar: 1409–1219 and 1392–1123 cal BC (2σ) (Fig. 15.1, 3). Furthermore, four charred hazelnut shells from the cultural layer were dated. The date of a single hazelnut shell found in Zone A corresponds to the dates of the barley grains: 1396–1131 cal BC (2σ) (Fig. 15.2). The remaining three dates fall into a later period, but are all very similar: 1043–846, 1012–839 and 995–825 cal BC (2σ) (Fig. 15.5–7). Therefore, the six dates obtained from terrestrial material fall within two period intervals: ca 1400–1150 and ca 1000–850 cal BC.

We would not wish to consider this grouping as accidental; therefore, we think that it indicates two phases of the most intensive cultural layer formation in zones A and B. Even though the ceramic finds may, at first sight, exhibit slightly different tendencies (the numerous different pottery types indicate a lot more phases of activity having taken place there), the AMS dates lead us to presume

that the other phases were probably not intensive. In truth, the pottery analysis described above does not contradict this presumption, as most of the types are represented by just a few sherds. Naturally, the assumption arises that the more intense phases of activity should be represented by greater amounts of sherds. Thus, we can try to examine which pottery types can be linked to these AMS dates that indicate phases of the most intensive cultural layer formation. As the examination of the pottery has shown, only four types stand out from the assemblage in terms of the larger number of sherds. Three of these types, CW, SIPCW and FRW, are chronologically distant from these dates. The fourth more abundantly represented type is KTW, which has a direct date obtained from the food crust that appears to fall in the gap between the phases indicated by cereal grains and hazelnuts: ca 1250–1000 cal BC. We think that KTW pottery can be associated with the earlier of the aforementioned phases, because this pottery is the only one (in addition to CW) to be found in both the features and to yield the dated cereals. Although Type A pottery predominated in feature 43, this does not suggest that this pottery should necessarily be linked to the date of the cereal. Isolated cereal grains, just like sherds of various pottery types, should be considered to have entered the feature's fill with soil from the surrounding cultural layer. Therefore, it looks as if the three earlier dates can be re-

garded as defining the chronology of KTW. By overlaying all four dates, the period of the use of KTW is defined as ca 1300–1100 cal BC (Piličiauskas et al., 2020).

It remains unclear which pottery can be associated with the later phase of 1000–850 cal BC. Based on the same logic, we would need to look for the more abundant pottery type, sherds of which have been found in both Zone A and Zone B. However, each of the remaining types are constituted by just a few sherds, and identified in only one of the zones. Numerous unidentifiable small sherds were found in Zone A: theoretically they could belong to Type A, B, C or D, but it remains unsubstantiated. Therefore, nothing particular can be said about the chronology of these and other types not mentioned in this chapter. We can only make some preliminary assumptions, based more on intuition rather than on strong arguments. Because Types B and C have a lot of common attributes with KTW, we may guess that they are chronologically close to KTW, or even contemporary variants. Type A must be earlier than KTW and Type D, which is demonstrated by the context of feature 43. Type G has similarities with the settlement's FRW: they could be contemporary, but from vessels serving different purposes.

The formation of the cultural layer

While trying to understand the types and phases of activities carried out in the investigated zones, it is important to take note of the fact that the cultural layer formed there as soil A-horizon rather than soil O-horizon. O-horizon develops in zones where intense activity is carried out in a limited space, e.g. in hillforts or towns. In such environments, large amounts of organic matter accumulate on the surface, and the occupation surface gradually builds up; therefore, the different phases of settlement can be distinguished stratigraphically. The A-horizon cultural layer is formed through the accumulation of surface organic matter on a smaller scale. In this case, the surface does not rise over time, and the cultural layer is formed instead by percolating the topsoil. Organic matter and artefacts infiltrate the deeper layers of the soil as a result of trampling, bioturbation, eluviation, and other soil development processes (Holliday 2004, pp. 261–283). At Kvietiniai, the formation of the cultural layer as A-horizon is clearly indicated by multiple factors: its original western boundary in Zone B shows that the cultural layer was incorporated into the paleosurface rather than developing on it (Fig. 3). The cultural layer in undisturbed locations is always of nearly the same thickness, and the more intense activity that was carried on at certain locations manifests itself by an increased amount of organic matter and archaeological finds, rather than by a thicker layer. The finds from different periods are completely intermixed, and any,

even residual, traces of past stratification are impossible to determine from an analysis of their vertical distribution. Bioturbation and other intensive soil development processes took place in the cultural layer for as long as it was the surface layer, and subsided after it had been buried under the layer of aeolian sand. As a result of soil development processes, the layer has become homogenous; thus, no distinct structures can be distinguished within it. The burial pits and subsoil features of the settlement must have definitely cut through the cultural layer. However, their outlines were never discernible on the level of the cultural layer, only becoming so in the sterile soil horizon. Therefore, the sterile soil horizon should not be considered as a paleosurface, but rather as the bottom boundary of the soil A-horizon, in which the most intensive soil development processes occur.

Taking account of the above circumstances, the dating differences of the pottery assemblage and the organic matter from the cultural layer can be explained, i.e. why do all the dates fall into a much narrower period than that suggested by the chronology of the pottery types? A review of Corded Ware culture settlements in Lithuania and other countries has shown that they were inhabited for short periods, as pottery is very seldom found in large numbers, and more noticeable cultural layers do not build up (Piličiauskas 2018, pp. 181–182). Even in CW culture settlements which exhibit traces of the most intensive activity (e.g. Karaviškės 6), the cultural layer is only very weakly saturated with organic matter, and appears light yellow, and subsoil features are almost absent (Piličiauskas 2004, 2018, pp. 80–87). Similar tendencies can also be observed at the Kvietiniai settlement. Even though about 1,300 sherds found in all the excavated zones are attributed to CW, the minimal number of vessels is not high: just over a dozen. An important feature of CW in this respect is that the majority of its sherds displayed traces of intense post-depositional gnawing by rodents. This shows that the sherds had lain on the ground surface for quite a while. It also indicates the short-term nature of activity: the camps were abandoned even before the accumulated refuse was trampled into the soil. Furthermore, the refuse contained very little organic matter, which was not conducive to more intense bioturbation processes, which in turn could facilitate the integration of refuse into the topsoil. The same attributes, a small number of vessels and identical post-depositional wear, is also common to SIPCW, which was found exclusively in Zone A. This leads us to assume that in the period of use of SIPCW, the settlement system and lifestyle pattern were still very similar to Corded Ware culture.

From ca 1400–1150 cal BC onwards, an entirely different cultural layer formation processes can be observed, to which we can attribute the beginning of the highly increased accumulation of organic matter on the occupa-

tion surface. Interestingly, two of the dates from this range were obtained from crop plants, which poses the question whether these transformations could have been connected to the beginning of crop agriculture. However, we can surmise that the accumulation of organic matter should for the most part have been generated not by crop cultivation itself, but rather by the processes that had already been taking place before, such as the accumulation of cattle manure in the soil, and of charcoal from the hearths. In this way, a more significant accumulation of organic matter could have begun due to the resulting change in lifestyle, i.e. the considerably longer stays in one place.

This explanation of the formation of the cultural layer at the Kvietiniai settlement requires an answer to yet another question: why does a higher amount of organic matter in the cultural layer so strongly correlate with the density of finds in it? For instance, CW artefacts, which, according to our explanation, are older and not related to the accumulation of organic matter in the cultural layer, are visibly concentrated in the area of the cultural layer richest in organic matter in Zone B; whereas, like other finds, they become much sparser in areas where the cultural layer is poorer. We believe that this may be the result of natural post-depositional processes. In places where a large amount of organic matter accumulated on the surface, bioturbation processes were also more intense. Consequently, the artefacts, including those older than the organic matter, dispersed from the surface into the ~30-centimetre-thick topsoil. Meanwhile, where bioturbation processes were less intensive, a much smaller fraction of the finds was integrated into the soil. The finds that remained on the surface disintegrated over time, as they were more exposed to natural and anthropogenic (ploughing) processes. It is likely that the dwelling zone changed into agricultural fields at some time between ca 1400 and 800/550 cal BC, and that ploughing contributed to the homogenisation of the cultural layer. Although we do not have good evidence for this, the absence of pottery concentrations and clearance cairns or other structures in the cultural layer suggests this conclusion is plausible. However, as ploughing in those early times could not have been so deep, it could only have affected the upper part of the cultural layer. Therefore, it is impossible to explain the present structure of the cultural layer solely as the result of surface ploughing: the contribution of bioturbation processes should also be considered.

Cremation graves from the 1st millennium BC

Dwelling and agricultural activity in zones A and B ceased some time between ca 800–550 cal BC, since from ca 700–400 cal BC the area began to function as a burial zone.

Thirteen identifiable cremation graves and artefacts from disturbed graves were found there during excavations. The graves were discovered in Zone B and to the east of it (Fig. 16.A). Nine graves, situated two to five metres apart, were unearthed inside Zone B. To the east of Zone B, four graves were found separated by distances of eight to 15 metres.

The graves can be divided into two groups: graves with urns, and graves without urns (Fig. 17). There were six graves with urns, all unearthed in Zone B (Fig. 16, Table 1). These graves were found to be preserved differently: one was found inside a wholly intact urn, two were discovered in broken but well-preserved *in situ* urns, and three other graves were ploughed out. All the graves were dug into the older cultural layer, the top parts of the urns were revealed from a few to over a dozen centimetres below the plough boundary. The outlines of the burial pits could not be distinguished in the cultural layer. In the case of graves two and four, the bottom parts of the pits have become visible only in contact with the sterile soil as approximately 25-centimetre-diameter circular patches of dark grey sand. No stone structures were built in the graves, the urns were simply buried in individual pits; no coverings of the pits were discovered. Grave 4 could have been different in this respect, although its arrangement remains unclear due to disturbances. This grave was identified by a concentration of sherds from broken urns, comprising two clusters found about 30 centimetres from each other. Judging by the rims, at least two different urns could be identified. One of them was similar to all other urns, it had a slightly everted neck, while the second was probably a bowl-shaped vessel. Sherds from the urns were not found in original positions, but intermixed. Fragments of other ceramic items were discovered among the urn sherds, which could have been either strongly burnt clay daub, or perhaps the lid of an urn. The fabric of these fragments contains sand and organic temper and no crushed rock, the surfaces are not smooth, and fragments are of different thicknesses (up to 20 mm). Some voids, left by roughly four-millimetre-thick cords that had been inside before firing (comprising a single thread made from twisted fibres), are visible. Despite a total of 443 grams of sherds belonging to this object collected, we were unable to determine its shape or function.

It is evident from the better-preserved graves that the bones filled only the bottom parts of the urns. The soil between the cremated bones is darker than the surrounding earth: they were probably put into the urn together with ash from the pyre (Fig. 17.A). Grave 9 contained some charcoal among the bones. Inside the urns from all the three undisturbed graves, we discovered pottery sherds that are dated to much earlier periods than the graves

Table 1. Properties of the urn graves from the Kvietiniai burial site.

Grave No.	condition of the urn	depth from the bottom of the plough layer	quantity of sherds	pottery type	dimensions of the urn (mm)			amount of bones (g)	age of the buried individual	presence of charcoal in the grave	grave goods
					mouth Ø	base Ø	height				
1	broken, but in situ	c. 10 cm	whole urn	FRW	325	175	335	402	up to 14 years old	not present	sherds of an earlier pottery type (CW, 60 fragments)
2	scattered sherds	unclear	13 larger sherds from the base of the vessel	FRW		200		212	up to 14 years old	unclear	unclear
3	scattered sherds	unclear	2 larger sherds + small fragments (283 g)	Type H				3,7	unidentifiable	unclear	unclear
4	scattered sherds	unclear	sherds from at least 2 vessels (1016 g)	FRW				7	unidentifiable	unclear	unclear
5	broken, but in situ	c. 10 cm	whole urn (1830 g)	FRW	c. 200	135	c. 230	329	above 20 years old	not present	sherds of an earlier pottery type (3 fragments)
9	intact	c. 3 cm	whole urn	FRW	385	250	410	1545	unidentifiable	present	sherds of an earlier pottery type (CW, 42 fragments)

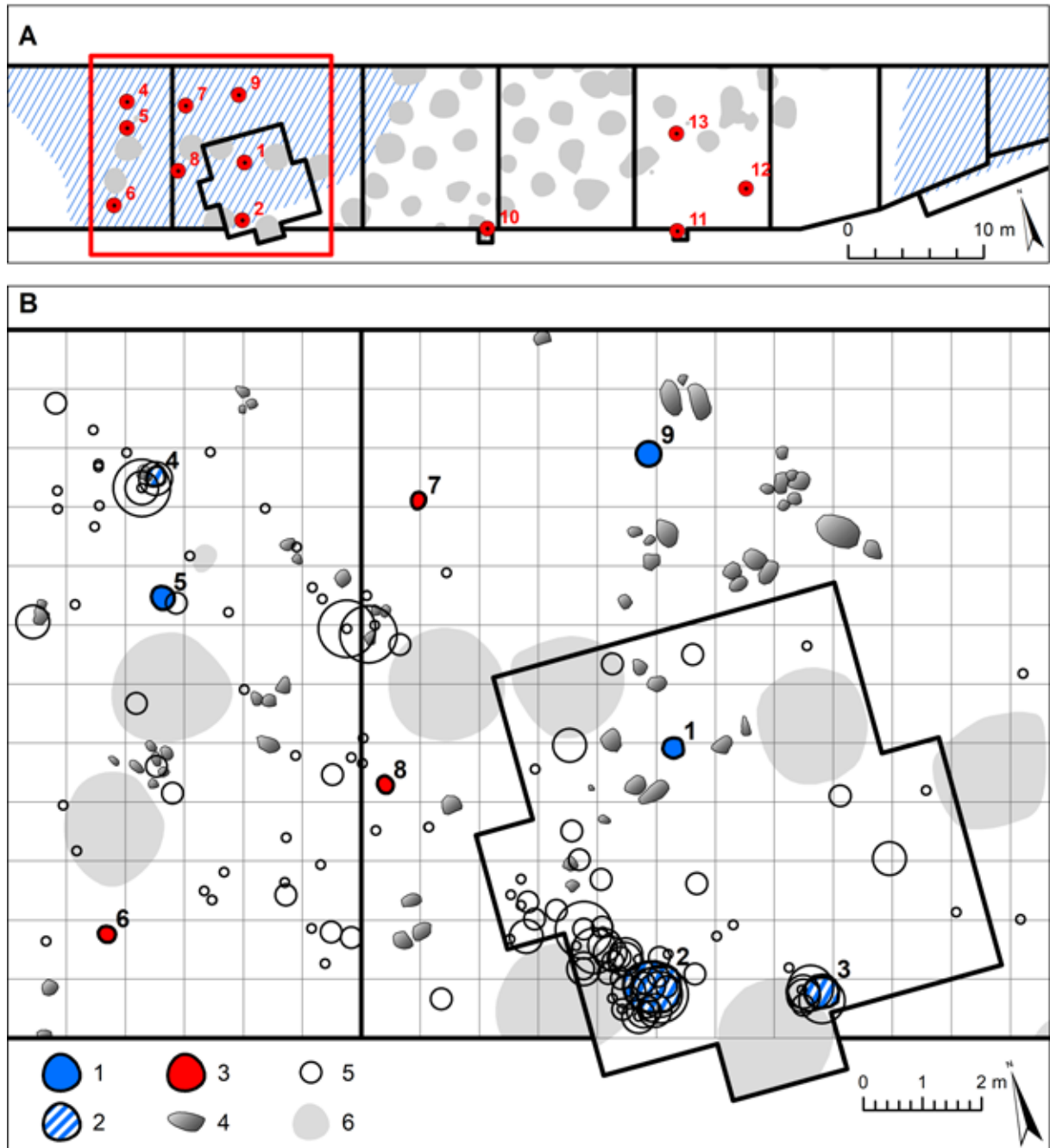


Figure 16. The distribution of cremation graves in the eastern part of the 2015 trench (A), and a detailed view of the western group of burials (B): 1. graves in urns; 2. disturbed graves in urns; 3. graves without urns; 4. stones; 5. sherds of destroyed urns, according to their size; 6. 20th-century pits (drawing by R. Vengalis).

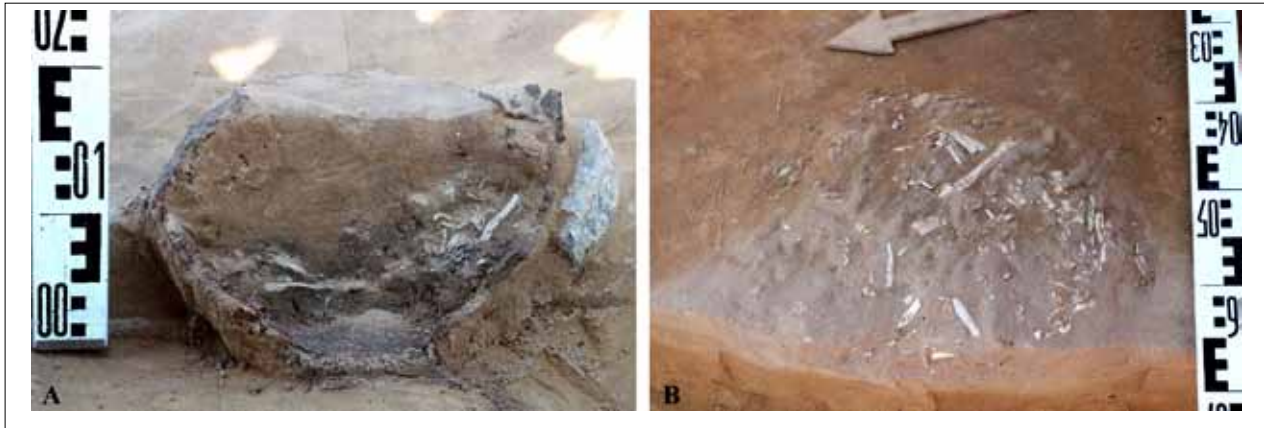


Figure 17. The main types of burial in Kvietiniai: cremations in urns (A), and cremations without urns (B): A. grave 5; B. grave 8 (photograph by R. Vengalis).

Table 2. Properties of the cremation graves without urns from the Kvietiniai burial site.

Grave No.	level of preservation	depth from the bottom of the plough layer	diameter of the concentration of bones	amount of bones (g)	age of the buried individual	grave goods and other finds
6	intact	~30 cm	28 cm	313	above 20 years old	none
7	intact	~30 cm	25 cm	349	above 20 years old	none
8	intact	~20 cm	30 cm	596	above 25 years old	a few burnt animal bones
10	cut by a late feature	0 cm	30 cm	289	unidentifiable	15 small sherds of an earlier pottery type and a flint flake
11	upper part ploughed out	0 cm	45 cm	222	4-8 years old	none
12	disturbed by bioturbation	0 cm	70x40 cm	835	above 25 years old	fragment of an iron object; sherds of a small ceramic vessel
13	upper part ploughed out	0 cm	disturbed	69	unidentifiable	none

themselves. Sixty CW sherds were found inside grave 1,¹ three sherds of unidentified type were discovered in grave 5, and 42 CW sherds were retrieved from grave 9. These sherds measured about 20 to 60 millimetres, and were from different vessels. Most of them display strong post-depositional wear, and are gnawed by rodents. It could not have been an accident that so many sherds ended up inside the urns together with the surrounding soil, as the density of the sherds inside the urns is many times greater than of those found in the cultural layer. We can say with-

¹ These finds were not mentioned in the 2014 excavation report and publication (Kontrimas 2015) as they were discovered only later, during the conservation of the urn.

out doubt that these sherds were put inside deliberately, for ritual purposes.

An additional 240 FRW sherds (2.2 kg) were collected in a 20-metre-wide area around the urn graves. Most were found in the plough layer, some also in the upper part of the cultural layer. Some of these finds should be from disturbed graves 2, 3 and 4, but the horizontal distribution of the sherds, and the variety of rims, indicate that there must have been more urn graves in this area. For instance, a distinct concentration of sherds was identified between graves 7 and 8, which could potentially indicate that there was originally one more grave here (Fig. 16.B). Type I

sherds similar to the urn from grave 3 were scarce, their number and distribution suggesting that all of them may well belong to the same urn. The horizontal distribution of urn sherds correlated with the distribution of isolated cremated human bones. Several hundred grams of these were collected, although a lot of small fragments could often not be distinguished from the burnt animal bones that were also present in the cultural layer.

Seven graves did not contain any urns. The cremated bones were buried in simple small pits, without any stone constructions (Fig. 17.B, Table 2). As in the case of the urn graves, the outlines of these grave pits were always indiscernible. The cremated bones inside the undisturbed graves were densely packed in circular patches measuring 25 to 30 centimetres in diameter, and in a thin layer a few centimetres deep. The soil between the bones was darker than the surrounding earth, but did not contain charcoal. Only grave 12 contained objects that could be interpreted as grave goods or the remains of burial rituals. In that grave, a corroded piece of an unknown iron object and a few dozen sherds were found. The sherds could be refitted, and hence belong to the same vessel, although they were not lying in their original positions and were intermixed with the bones. The vessel must have been put into the grave already broken, and not whole (the total weight of the sherds is 87 g). Its fabric contains fine crushed granite and sand temper, the wall thickness is six millimetres, the surface is even. Judging by the profile of a sherd from the bottom part of the vessel's body, the vessel had very convex walls and a vertical rim; hence, it probably had the shape of a small bowl. In a further two graves, objects were found that could only tentatively be considered to be the remains of burial rites. In grave 8, a handful of animal bones were retrieved from among the cremated human bones. In grave 10, 15 small sherds of various types and one flint flake were found. However, these sherds cannot be definitely compared to the sherds that were put inside the urn graves. The former sherds are very small, up to only 15 millimetres wide; therefore, it is doubtful whether such sherds would be put in the grave for ritual purposes. They could also have entered the context of the grave from the cultural layer above that was subsequently ploughed out.

Furthermore, stones which were found concentrated in the western area of the graves' distribution are most certainly connected to the graves (Fig. 16). In total, 62 stones were unearthed, and the small pits filled with yellowish sand distinguishable on the dark-coloured surface of the cultural layer indicate that there were more. The stones measure 20 to 40 centimetres, in some cases up to 70 centimetres. They do not form any regular structures, and were usually found in small clusters of several stones (Fig. 16.B). The stones lay higher than the graves, most in the bottom part of the plough layer. Therefore, we can as-

sert that any stone structures had already been disturbed, while previously more complex structures may have existed here. In the eastern area of the graves' distribution, not a single stone was found in association with the graves, but this is likely to be the result of ploughing, rather than different burial customs.

An examination of the cremated human bones was conducted visually. The diagnostic features for sex were based on the qualitative indicators of sexual dimorphism and osteometric measurements, if possible. The age was defined according to the fusion of cranial sutures, the formation of dental roots or crown, the epiphyseal fusion of the long bones, and the fusion of the vertebral apophyseal rings. The minimal number of individuals was calculated by the maximal preservation of identifiable bone anatomical elements. In terms of colour, the cremated bones range from creamy hues to completely burnt white fragments, indicating that the temperatures during the cremation process reached about 600° to 800°C, and the bones were burnt evenly (Schmidt and Symes 2015). The largest fragments of cremated bones measure five to seven centimetres. The majority of the bones are comprised of diaphyseal long bone and calvaria fragments. About 200 to 400 grams of bones were found in each of the better-preserved graves, only a few contained more. Grave 9, which contained the largest urn, yielded a much larger number of bones, 1,544 grams. No more than one individual was identified in all the graves; so it is possible to conclude that the graves were individual. However, anthropological analysis has not provided much information regarding questions of sex and age. Sex was impossible to determine in all cases, due to the fragmented nature of the remains. The approximate age of the individuals was determined in eight cases: out of eight graves, three were non-adult, while five graves contained the remains of adults.

The geographical situation, chronology and burial tradition make it possible to ascribe the discovered graves to West Balt Barrow culture. The question that follows from this is whether these graves belong to destroyed barrows, or if the burial took place in a flat field by placing the cremated remains in individual pits. We should note that the burial tradition of West Balt Barrow culture in Lithuania has been little analysed to date. Flat graves next to barrows are found in most excavated sites of this type. That being said, they were never analysed from the aspect of taphonomy: no one has tried to answer the question whether these graves could be of destroyed barrows. Bearing in mind the very low number of preserved barrow cemeteries in west Lithuania, and the fact that each of them contains only a few barrows (Muradian 2017, pp. 53–54), the erosion of a large part of the barrows is very likely. Nonetheless, we can assume that most of the deceased were actually buried in flat graves, but they are much harder to detect than barrows.

Based on the fact that the discovered graves seem to form separate groups, the assumption was made in an earlier publication that these could be eroded barrows (Vengalis et al., 2016). However, we should note that the graves in the western group cut through the earlier cultural layer, thus showing that the remains were buried by digging into the then surface. This burial type is not found in barrows, which were usually raised on top of a central grave, which was the earliest one, and later graves were dug in different places into the mound itself (Grigalavičienė 1995, pp. 66–83, 89). This would be a rather strong argument in favour of a flat-grave cemetery at Kvietiniai. The clustering of graves in groups in this case can be explained as the result of later disturbances. The best-preserved western grave group matches the area of the cultural layer undisturbed by ploughing in Zone B. The aeolian layer that formed here protected both the cultural layer and the graves from destruction by ploughing. To the east of this location, the cultural layer was completely ploughed out, and only subsoil features from the settlement and some graves that were probably dug deeper than others were preserved in the horizon of the sterile soil. Even the surviving graves here were identified only at the contact between the plough layer and the subsoil, which shows how little it would have taken for them to be entirely destroyed by ploughing. In addition, it must also have been due to the more intensive and deeper ploughing than in the eastern part that very few finds from the disturbed graves remained even in the plough layer, and the stone structures were completely cleared away.

Some new insights about the Bronze Age settlement pattern

One of the main questions that warrants discussion is related to Bronze Age pottery. An analysis of pottery from Kvietiniai and the search for finds corresponding to the newly defined types highlighted the fact that this pottery is still completely unknown in Lithuania and neighbouring countries. Furthermore, not only have some of its types not been defined, but they possibly have not even been excavated yet. In other words, it is possible that different chronological stages are almost unrepresented in the archaeological material accumulated so far.

An analysis of known Early Metal period settlement sites in western Lithuania revealed that their number is very low (Merkevičius 2018). If the sites where only isolated artefacts from the period were found are excluded, we are left with basically two groups of sites. To the first group, we can attribute two micro-regions which both contain high numbers of sites, i.e. Šventoji and the Lake Biržulis region. These micro-regions stand out in western Lithuania due to the presence of large and shallow lakes. These properties have resulted in the accumulation of large amounts of

biomass, which was not difficult to absorb because of the shallow depth. The shores of these lakes were extensively settled during the 4th and 3rd millennia BC. At the beginning of the Bronze Age, the lakes turned to marshes, and these micro-regions lost their unique attractiveness. What is more, after the spread of animal husbandry and crop agriculture, together with the declining significance of fishing, these lakes lost their importance. The human activity in them and on their shores did not cease completely (Piličiauskas 2016, pp. 50–58), but more noticeable traces of later settlement have not been detected there. Thus, this large group of extensively excavated sites represents only the beginning of the Bronze Age. The other group of sites is of an entirely different type: it consists of hilltop settlements (Kurmaičiai, Imbarė, Kukuliškiai, and others) that were more intensely inhabited only from ca 800 to 400 BC (Podėnas 2020). On the whole, we can see a gap between ca 1600 and 800 BC, which is not represented by any extensively excavated settlement sites in western Lithuania. This gap can only be filled by some isolated finds from very fragmentarily excavated settlement sites that have been placed in museum storerooms and have not received further attention from researchers.

This situation can create a picture of a very low population and a deserted land. However, we think that the current level of research does not justify this conclusion. This picture is the result of many factors, such as the type of the settlements themselves, surveys that were carried out in search of these sites and their excavations, and researchers' attention to the excavated material. The most common reasons given in the literature for this development are the size of the settlements, which during this period were supposed to be small, and inhabited for a short time, as well as the fact that the pottery is indistinct, and therefore difficult to identify in the archaeological record spanning multiple periods (Lang 2007; Brazaitis 2008). The settlement at Kvietiniai partially confirms such statements. Very few finds have accumulated over individual periods, and larger quantities of finds and a richer cultural layer have built up only over a long time from the palimpsest of individual settlement episodes. Nevertheless, the pottery from Kvietiniai, which represents precisely the missing period, is not so indistinct: it is quite richly decorated, and should be easily distinguishable from pottery from other periods. However, there is another problem: the pottery of the Early Metal period in Lithuania, as well as in neighbouring countries, has never been analysed in detail. Even though there were some quite comprehensive publications focusing on the pottery from this period (Vasks 1991; Grigalavičienė 1995, pp. 202–233), they did not establish a clear typological system based on the chronological principle.

Consequently, even the more distinct types of pottery remain unknown and undefined in the multi-period ar-

chaeological record. In earlier literature, the SIPCW and KTW types themselves were very frequently attributed to CW. Finally, yet another reason is that prospecting such settlements has never been carried out systematically. To expect that a larger number of these sites would accumulate incidentally and without special investigation would be unreasonable. These settlements are characterised by weak cultural layers and few finds, which makes them difficult to notice even when a special effort is made to look for them. For example, when a ten-square-metre exploratory trench was excavated at Kvietiniai in 2014, the archaeologist concluded that the site did not feature archaeological attributes (Kontrimas 2015, p. 49). In truth, our understanding of prehistoric settlement systems is not influenced by the prehistoric reality so much as by the disproportion of archaeological research in different regions. For instance, when looking at the current archaeological map, it seems as though the settlement in Neolithic and Bronze Age western Lithuania was clearly concentrated in the Šventoji and Biržulis micro-regions. Of course, while these micro-regions were really very important due to the very favourable ecological setting, the settlement system was certainly not limited to them. The impression that these regions stand out is sustained not only by their actual importance in the settlement system, but also by a wide range of various factors. The discovery of these archaeological sites was not related to any preconceived assumptions that these regions were significant centres. Rather, it occurred because of the drainage work carried out in the middle of the 20th century, which revealed cultural layers with impressive artefacts. Such accidental discoveries stimulated further intensive work by archaeologists in these micro-regions. Thus began long-term and large-scale excavations driven by research purposes. The surroundings of the discovered archaeological sites were also extensively surveyed, thus revealing an even larger number of new sites. All things considered, we believe that the image of the settlement network in Bronze Age west Lithuania would radically change if the aforementioned reasons were eliminated. This entails launching systematic surveys, and at least the minimal excavation of new settlement sites, establishing typological pottery sequences, and identifying isolated Bronze Age finds in the multi-period assemblages of the excavated sites.

Another debatable question concerns the multi-periodicity of settlements. We see traces of activity at Kvietiniai already in the Mesolithic, and from the Neolithic to the Early Iron Age the stays at the site were quite frequent. Similar tendencies have also been observed in other more extensively excavated sites, not only in western Lithuania, but in different regions as well. As was mentioned before, the scarce finds in such settlements suggest that the stays were short. Temporary or seasonal settlements were still predominant at least until the late 2nd millennium BC,

and perhaps even longer (Hoffmann and Rzeszotarska-Nowakiewicz 2016, p. 54). Therefore, we should speak not of a permanent settlement over a long period, but of a constant return to the same place that continued for several millennia.

The fact that the whole period from ca 1600 to 800 cal BC is so poorly represented in excavated settlement sites in western Lithuania suggests that the settlement system in this period was not very dense, and differed from those of other periods. Most likely, a smaller number of sites compared to other periods was used; however, people would periodically return to each site. Support for this model can be gained by comparing the representativity of the more researched CW and Kvietiniai pottery types from this period, such as KTW, and probably Types A–E, in the archaeological record. From this perspective, we can see very clear differences, because CW is found in almost every settlement site located next to lakes or large rivers that has been more extensively excavated, but always in very small amounts (Piličiauskas 2018, pp. 181–183). These tendencies show that the people of Corded Ware culture probably did not attempt to return to the same places, and settled in a different place each time. The above-mentioned pottery types from Kvietiniai display completely different patterns of distribution. The fact that they were unknown indicates that they are concentrated in a small number of sites.

These differences in the distribution of pottery types from separate periods indicate certain transformations in the settlement system. The number of settled sites decreased noticeably, while the recurring occupation of the same places became more frequent. This phenomenon may be for various reasons. First of all, it could signify a change in the economy, which meant that the communities' needs were satisfied by a more specific ecological niche, more rarely found across the landscape. The changes in the economy during this period were almost undoubtedly driven by the beginning of agricultural practices. It was in Kvietiniai that the earliest directly dated cereal grains in the southeast Baltic (ca 1400–1200 cal BC) were discovered. That being said, the data show that it was just the preliminary stage of agriculture: growing crops was probably not yet the primary, but a supplementary, source of subsistence, along with animal husbandry and fishing (Minkevičius et al. 2019; Piličiauskas et al. 2020). At this stage, agriculture already influenced transformations in the settlement system, although these transformations were not such as to cause a transition from a nomadic to a completely sedentary lifestyle. In fact, it should be noted in this respect that the issues of sedentism and mobility in the Bronze Age in the east Baltic have not been studied, as the data available are extremely fragmented. It seems likely that different types of settlements could have co-existed within one settlement system, e.g. relatively stable base camps, where people engaged in agricultural activi-

ties, and temporary camps, established for cattle grazing or hunting/fishing.

The intention of communities to return to previously inhabited places should not necessarily have been caused by the decrease in natural ecological niches that were regarded suitable; it could also mean that only the earlier type of activity made those niches suitable. It was easier to set up agricultural fields in places where the forest had already been cleared, and the cultural layer formed during previous occupations could produce more fertile soil. However, these questions are still difficult to discuss. Having just a single extensively excavated settlement from ca 1600–800 cal BC, we cannot determine how often people returned to the same place, and if signs of the earlier occupations were still clearly visible at the time of the return, or if the site was already indistinguishable from the natural landscape.

In any case, the more frequent return visits to previously occupied places, despite being motivated by ecological reasons, must over time have been given an ideological meaning as well. While this point has already been noted more than once by archaeologists, the data on which these insights were based were almost always limited merely to the coincidence of location for different period sites, e.g. settlements, burial sites or arable fields (Vedru 2015). Nonetheless, the coincidence of location cannot always be reliable proof of ideological ties between a particular people and the earlier inhabitants of the place. A similar pattern could be produced unintentionally by returning to the same place to live. Meanwhile, the Kvietiniai archaeological record provides much more substantial evidence regarding this question. The sherds of earlier pottery intermixed with cremated bones in graves 1, 5, 9 and possibly ten must have been found in the same place by the community that buried their dead there; these sherds show that people were also trying to give meaning to the relationship with the communities which inhabited the same location previously through rituals. The traces of such rituals demonstrate how prehistoric communities took note of ancient objects found in their living space. Furthermore, they could not fail to notice the archaic appearance and obvious differences of such objects from those they used. All of this can lead to the conclusion that a certain symbolic meaning was given to the earlier occupation of a place. Perhaps earlier inhabitants were perceived as distant ancestors, with whom it was crucial to create and maintain a ritual bond. The spatial relationship between burial sites and the cultural layers of earlier occupations is usually interpreted as the legitimization of a community's territorial claim to the recently settled place (Saxe 1970; Vedru 2015). The legitimization of territorial claims has a meaning if it is seen by members of other communities; hence, it is often associated with the monumentality of burial monuments, the construction of megaliths or barrows. Meanwhile, the Kvietiniai graves demonstrate that

the connection with the ancestors was also important for the sake of the community itself, and not merely for the sake of displaying such connections externally.

Conclusions

Large-scale excavations at Kvietiniai carried out as part of the implementation of an infrastructure development project have provided very important new data on the Bronze Age in western Lithuania. The excavations revealed a multi-period archaeological site that contains traces of activity spanning from the Mesolithic to the Early Iron Age. The cultural layer here is distributed over a vast, 600-metre-wide area, and probably extends even further. However, the size of the archaeological site does not mean that there was an exceptionally large settlement. Instead, it is comprised of a palimpsest of many settlement sites from various periods. These were short-term settlements, to which people would return from time to time.

Particularly significant data have been obtained on so far almost unknown Bronze Age pottery. Neolithic CW and Late Bronze Age–Early Iron Age FRW were already known and found at many of the excavated sites. Meanwhile, the remaining Bronze Age pottery from Kvietiniai has until now never been found in great numbers anywhere in Lithuania. The typology of this new pottery is still somewhat problematic, due to its small quantity and the lack of similar finds from other sites, as well as the absence of material suitable for secure dating. Although it is evident that the Bronze Age is represented by a high number of types in the assemblage, we managed to define in detail and date only 1 of them, the most abundantly found KTW, dated to ca 1300–1100 cal BC.

In addition, excavations at Kvietiniai have provided exceptionally important data on the beginnings of agriculture. The earliest cereal grains in the east Baltic to date, i.e. barley (*Hordeum vulgare*), dated to ca 1400–1200 cal BC, were found. The low amount of cereals and other data indicate just the beginnings of agriculture, rather than a developed stage.

Meaningful data were also collected from graves discovered from the middle of the 1st millennium BC. It is paradoxical, but it is only now that the first AMS date from graves attributed to West Balt Barrow culture in Lithuania has been obtained. Traces of rituals previously unnoticed anywhere in this culture, such as putting into the graves pottery sherds left by the site's earlier inhabitants, were found at Kvietiniai as well.

Due to its limited scope, this article does not discuss all the questions posed by the data accumulated during the excavations at Kvietiniai. An analysis of the data could provide a lot of new insights in the future, especially if material for comparison was obtained from other similar

sites. Only a small part of the whole Kvietiniai archaeological site was explored during the excavations described here; hence, the future for field research in this location remains very promising.

In the end, it is important to stress that most of the data presented in the article were obtained while conducting large-scale excavations under an infrastructure development project. Unfortunately, such excavations are still carried out rather rarely in Lithuania. And if they are carried out, it is done hurriedly and unprofessionally, by keeping to the minimum requirement limit, and without conducting essential laboratory analyses. The case of Kvietiniai demonstrates that the excavation of large areas as part of infrastructure development projects can and should become an indispensable source of qualitatively new information for the science of archaeology. By properly using this source, it is definitely possible, even over a very short time, to change significantly our understanding of Lithuanian prehistory.

Abbreviations

ATL – Archeologiniai tyrinėjimai Lietuvoje ... metais. Vilnius (since 1967–)

Lietuvos Arch. – Lietuvos archeologija.

LNM – Lietuvos nacionalinis muziejus / National Museum of Lithuania.

MLIM – Mažosios Lietuvos istorijos muziejus / History Museum of Lithuania Minor.

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PLATAUS MASTO TYRINĖJIMAI ILGALAIKĖJE KVIETINIŲ ARCHEOLOGINĖJE VIETOVĖJE, NUŠVIEČIANTYS VIS DAR BEVEIK NEPAŽĪSTAMĄ VAKARŲ LIETUVOS BRONZOS AMŽIŲ

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Santrauka

Šiame straipsnyje pristatomi 2014–2015 ir 2017 m. Kvietiniuose atliktų tyrimų rezultatai. Didelės apimties tyrimai atlikti įgyvendinant infrastruktūros plėtros projektą – magistralinio dujotiekio statybą. Per tris tyrimų sezonus Kvietiniuose buvo ištirtas vientisas 2 029 m² dydžio plotas, 13 šurftų, 17 kasinių, padarytas 221 grėžinys, žvalgyta magnetometru, metalo detektoriumi, vizualiai (2 pav.). Tyrimų metu aptikti mažiausiai 600 m ilgio atkarpoje besitęsiantys kultūrinio sluoksnio fragmentai, datuojami nuo mezolito iki vėlyvojo bronzos amžiaus, fiksuota 13 degintinių kapų, 100 kitų įgilintų struktūrų (13, 14 pav.), surinkta daugiau nei 4 000 archeologinių radinių (5–12 pav.).

Kvietinių archeologinė vietovė yra Vakarų Lietuvoje, Klaipėdos rajone, nuo Baltijos jūros nutolusi ca. 20 km. Gyvenvietė ir kapinynas yra Minijos slėnyje, dešiniajame krante (1 pav.). Gyvenvietės kultūrinio sluoksnio pėdsakų aptikta ties viršsalpinių terasų pakraščiu, iš esmės beveik visose vietose, kur tik buvo tyrinėta. Tačiau gerai išlikęs nesuartas kultūrinis sluoksnis išlikęs tik keliuose atskiruose keliasdešimties metrų skersmens arealuose (3, 4 pav.).

Nors kultūrinis sluoksnis paplitęs didelėje teritorijoje, archeologinės vietovės dydis nerodo buvus neįprastai didelės gyvenvietės, ją sudaro daugelio įvairių laikotarpių apgyvendinimo pėdsakų palimpsestas. Tai būta trumpalaikių gyvenviečių, į kurias būdavo laikas nuo laiko vis sugrįžtama.

Itin svarbių duomenų gauta apie iki šiol beveik nepažįstamą bronzos amžiaus keramiką. Kvietinių keramikos kolekciją sudaro didelis skaičius skirtingų tipų (5–11 pav.), kurių didžioji dalis iki šiol nebuvo išskirti, aprašyti ar net išvis neturėta jų pavyzdžių. Šios naujos keramikos tipologija kol kas yra šiek tiek problemiška dėl nedidelio jos kiekio, analogijų iš kitų vietovių trūkumo ir patikimam

datavimui tinkamos medžiagos nebuvimo. Detaliau apibūdinti ir datuoti pavyko vieną keramikos tipą, kuris įvardytas Kvietinių-Tojāti keramika ir datuotas apie 1300–1100 cal BC. Likusios keramikos tipologija dar turės būti tikslinama atsiradus daugiau medžiagos iš naujai ištirtų vietovių.

Tyrimai Kvietiniuose suteikė itin svarbių duomenų taip pat ir apie žemdirbystės pradžią. Aptikti kol kas patys ankstyviausi rytų Pabaltijyje javų grūdai – miežiai, datuoti apie 1400–1200 cal BC (13 pav.). Nedidelis grūdų kiekis bei kiti duomenys rodo dar tik pradedamą praktikuoti žemdirbystę, bet ne išvystytą jos stadiją.

Reikšmingų naujų duomenų suteikė ir aptikti I tūkst. BC vidurio degintiniai kapai, skirtini Vakarų baltų pilkapių kultūrai (16, 17 pav.). Kvietiniuose užfiksuoti ir niekur iki šiol šioje kultūroje nepastebėtų ritualų pėdsakai – ankstyvesnių šios vietos gyventojų paliktos keramikos dėjimas į kapus.