Report on the Activities of the Second Field Season of the Georgian-Italian Lagodekhi Archaeological Project (GILAP), June-July 2019

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Introduction

The second field season of the project of Ca' Foscari University of Venice (Italy) in cooperation with the Lagodekhi Regional Department of the Ministry of Culture, Sport and Youth (Georgia) took place from June 16th to July 31st 2019. The Italian team arrived in Georgia on June 17th and reached the town of Lagodekhi on June 19th. Excavations activities at Tsiteli Gorebi 5 started on June 26th and were completed on July 26th. On July 28th the team returned to Tbilisi, and on July 31st it flew back to Italy.

The Italian group was headed by prof. Elena Rova of Ca' Foscari University (co-director of the project) and included: Flavia Amato (post-doc fellow at Ca' Foscari), Laura Tonetto and Sara Maria Stellacci (post-graduate students at the SISBA archaeology specialisation school, Universities of Trieste, Udine and Venice Ca' Foscari), Francesco Bianchi, MA, Stefania Fiori, Chiara Mariotto, Andrea Milanese, Stefano Orlando, Vanessa Perissinotto, BA (MA students at Ca' Foscari), archaeologists, prof. Giovanni Boschian (University of Pisa), geo-archaeologist, dr. Giovanni Siracusano (Rome, archaeozoologist).They were joined by Megan Willmes, BA (archaeologist).

The Georgian team was composed of Davit Kvavadze (Director of the Lagodekhi Museum, co-director of the expedition), dr. Davit Darejanashvili (consultant), Giga Bakradze and Otar Gelashvili (BA students at Ivane Javakhishvili Tbilisi State University and, respectively, at Ilia State University). 13 workmen from the village of Tsitelgori were engaged in the excavation; Mr. Tamazi Samkharadze drove the expedition minibus, and Mr. Paata Kukchishvili was in charge of logistics. On July 24th drone photos of the excavation were made by Mr. Beka Peradze (Lagodekhi Municipality, Regional Department of the Ministry of Culture, Sport and Youth).

On July 22th the excavation was visited by colleagues Goderzi Narimanishvili, Nino Shanshashvili and Giorgi Narimanishvili.

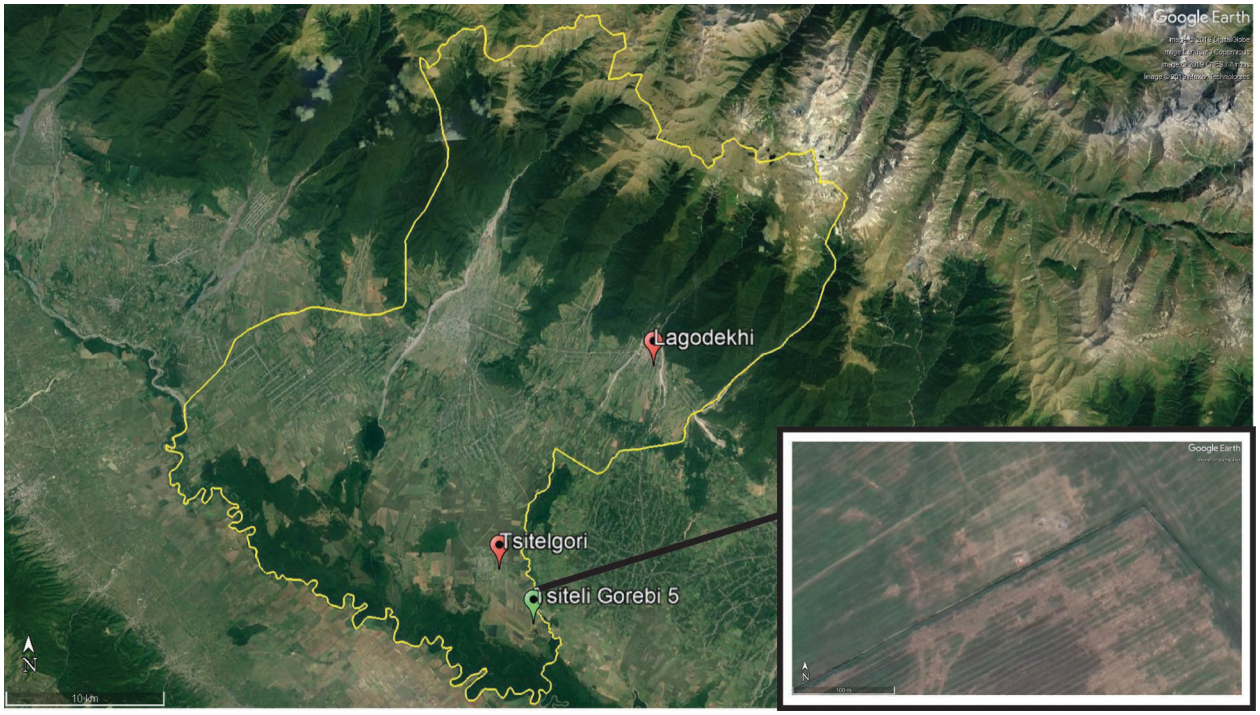


Fig. 1. Satellite view showing the location of the Tsiteli Gorebi 5 site.

Aims and activities of the season

The main aim of the season was to continue excavation at the settlement of Tsiteli Gorebi 5 (**Fig. 1**), where three soundings had been opened in 2018. The site is part of a cluster of Chalcolithic sites (5th-4th millennium BC), collectively known in literature under the name of Tsiteli Gorebi, which are located close to the present village of Ulianovka/Tsitelgori in the southern part of the Lagodekhi Municipality. Some of them had been investigated in the late 1970s-early 1980s by V. Varazashvili (V. Varazashvili, 4th millennium BC. materials from the Iori-Alazani basin, in *Works of the Kakheti Archaeological Expedition IV*, Tbilisi 1980, 18-35, Id., Settlement of „Damtsvari Gora". Result of the excavations carried out in 1980, in *Kakheti Archaeological Expedition's works VI*, Tbilisi 1984, 19-26, Id., *Rannezemledel'cheskaja kul'turaJuro-Alazanskogo Bassejna* [*The Early Farming Culture of the Iori-Alazani Basin*], Tbilisi: Metsniereba 1992). The Soviet period excavation left several important questions unanswered, to start with the general chronology of the Tsiteli Gorebi settlements. In fact, although they had been attributed by the excavator to the first half of the 4th millennium, no ^{14}C date could unfortunately be collected from them, so that their absolute date remains uncertain. It is also unclear whether they should be considered as strictly contemporary with each other, or as belonging to different sub-periods, especially since parallels drawn by the excavators for their ceramic repertoire spans from the Ceramic Neolithic to the Late Chalcolithic period.

The meaning of this cluster of settlements located at a short distance from each other in the framework of the general settlement pattern of Chalcolithic occupation in Eastern Georgia and their relation with the surrounding general environment are also still to be understood. In fact, Varazashvili's excavations yielded abundant ceramic, lithic material and bone objects, but no architectural remains or preserved contexts with *in situ* material, to the exception of a number of storage pits, a few burials, and some enigmatic ditches. The lack of preserved architectural remains

was tentatively explained with the fact that the upper part of the anthropic sequence had been destroyed by ploughing and intensive agriculture exploitation.

Our 2018 soundings at Tsiteli Gorebi 5 produced materials widely comparable to those discovered by the previous expeditions and confirmed the bad preservation of the anthropic levels in the area, specifically as concerns the almost total absence of organic remains. On the other hand, however, they resulted in the discovery of some wide walls, which suggested the presence at the site of significant architectural structures and encouraged us to plan further investigations.

A last open question is the relation of the Tsiteli Gorebi pottery and lithic assemblage with the earlier Neolithic tradition, with the local Sioni/Tsopi Chalcolithic cultures and with the Mesopotamian-related Chaff-Faced Ware tradition.

The aims of the 2019 excavation were the following:

1) to enlarge the surface of the investigated area, in the attempt to understand the general topography of the site and obtain some complete building plans;

2) to verify the site's general stratigraphy and confirm that the site's occupational sequence belongs to a single main period, as suggested by last year deep sounding (Sounding 1), but verify the possible existence, within this, of different sub-phases in the central part of the mound (Soundings 2 and 3 of 2018) where virgin soil had not been reached in the 2018 season

3) to better understand the reasons of the poor preservation of the archaeological remains: soil conditions, repeated flooding and/or water stagnation, various post-depositional disturbances etc., and their precise date;

4) to obtain a wider collection of artefacts and ecofacts for typological/functional study (pottery, lithics, worked bone), reconstruction of the ancient economy and paleoenvironment (animal bones, palynology), absolute dating (organic materials for ^{14}C sampling) and archaeometric analyses (pottery, obsidian).

In order to investigate these issues, a 225 m^2 area was opened on the top of the main (eastern) mound, which would allow to obtain a wider horizontal exposure and, at the same time, to reach the virgin soil at selected locations. In spite of the slightly late beginning of the excavation due to the unforeseen delay in harvesting the field, the work of the expedition could be carried out regularly and yielded very important results for the general interpretation of the site and its surrounding environment.

The devastating impact of post-World War II mechanised agriculture on the ancient settlements located to the north of the Alazani river was widely confirmed. The main elements of destruction of Tsiteli Gorebi 5 were identified in the artificial flattening of the low natural and anthropic elevations, in the excavation of a large irrigation/drainage canal crossing the top of the site in a SW-NE direction and of numerous large pits of circular and rectangular shape and, finally, in repeated ploughing which continues until the present day.

The large scale 2019 excavation allowed to understand that the ancient settlement was located on slightly elevated portions of territory, apparently divided from each other by artificial ditches, the soil excavated from which was accumulated on their sides and contributed to create well drained areas spared from water stagnation, on which the dwellings were located. Unfortunately, the remains of these had been obliterated over most of the excavation area by Soviet-Period operations, which erased the building levels to the bottom of the walls, and spread their remains all around, in particular in the filling of the large artificial canal, where we recovered most of them. Part of a Chalcolithic ditch delimiting one such occupation area was unearthed at the NE limit of the excavation. It run from south-east toward the north-west (where it had been cut by the modern canal).

In situ remains of the original occupational level were preserved only over a 10 x 10 m area at the SE limit of the excavation. They were located in a slightly depressed sector within the above mentioned raised area, a fact which had probably spared them from complete destruction. As already supposed after the 2018 soundings, they consisted of rectilinear architecture with rather wide walls in compacted clay/bricks with a general NE-SW orientation, whose max. preservation did not exceed 10-15 cm, and was also affected by the presence of numerous small pits, presumably dug from a now

completely disappeared, later phase of the Chalcolithic occupation, as well as by a large number of modern animal burrows. At least one room measuring 2.20 x 3.20 m with remains of a plastered floor and parts of other spaces were identified. Unfortunately, no *in situ* material was recovered from them. A sounding at the eastern limit of the excavation area confirmed as well the presence, over the virgin soil, of another occupational layer with comparable walls and structures but with a different and slightly divergent orientation with similar traces of floors. The depth of this layer was, however, so limited and its preservation so poor (it also yielded no *in situ* material) that it appears doubtful whether a larger scale exposure of this earlier sub-phase could provide much additional information. As for the almost complete absence of any organic remains even from the modern occupational layers, we came to the conclusion that this is mostly due to the basic composition of the soil, which creates very unfavourable conditions to their preservation.

Work on the season's finds (both artefacts and ecofacts) proceeded in the expedition house at Lagodekhi at the same time as the excavation. Samples for radiometric dating, palynology and archaeometric analysis (ceramics, obsidian) were also collected in the course of the season.

Besides excavating Tsiteli Gorebi 5, the expedition carried out the following activities:

1) Giovanni Boschian continued the geological survey of the surroundings of the site initiated in 2018, took samples for soil micromorphology analysis from archaeological levels at Tsiteli Gorebi 5, and excavated a small geological sounding in the plain to the east of the site in order to verify the sequence of natural depositions of the alluvial plain;
2) Giovanni Boschian and Stefania Fiori visited some possible archaeological sites indicated by locals and took GPS points on them as a preparation for the second survey season of the expedition, which is foreseen for October-November 2019;
3) Flavia Amato analysed and studied the lithic assemblage from the 2018 and 2019 seasons at Tsiteli Gorebi 5;
4) Giovanni Siracusano analysed the faunal assemblage from the 2018 and 2019 seasons at Tsiteli Gorebi 5;
5) Sara Stellacci analysed bone artefacts from the 2018 and 2019 seasons at Tsiteli Gorebi 5, as well as from the 2013-2017 seasons at Aradetis Orgora/Doghlauri of the Georgian-Italian Shida Kartli Archaeological Expedition, and carried out traces analysis on them;
6) Experimental 3D scansions of artefacts (pottery, obsidian, bone objects) and ecofacts (animal bones) were carried out by Flavia Amato on items from both the Tsiteli Gorebi 5 excavations and the Local Museum at Lagodekhi.
7) A series of three lessons of "Introduction to Archaeology" for local high school students were carried out on July 5th, 6th, and 8th in collaboration with the Lagodekhi Local Museum and the Italian Embassy in Tbilisi, under the responsibility of Megan Willmes.

Excavations at Tsiteli Gorebi 5

The site corresponds to no. 21 of the Lagodekhi Survey (LS021). It is located at UTM 38N 598828 E 4614070.00 N, and its maximum elevation above sea level is 204.82 m. It lies in the flat plain ca 4.5 km to the SE of the Tsitelgori village, between the dirt road running southwards from the military checkpoint east of Tsitelgori and the Georgian-Azerbaijani border, which follows the course of the Kviriatskhali River.

It consists of a low mounded area oriented NE-SW, which has a maximum extension of ca 2 ha and emerges of ca 1.30 m on the surrounding plain. Until post-World War II times the surrounding territory had been occupied by riverine forest. This was cleared in the 1950s, when the whole area was levelled in order to make place for intensive cultivation of both cereals and fruit trees. The site is presently occupied by a large wheat field (**Fig. 2**). It has been subjected to repeated ploughing, which probably flattened its top and spread archaeological materials over the surrounding area.

Fig. 2. View of the site before the beginning of the excavation, from E.

It is characterised by two low elevations, a larger one to the NE and a smaller one to the SW, separated by a 20 m wide slightly depressed area (**Fig. 3**). A modern drainage channel running SW-NE cuts the site's southern part. The area located beyond the channel is flatter, probably because it has been more affected by ploughing.

At the beginning of our activities, the wheat field had just been harvested. After removing the wheat stubble, we opened a total of nine 5 x 5 m quadrants (098.102b-d, 099.102a-b, 100.102a-b, 099.103d, 100.103c-d) on top of the north-eastern elevation with the aim of connecting to each other the areas of Soundings 2 and 3 excavated in 2018, both of which had yielded parts of large architectural structures (rectilinear walls in Sounding 2, a large "platform" in Sounding 3) whose function had not been clarified. By obtaining a larger horizontal exposure, we hoped to be able to obtain an intelligible plan of these structures and to get a more precise idea of their general layout and function. A further 2 x 2 m area was opened during the last week of excavation in quadrant 101.103c in order to follow the continuation of the structures uncovered at the eastern limit of the excavation area. The 2019 excavation confirmed and better defined the general stratigraphy of this part of the site, and allowed us to correct some errors of interpretation.

Recent plough soil was only 20-30 cm thick in the eastern part of the excavated area (quadrants 100.103c-d, 100.102a-b), where it was directly underlain by the damaged top of the Chalcolithic level (subsurface layer, up to ca 25 cm thick). Faint traces of SW-NE oriented plough furrows were still visible on top of the latter.

As far as one moved in western direction (quadrants 099.102a-b, 098.102b-d), the recent plough soil was underlain by a progressively thicker layer of greyish amorphous coarse-grained sediments topped by a thinner layer of yellowish soil. In the course of the excavation it became clear that this situation, which had already been observed in 2018 in Sounding 3 and had not been fully

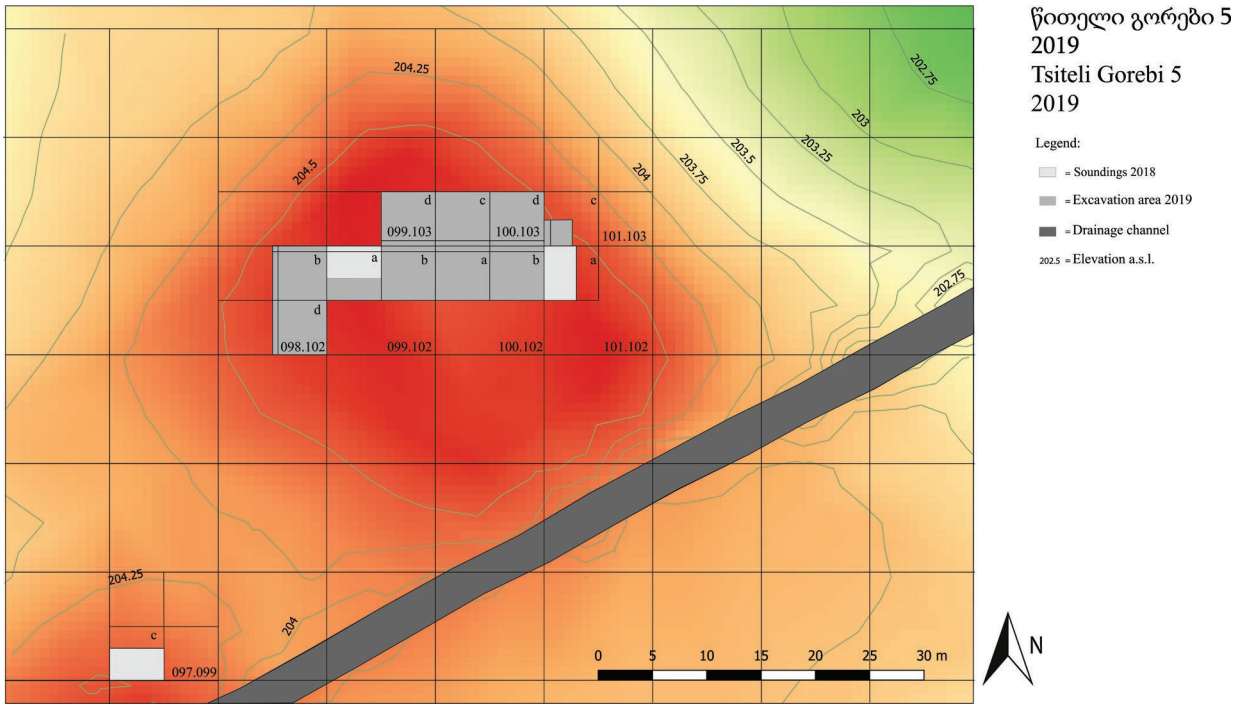


Fig. 3. Contour map of the site with location of the 2019 excavation areas.

understood at that time, derived from the recent deposition of sediments after the in-filling of a ca 270-280 cm wide and 130 cm deep Soviet-period rectilinear irrigation/drainage canal (locus 0441-0269-0707, 0509) which crossed the whole excavation area in SW-NE direction (**Fig. 4, Fig. 5**), the course of which was followed for 22.50 metres. The canal presently exhibits an U-shaped profile, which derives from the erosion and partial collapse of its sides (**Fig. 6**). It had obviously been filled during a single operation – its filling did not show any internal stratification – with sediments which mainly derived from flattening the top of the ancient settlement. In fact, in addition to few modern items (a plastic comb, some iron nails and some fragments of iron wire) which undoubtedly prove its modern date, it contained almost exclusively Chalcolithic material. The canal's filling also contained a few stones and small sparse blocks of clayish material, possibly deriving from the debris of ancient architecture.

It also became clear in the course of the excavation that what we had discovered in Sounding 3 in 2018 and considered to be the western face of a large platform (locus 0224) was in fact the eastern limit of the Soviet canal that had cut into a vast raised area, mainly consisting of compact silty soil of yellowish colour but also containing remains of mud-bricks and showing some internal stratification. The level of the preserved top of this structure varied between 204.11 and 203.90 m a.s.l., but its remains were visible in section up to alt. 204.20. It extends over most of the excavated area, and its different parts have been separately numbered as loci 0715-0224-0254-0255-0510-0422-0414-0408-0406-0377. We interpret it as a vast partially artificial "platform", once used as a raised base for buildings and other living structures, with the aim of protecting them from water stagnation and repeated flooding, which must have represented a recurrent problem in this depressed part of the river plain. The exact date of the modern canal is unclear, as it cannot be located on any of the available satellite pictures, but we are inclined to date it late in Soviet times (1970s?) as it cuts at least some other disturbances dating to the same general period (**Fig. 7**).

Fig. 4. View of the Soviet canal cutting the wide Chalcolithic "platform" in quadrants 098.102b-d, from SW.

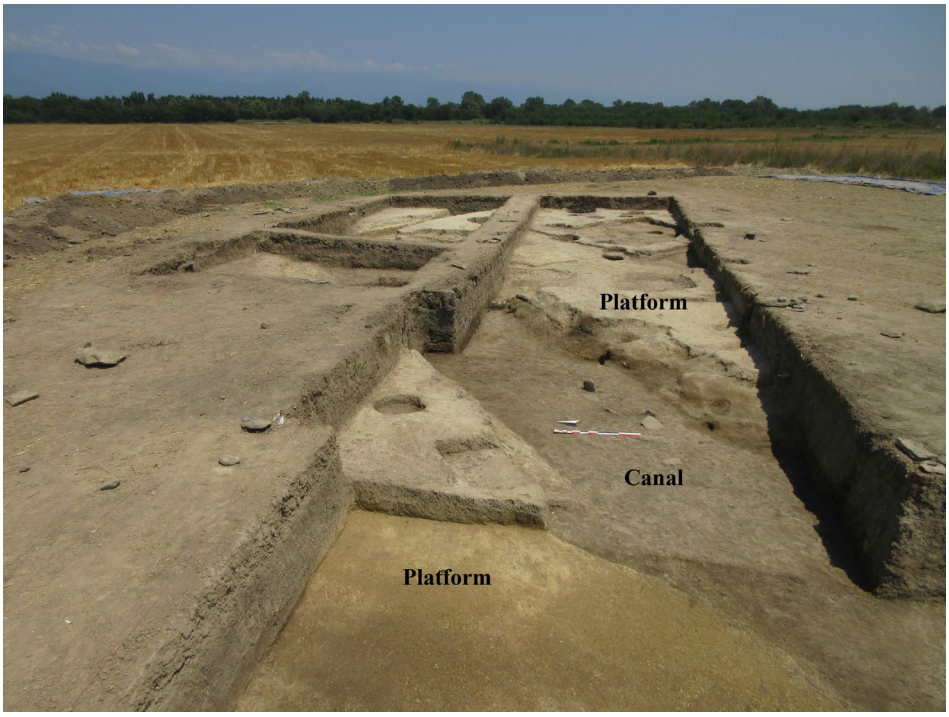


Fig. 5. View of quadrants 098.102b, 099.102a, b, with Soviet canal cutting the Chalcolithic "platform", from W.

Fig. 6. N section of quadrant 100.103c with profile the large Soviet canal, from S.

These consist of large pits of two different shapes: rounded pits with a diameter between 1.50 and 2.50 m, which we tentatively connect with either the eradication or planting of large trees, and rectangular elongated ones, ca 1 m wide, whose aim is less clear. Similar pits, which also occasionally contain modern material (sherds of glass bottles, iron nails) have been found over the whole excavated area, but they luckily affect its south-eastern part (quadrants 100.102a-b) only to a limited degree. It is possible that a few of the many smaller pits which cut the subsurface soil in this area are modern as well but, since none of them contained any modern material, we are inclined to date most of them to the Chalcolithic period.

We were informed by local residents that until the 1950s the area was occupied by riverine forest, which was then cleared and drained in order to make place for fruit tree orchards (an operation with which the large pits may possibly be connected) and other cultivations, and later converted into grain fields, the shape and orientation of which were repeatedly modified in the course of time. Further analysis of satellite images taken in different years and archival research, which we are planning in the future in connection with the Lagodekhi Municipality survey may shed further light on the question of the deep anthropic modifications which affected this part of the Alazani plain in the course of the last 70 years and on their impact on the preservation of the archaeological remains.

In the western part of the excavation (quadrants 098.102b-d, 099.102a-b, 099.103d) nothing was preserved of the Chalcolithic structures once standing on top of the raised area, with the exception of few unintelligible traces of possible walls and living surfaces at the eastern limit of quadrant 099.102b (**Fig. 8**, **Fig. 9**). We therefore exposed the top of the ancient raised area ("platform") and emptied the modern pits which cut it, but excavated only the upper part (for a maximum depth of 40 cm) of the filling of the modern canal over its whole course.

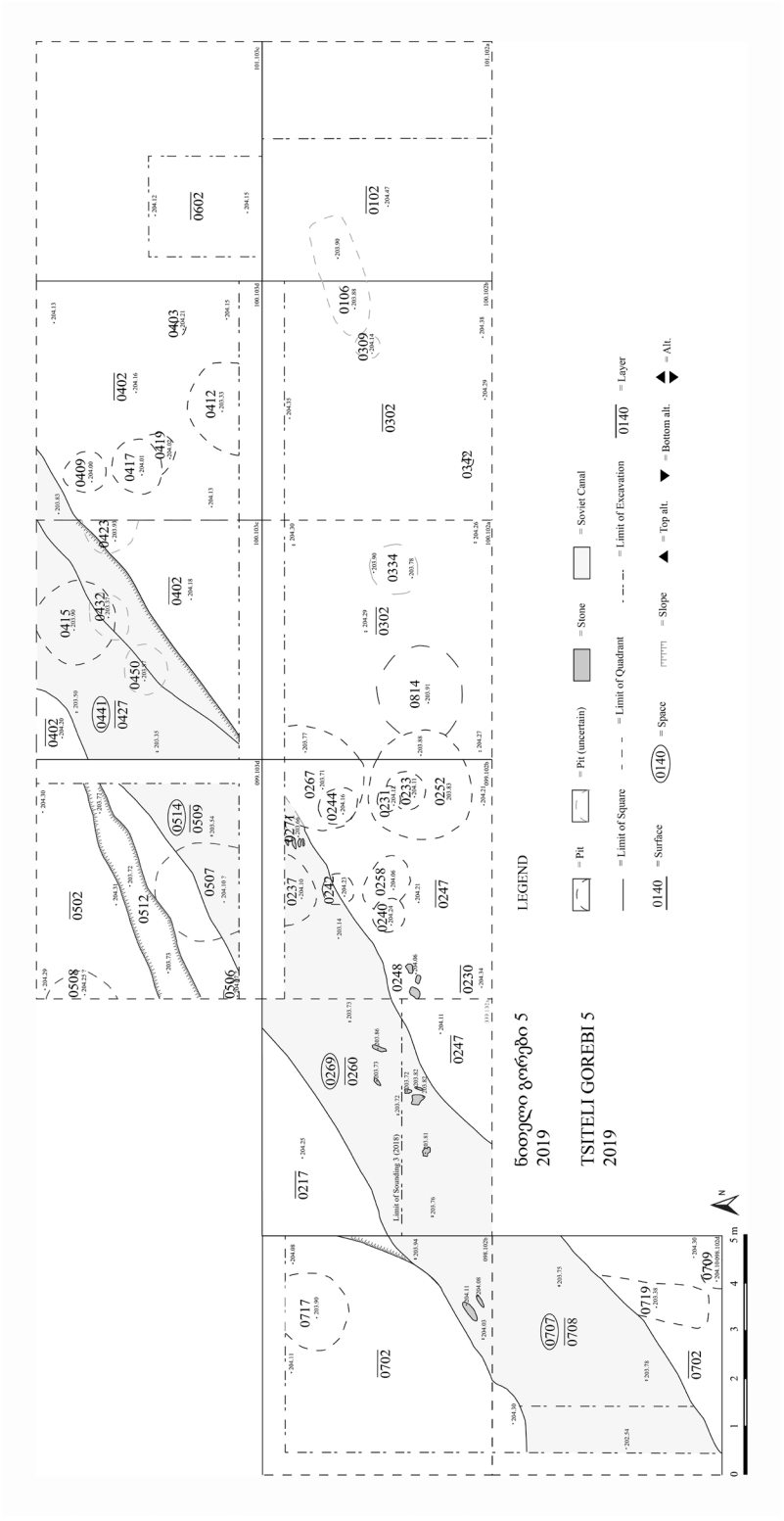


Fig. 7. Preliminary plan of Soviet-period disturbances in the excavation area.

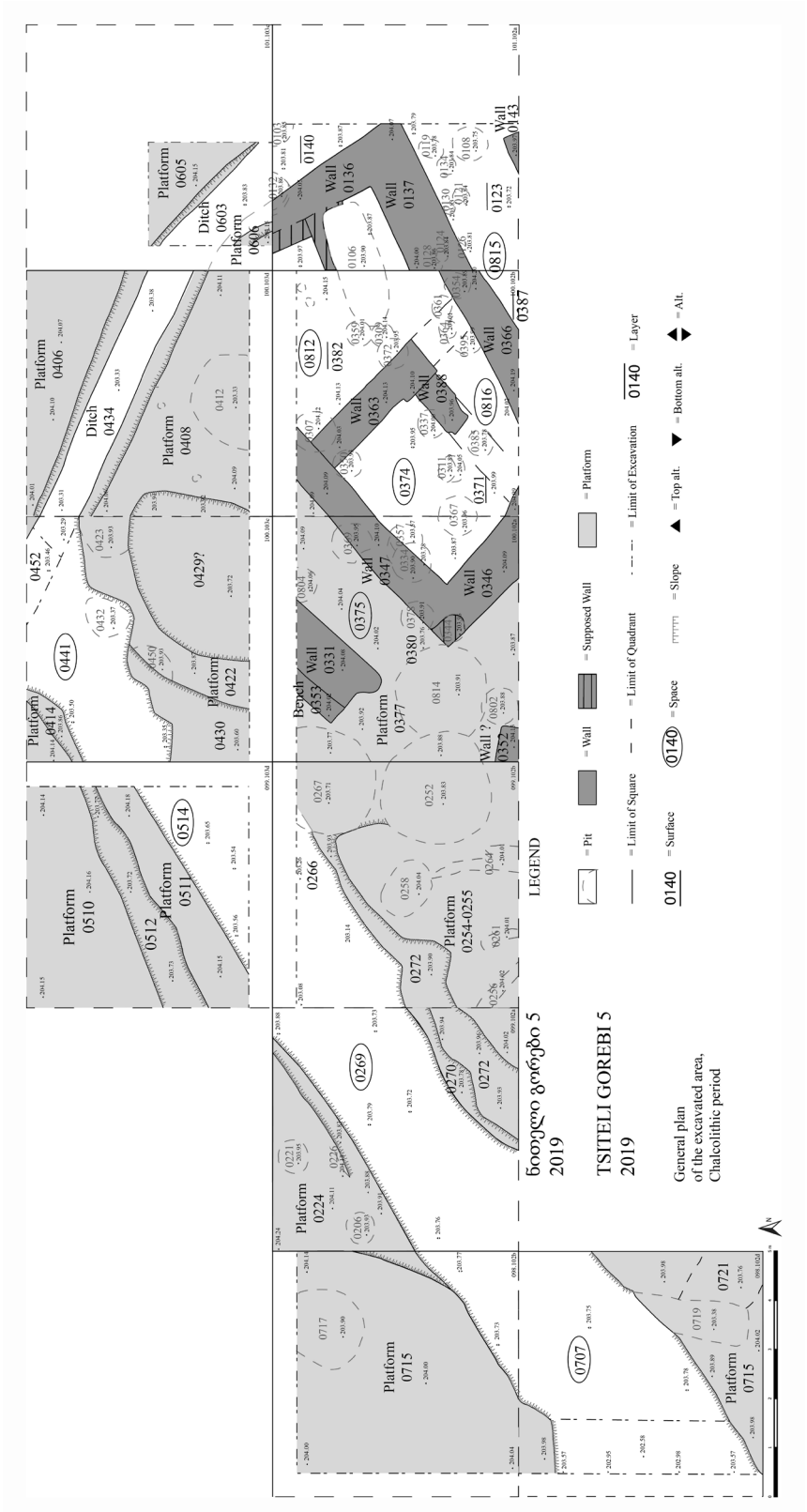


Fig. 8. Preliminary general plan of Chalcolithic occupation in the excavation area.

Fig. 9. Drone photo of the excavation area at the end of the 2019 season.

Although this allowed us to collect a significant amount of Chalcolithic material, the latter was extremely homogeneous, and we considered that emptying the whole canal would not have increased its representativeness for typological studies. We therefore limited ourselves to excavate two soundings until the bottom of the canal (respectively in the north-western part of quadrant 099.102b and along the western limit of quadrant 098.102d) in order to measure its depth and determine its profile before abandoning this section of the excavation.

More interesting results were reached in the north-eastern part of the excavation area. Here, in quadrants 100.103c-d, we discovered a Chalcolithic ditch (locus 0434) oriented SE-NW dividing two sections of the raised platform (loci 0408-0422-0414 and respectively 0406) (**Fig. 10**), the NW limit of which had been cut by the above-mentioned Soviet canal. The ditch continued as locus 0603 in adjacent quadrant 101.103c (**Fig. 11**), after making a slight curve at the limit between the two quadrants; its course could be excavated for a total length of 8.30 metres.

As preserved, ditch 0434-0603 was 0.78 m deep, only slightly sloping in NW direction (its bottom lay at alt. 203.38 at the eastern limit of quadrant 100.103d). Its width was 1.70 m on the top and 1.0 m near the bottom, which had a slightly curved profile (**Fig. 12**). The sides were irregular and had been smoothed by erosion and affected by partial collapse. Its filling was layered and composed of sediments of greyish colour, which suggests successive events of slow deposition of clay in still environment (loci 0407, 0425, 0426 and 0435). It contained small quantities of material of exclusively Chalcolithic date. As can be observed in section, the ditch had been cut into a thick compact layer of dark yellowish silty clay loam of natural origin (locus 0440).

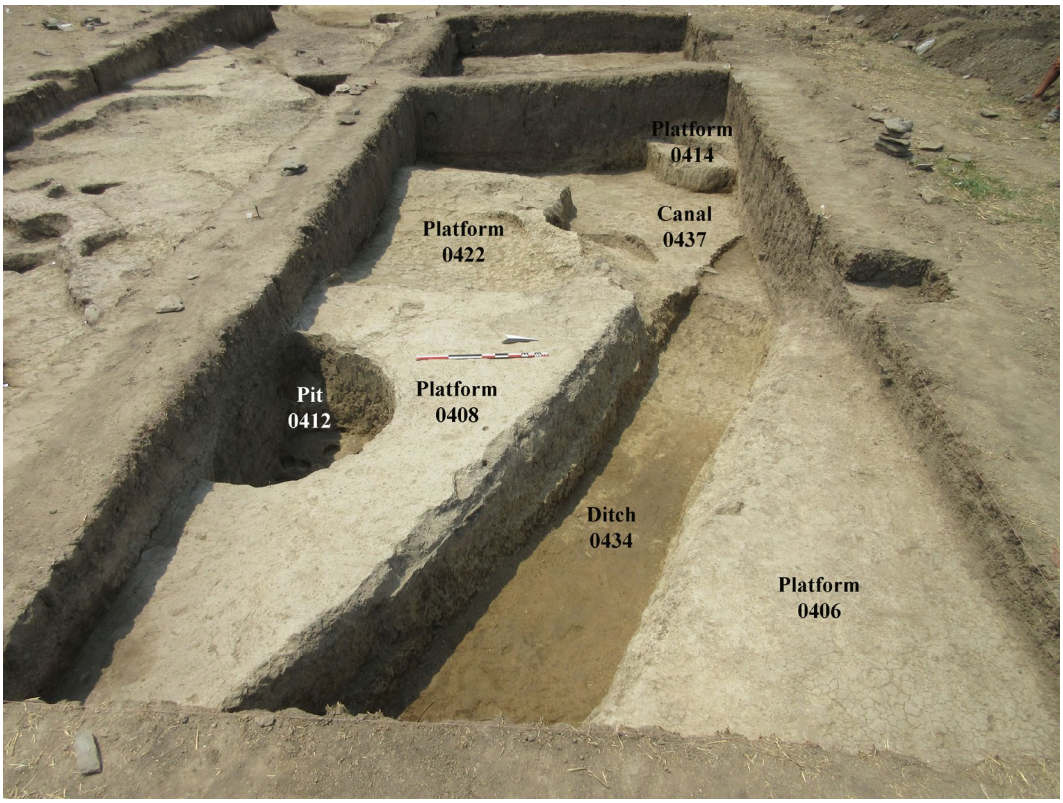


Fig. 10. View of quadrants 100.103c-d from E, with Chalcolithic ditch and platform cut by the large Soviet canal.

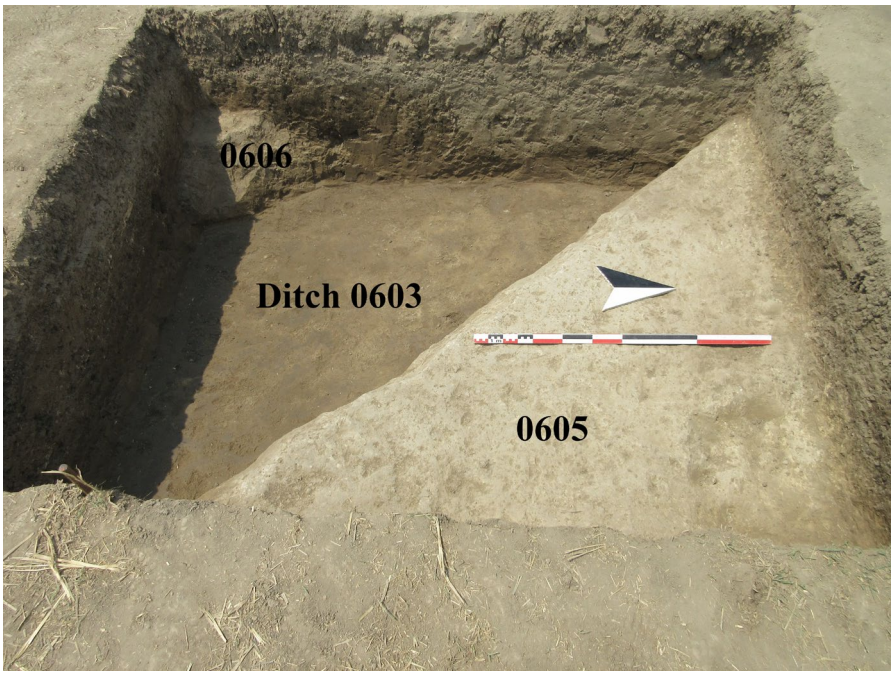


Fig. 11. View of quadrants 101.103c with continuation of ditch 0434 (locus 0603) from E.

Fig. 12. E section of quadrant 101.103d with profile of ditch 0434.

Sediments deriving from the excavation of the ditch had then been accumulated on both sides of it, in order to create the raised limits of the "platforms", the upper parts of which were composed by the same sediments found on the bottom, and contained almost no material of anthropic origin.

Ditches, the purpose of which remains to a certain extent unclear, are rather common in different settlements of the Neolithic period both in Georgia (Arukhlo) and in Azerbaijan (Kamiltepe) but have also been found at Damtsvari Gora which like Tsiteli Gorebi 5 is dated to the Chalcolithic period and lies at a distance of only a few km from it (see Ioseliani in B. Helwing et al. *The Kura Projects. New Research on the Later Prehistory of the Southern Caucasus*, Archäologie in Iran und Turan 16, Berlin: Dietrich Reimer Verlag 2017, 223-231). Considering the profile of ditch 0434, the nature if its fillings, and the composition of the "platforms" of both sides of it, we suppose that its main purpose was to isolate the raised areas of the settlement and protect them from stagnation of water from the heavy rainstorms which characterise the region and from occasional flooding of the river plain.

Of the two raised areas (loci 0408-0442-0414 and 0406) located on the sides of ditch 0434, only the former had preserved some faint traces of the walls originally lying on top of it, but unfortunately the presence of a large modern pit (locus 0412) prevented us from tracing their exact limits. During the last days of excavation, a 1.0 m wide sounding was cut at the eastern limit of quadrant 100.103d into the natural soil. This put into evidence the presence, under locus 0440, of a sequence of layers of alluvial origin similar to that excavated in 2018 in Sounding 1 and, in 2019, in

the geological trench on the plain to the east of the site (see below). The sounding also highlighted the presence of two pits (loci 0436 and 0438) filled with grey sediments containing little Chalcolithic material, which cut "platforms" 0406 and respectively 0408. They had clearly been dug from the top of the platform into its body and the underlying natural soil, in spite of the fact that their cuts could not be identified on the platform's surface, probably because they were of roundish shape with a small opening on top and progressively widening sides.

As we anticipated, the only part of the excavation where some remains of Chalcolithic architecture could be identified corresponds to quadrants 100.102a-b at its south-eastern limit, on the continuation of Sounding 2 of 2018, which had already yielded similar remains. The continuation of the large raised "platform" (locus 0377) appears to have been deepened in this area, at some points almost down to the bottom of the thick yellow layer which represents its base, in order to accommodate the walls of some buildings. This circumstance apparently partially spared the Chalcolithic structures in this area from the effects of ploughing, a fact which allowed us to follow the line of some walls. Unfortunately, these were not well preserved (their maximum height was generally less than 10 cm and their body was very deteriorated). Additionally, the area was cut by a large number of small pits, whose diameter varied from 0.50 to 0.90 m. Most of these pits were visible just under the bottom of the surface soil layer. Since they contained only Chalcolithic material, we suppose that most of them had originally been dug from a later Chalcolithic layer, which had completely disappeared (this had been considered as Level 1 in the 2018 excavation of Sounding 2).

The Chalcolithic structures uncovered in this area (**Fig. 13**) represent the continuation of the walls discovered in 2018 in Sounding 2, which had at that time attributed to "Level 2". We were able to draw the tentative plan of a complete building. This was oriented SW-NE, and had rectilinear walls,

Fig. 13. View of room 0374 (quadrants 100.102a-b) from E, with sounding into virgin soil in foreground.

on some of which we observed what seemed to be the limits of rectangular-shaped mud-bricks. It apparently consisted of two main rooms, the second, smaller one of which (locus 0374) was accessed from the first one through a sort of corridor.

Room 0374 was located half way between quadrants 100.102a and 100.102b. Its limits were walls 0347 (NW), 0363 (NE), 0388 (SE) and 0346 (SW), whose width varied between 0.60 and 0.90 m. Remains of an irregular white-plastered floor (locus 0371) sloping in a SE direction from alt. 203.97 to alt. 203.86, were observed in different parts of the room, but no *in situ* material was recovered on this floor and even the overlying filling (locus 0333) contained very few artefacts.

Besides room 0374, the remains of other contemporary structures were also observed. Wall 0331, ca 1.0 m wide and possibly flanked by a lower bench (0357), was situated to the west of wall 0347 at a distance of ca 2.0 m from it. It may have belonged to another room which continued in quadrant 099.102b, but had been almost completely obliterated by erosion and modern pits. It was separated from 0347 by a street-like open area (space 0375) whose walking surface was the top of the "platform" (locus 0377 in this part of the excavation).

Wall 0366, which run in SW-NE direction in the south-eastern corner of quadrant 100.102b was the continuation of wall 0132 discovered last year in Sounding 2. As excavated, its orientation seems to be slightly different from that of the walls of room 0374, but it probably originally belonged to the same building, whose limit may have lain close to the continuation of ditch 0434-0603 and have approximately followed its curve.

A 1.0 m wide sounding excavated during the last days of the excavation along the eastern limit of quadrant 100.102b resulted in the discovery of parts of two walls (0389 and 0393) of an earlier phase of Level 2, which run roughly parallel to each other in SW-NE direction and lay on the continuation of similar walls (0146) discovered in Sounding 2 at the end of the 2018 season. Unfortunately, these walls were also preserved for a height of no more than 20 cm. A series of laminated surfaces (locus 0394, alt. 203.90-85) was associated with them, as it joined the base of wall 0393. Walls 0389 and 0393 and surface 0394 were lying directly on the natural soil (locus 0801). This corresponds to the base of the thick compact layer of dark yellowish silty clay 0440, which in this part of the excavation had probably been cut into by the first inhabitant of the site before erecting their first buildings on it. Surface 0394 and the fillings overlying it were extremely poor in finds of anthropic origin, though not completely devoid of them. They were cut by two pits (0806 and 0808) filled with grey sediments, which deepened into the natural soil and where similar in shape to pits 0436 and 0438 in quadrant 100.103d. Like the latter, their top had not been noticed in the course of the excavation, but we suppose they had been dug from the level of the top of the "platform".

To conclude, the large-scale excavation of 2019 confirmed that the ancient occupation at Tsiteli Gorebi 5 is exclusively of Chalcolithic date, and that it dates to a single chronological period, though with two, or maybe even three different sub-phases, which are most probably very near to each other in time. The depth of the anthropic occupation amounts to no more than 1.30 m, including the ditches and pits dug into the natural soil, but is reduced to a maximum of 60 cm if only building layers are considered. Furthermore, the upper part of the latter has been deeply affected by a combination of different post-depositional elements (water stagnation, unfavourable soil conditions, pervasive bio-perturbance – animal burrows – and especially modern disturbances and deep ploughing) which caused irreversible degradation of the architectural structures once standing on top of it, and the dislocation of artefacts from their original position. In spite of these unfavourable circumstances, it confirmed beyond doubt the presence of rectilinear mud-brick (?) architecture with wall of significant width, which represents until now an *unicum* in the contemporary cultures of the Southern Caucasus, and provided a general idea of the general layout of the ancient settlement, which appears to have been founded on slightly elevated areas emerging from the alluvial plain, the height of which had been artificially increased by digging ditches between or around them.

Ceramics (Laura Tonetto)

The pottery recovered during the 2019 excavations at Tsiteli-Gorebi 5 belongs almost exclusively to the Chalcolithic period. A handful of sherds of Late Bronze/Early Iron, Hellenistic, and Medieval date were unearthed only within plough soil and mixed layers.

The Chalcolithic assemblage (**Fig. 14**) does not show any significant difference with what was recovered in the 2018 soundings at the site, and our general interpretation of it remains the same. Most items were in extremely fragmentary conditions and their surfaces were considerably damaged and/or encrusted. A large amount of the material comes from the superficial humus or from disturbed layers (notably, from the filling of the large Soviet canal and of modern pits). The Chalcolithic layers were not rich in pottery and none of it was found *in situ*; most of the sherds came from generic filling layers or from the filling of pits. Considering these circumstances, we can provide only a general evaluation of the fabrics, shapes and decoration repertoire.

Chalcolithic pottery is very homogeneous from the point of views of technology, morphology and decorations. All of it is handmade and its quality is coarse; the fabric contains a large amount of mineral inclusions of medium or large size, usually of brown and white colour, possibly of calcite or other metamorphic rocks, such as mica-schist. The presence of obsidian was observed only on fragments belonging to one of the three different wares which have been distinguished (see below).

According to the procedures established during the 2018 season, quantification of the Chalcolithic pottery was done by dividing the sherds into three different wares (Light Brown Orange Ware, Red Ware, and Grey Ware), and then counting them and weighing them on an electronic scale. The difference between the three wares is based on fabric, firing, section, surface colour, and surface treatment. Thirty non-diagnostic sherds were selected as samples for thin sections and petrographic analyses to be carried out in Italy in order to confirm or disprove the preliminary fabric classification based on macroscopic observation.

Light Brown Orange Ware is the most frequent and more homogeneously distributed over the whole excavated area; the total amount of LBOW sherds amounts to 1.104 fragments, which represent 70% of the Chalcolithic assemblage and include 124 diagnostics. The fabric is mostly oxydised, with some exceptions where the core is reduced, but the surfaces are oxydised; the colour of the outer surface is orange or light brown with yellowish shades (5YR 5/4 reddish brown, 5YR 6/3 light reddish brown, 10R 5/4 weak red). Sometimes the surfaces are smoothed.

Grey Ware is the second most common ware. It amounts to 300 sherds (19% of the total), 34 of which are diagnostics. The surface of the sherds is rarely smoothed, with a grey shade (5YR 3/1 very dark grey, 10YR 5/2 greyish brown); the fabric is reduced.

Red Ware, represented by 181 items (11% of the total sherdage), is the rarest, and includes no more than 15 diagnostics. Thanks to firing in an oxydising environment, it is characterised by a reddish surface (10R 5/4 weak red, 10R 5/6 red), which is sometimes finished by smoothing or, rarely, by slight burnishing. The fabric of this ware is notable for the presence of obsidian, which was intentionally added as a temper.

The morphological repertoire is shared by the three different wares. It mainly consists of large deep bowls with plain rims, wide-mouthed pots with slightly out-turned or vertical rims (**Fig. 14**, 0718-C-3), and hole-mouth jars with inturned rims. Bases are flat or flattened, sometimes slightly raised: mats impressions are relatively frequent on their lower surface (**Fig. 14,** 0427-C-3). The presence of handles was not recorded, but some items have elongated oval-shaped lug-like protrusions instead (**Fig. 14**, 0702-C-4). This basic repertoire is joined by a fair number of high straight-walled trays bearing a line of passing holes, made before firing, just under the rim (known in literature as *mangal*) (**Fig. 14**, 0301-C-5).

0718-C-3

0427-C-3

0702-C-4

0301-C-5

0410 C-1

0426 C-5

0421-C-1

0402-C-2

Fig. 14. Selection of Chalcolitic sherds from Tsiteli Gorebi 5, 2019 excavations.

Decorations are mostly represented by circular knobs in relief (**Fig. 14**, 0401-C-2). There are only two sherds with relief decorations – zig-zag patterns, etc. – similar to the ones known from sites of the Shulaveri-Shomu culture (**Fig. 14**, 0426-C-5), and no examples of painted decoration. Some rims have notches or nail impressions on the top (**Fig. 14**, 0402-C-2), and some sherds show relief bands decorated with finger impressions located between the shoulder and the neck (**Fig. 14**, 0421-C-1).

Both shapes and decorations are similar to those of the assemblage illustrated by Varazashvili from the 1970s excavations at Damtsvari Gora, Kviriatskhali and the other Tsiteli Gorebi sites (V. Varazashvili, *Rannezemledel'cheskaja kul'turaJuro-Alazanskogo Bassejna* [*The Early Farming Culture of the Iori-Alazani Basin*], Tbilisi: Metsniereba 1992). There are also numerous parallels with the site of Tsopi (L. Nebieridze, *The Tsopi Chalcolithic Culture*, Studies of the Society of Assyriologists, Biblical Studies and Caucasiologists 6, Tbilisi: Artlines 2010), in particular for the trays with rows of pierced holes and for the oval-shaped lugs. However, contrary to this site, Chaff-Faced Ware is totally missing at Tsiteli Gorebi 5. Except for the complete absence of vegetal tempering, our assemblage looks rather similar to that from Period II at Mentesh Tepe in the Tovuz district of Azerbaijan; which a few ^{14}C dates would situate in the second quarter of the 5th millennium BC. (B. Lyonnet in B. Helwing et al., *The Kura Projects. New Research on the Later Prehistory of the Southern Caucasus*, Archäologie in Iran und Turan 16, Berlin: Dietrich Reimer Verlag 2017, 144-147; B. Lyonnet, Rethinking the 'Sioni cultural complex' in the South Caucasus (Chalcolithic period): New data from Mentesh Tepe (Azerbaijan), in A. Batmaz, G. Bedianashvili, A. Michalewicz & A. Robinson (eds), *Context and Connection: Essays on the Archaeology of the Ancient Near East in Honour of Antonio Sagona*, Leuven, Paris, Bristol CT: Peeters 2018, 547-567). We therefore confirm the tentative dating to a rather early phase within the Chalcolithic period that we proposed after the 2018 excavation season. In fact, the apparent continuity (both in fabrics and in decorations) with the Ceramic Neolithic production suggests a date in the early 5th mill. BC., for Tsiteli Gorebi 5, *i.e.* much earlier than what Varazashvili suggested for the other sites of the cluster.

Bone objects (Sara Stellacci)

During the second excavation campaign at Tsiteli Gorebi 5, Sara Stellacci analysed the animal material tools discovered by the expedition at the sites of: Tsiteli Gorebi 5, Chalcolithic period (campaigns 2018 and 2019), Aradetis Orgora, Early Bronze, Late Bronze, Iron Age (campaigns 2013-2016) and Doghlauri cemetery, Early Bronze Age, Kura-Araxes period (campaigns 2012-2015).

The main goal for these analyses is the characterisation of the technological and functional traces found on the surfaces of the tools. The surfaces of the objects were analysed with a Veho VMS 004-Delux microscope with 400x magnification in order to verify the possibility of making casts of their surfaces with a plastic material (Provil Fast Light). This procedure facilitates obtaining perfect reproductions of the traces visible on the objects surfaces, which will be studied, once back to Italy, with a high magnification metallographic microscope and compared with a personal comparison collection of experimentally produced traces in order to define their origin (either technological or functional).

The objects from Tsiteli Gorebi 5 were analysed at the expedition house in Lagodekhi (Kakheti province). They are all awls (11 in number), obtained from the long bones of animals like *Ovis/Capra*. Their surfaces are well preserved and some technological traces are visible on them already with a lower magnification microscope like Veho (**Fig. 15**). In particular, on active part surfaces it is possible to see some abrasion traces probably aimed at giving a more pointed shape to the active part. On the proximal part of these objects, instead, it is possible to see scraping traces made with a flint blade. These were made before the abrasion, probably in order to clean the bone from organic material. For functional traces, the analysis will be done on casts with a high

Fig. 15. Veho Microscope photo on a bone awl surface with traces of abrasion on a hard material, possibly basalt.

magnification metallographic microscope at the LTFAPA laboratory of Sapienza. University of Rome.

The objects from the Kura-Araxes cemetery of Doghlauri, consisting of spindle-whorls and beads, were analysed at the Dedoplis Mindori Fund of the Georgian National Museum of Tbilisi, where they are presently stored, on July 8th and 9th, 2019. Unfortunately, the surfaces of all these objects were very damaged by post-depositional agents (soil acidity etc.) that had exfoliated them considerably. In fact, they were so damaged that the photos with the microscope could reveal no useful traces; as a consequence, it was considered unnecessary to make casts of the objects at the risk of causing further damage to them. However, new photos of all the items were taken with a normal camera, and data for a dedicated database of bone objects on FileMaker platform were collected by means of standard autoptic analysis, focusing on the presence of macroscopic traces.

The analysis provided the following results. All spindle whorls were produced with the femoral head of cattle. Probably the Kura-Araxes people cut the proximal epiphysis of the cattle femoral with a blade in order to create the support. Then, they used a burin to produce the hole in the centre of the support by means of circular movements. As it was impossible to locate any technological traces, it is not possible to say if they used flint or metal instruments to work the bone. The tubular beads for necklaces or bracelets were also made of bone. These objects have a white colour because they are burnt. They were produced from the long bones of small wild animals such as jackrabbits. It can be hypothesised that the Kura-Araxes people cut the diaphyses of the long bones of these animals with a flint or metal blade and then treated the supports with abrasion to clean them and give them a cylindrical shape.

The hard animal material objects from Aradetis Orgora were analysed on July 10th-13th at the local museum of Kareli (Shida Kartli region), where they are preserved. Due to limited available time,

it was not possible to take microscope photos of all of them, but new photos of the items were taken with a normal camera, and data for a dedicated database of bone objects on FileMaker platform were collected by means of standard autoptic analysis. Casts were made of specific points of the surfaces of those objects that had better preserved surfaces.

The collection from Aradetis Orgora comprises many different objects of various periods. It includes ornaments made from cattle or *Sus Scrofa* phalanges, needles and awls made from long bones of animals like *Ovis/Capra*, spindle-whorls made from cattle or *Sus Scrofa* head femoral, and objects made from deer antler. Some of them show a geometrical decoration. For a precise definition of the traces of these object it is necessary to wait for the results of the analyses that will be made on the casts at the LTFAPA laboratory of "Sapienza", University of Rome, after the end of the field campaign.

Lithics (Flavia Amato)

A preliminary analysis of the lithic items of the 2018 and 2019 field seasons was undertaken by Flavia Amato. All the data achieved by separation, items-counting, photography and drawings of the stone flaked materials were recorded in the project's FileMaker Pro database.

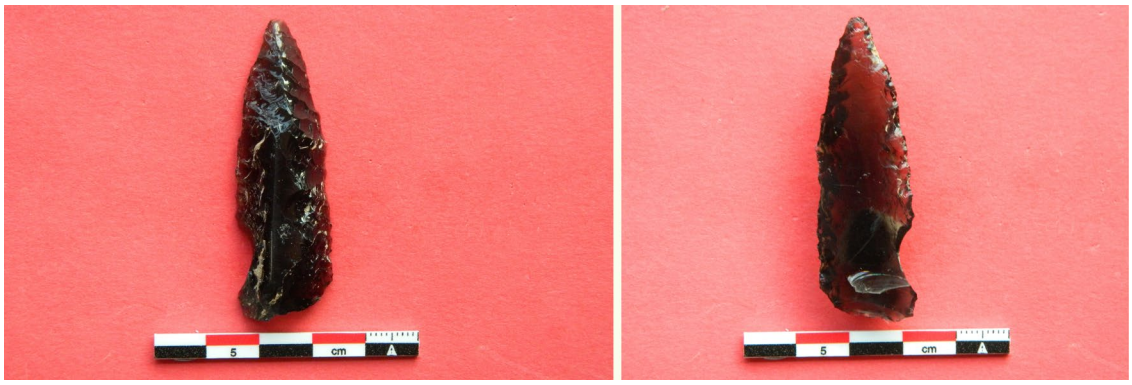
Lithic elements were classified according to their raw material: the most exploited one is obsidian (98,6%), followed by a very small percentage of flint. Furthermore, the presence on the field of a very large percentage of different extrusive volcanic rocks (basalt, andesite) is noteworthy. To our knowledge, they were not used to produce tools. The presence of cortex was systematically recorded according to what percentage of the cortical lithic was cortex. Twenty obsidian flakes were taken for sample from chosen contexts (loci: 0229, 0239, 0260, 0314, 0349, 0406, 0437, 0503, 0708, 0714) in order to verify their chemical composition and provenance. They will be analysed by Bernard Gratuze of CNRS IRAMAT LA-ICP-MS (Orléans), who already analysed 30 samples collected during the 2018 field season, outlining a multisource scenario for the Tsiteli Gorebi 5 site.

Obsidians and flint tools were classified into the following types: *flakes tools, blades tools* (**Fig. 16b, c, d, f**)*, bladelets tools, points* (**Fig. 16a**)*, cores* (**Fig. 16e**), *pièces esquilleés, microborers*, *drills*, and *scrapers*. We have also distinguished the debitage elements into *debris* (angular shatter, not discernible elements), *chips* (flaked pieces < 10 mm in largest dimension), *flakelets* (small flakes 10-20 mm in largest dimension), *flakes* (≥ 20 mm in largest dimensions), *blades* (flaked pieces ≥ 20 mm in largest dimensions that have length: width ratio ≥ 2:1), *bladelets* (flaked pieces 10-20 mm in largest dimension that have length: width ratio ≥ 2:1), and *primary elements* (flakes with at least 30% dorsal surface cover and less than three dorsal negatives).

Additionally, in order to better understand the technology applied, we have described the flake termination types based upon Cotterell and Kamminga (1987): feathered, hinge, step or plunging. We have also observed some knapping features (like bulb shape, presence of lipping, and scars) and platform preparation, morphology and shape. The tool's retouch was described following Laplace's terminology (Laplace 1968: 24-32), using the following categories: Morphology: *scaled retouch, stepped retouch, sub-parallel retouch, parallel retouch*; Extent: *short retouch, long retouch, invasive retouch, covering retouch*; Position: *direct retouch, inverse retouch, alternate retouch, bifacial retouch*; Delineation: *linear retouch, denticulate*; Localisation: *lateral or side retouch* (left, right, bilateral), *transverse retouch (distal, mesial, or proximal).*

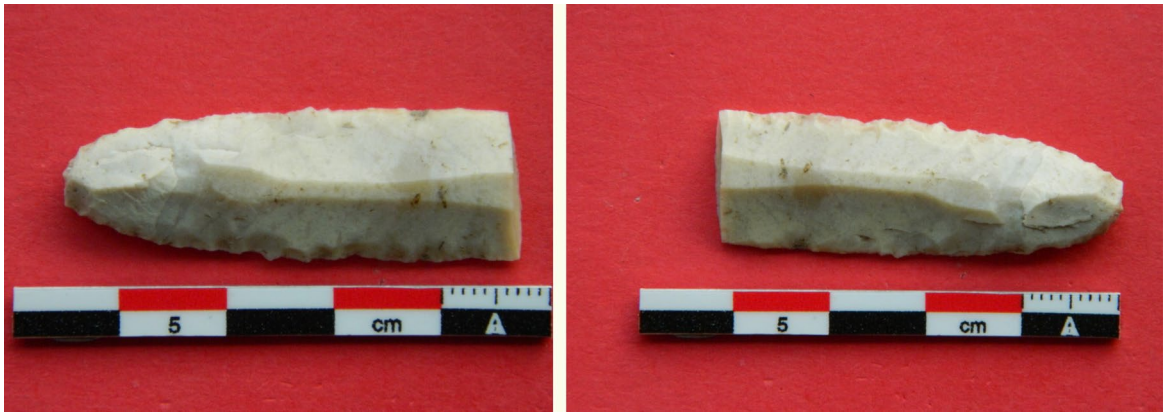
In the field season 2018 material, we found 86 tools (79 in obsidian and 7 in chert) and 572 debitage elements (567 in obsidian and 5 in flint). Among the debitage elements, we could distinguish 50 debris, 108 chips, 251 flakelets, 136 flakes, 11 bladelets, 13 blades and 3 primary elements, while tools are represented by 7 flint blade tools and 79 obsidian tools, distinguished in: 8 flake tools, 31 blades tools, 7 bladelets tools, 2 points, 19 cores, 1 pièces esquilleés, 1 microborer, 5 drills, 1 flake point, and 4 scrapers.

The area excavated during the 2019 field season was larger than the previous one and consequently also the lithic finds were much more abundant. The debitage elements consist of 1219 artefacts (1207 in obsidian and 12 in flint) and 112 tools (109 in obsidian and in 3 flint).



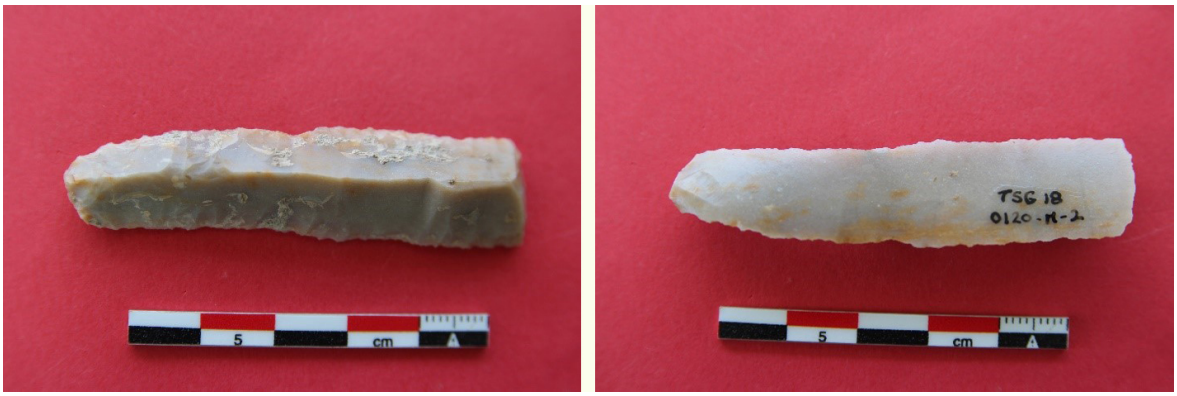
a) TSG_5 2019 0253-M-4 Dorsal and ventral faces obsidian point

b) TSG_5 2019 0260-M-5 Dorsal and ventral faces flint blade

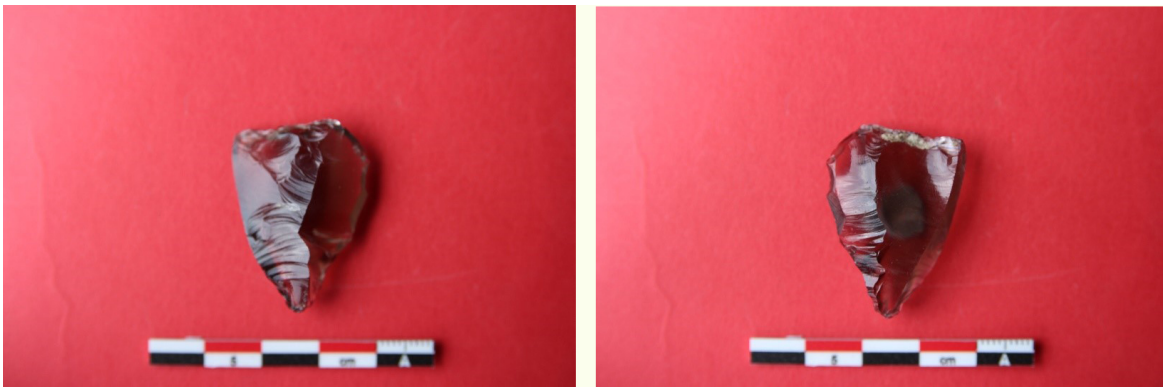


c) TSG_5 2019 0260-M-6 Dorsal and ventral faces flint blade

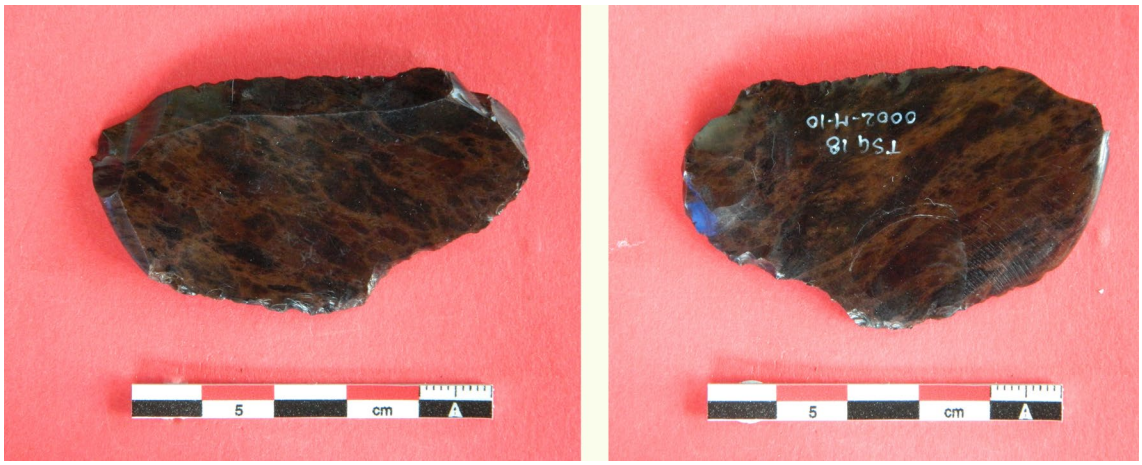
Fig. 16. Selection of lithic finds from Tsiteli Gorebi 5 (continuing).



d) TSG_5 2018 0120-M-2 Dorsal and ventral faces flint blade



e) TSG_5 2018 0118-M-4a Obsidian core



f) TSG_5 2018 0002-M-10 Dorsal and ventral faces obsidian blade

Fig. 16. Selection of lithic finds from Tsiteli Gorebi 5 (continued).

Among the debitage, we have 97 debris, 79 chips, 585 flakelets, 357 flakes, 45 bladelets, 56 blades. The flint finds consist of 1 core and 2 blades. The 109 obsidian tools include 17 flake tools, 42 blade tools, 1 bladelet tool, 2 points, 34 cores, 3 pièces esquilleés, 3 drills and 7 scrapers. Many of the finds came from surface or mixed layers and only relatively few came from undisturbed layers and pits dated to the Chalcolithic period. In spite of this, it is clear that they originally belonged to the Chalcolithic settlement. The study and comparison with other sites of the same period, which will be undertaken in the next future, will allow us a better understanding and contextualisation of the assemblage.

Faunal remains (Giovanni Siracusano)

The organic material unearthed during the 2018-2019 archaeological excavation campaigns at Tsiteli Gorebi 5 consists almost entirely of animal bone remains. The bone material is, in turn, mostly reduced to small fragments. The number of rests which have been processed amounts to more than 2100. Despite the material being subjected to careful washing, the clayish soil that covered the finds formed deposits difficult to remove from the fragments. This made it difficult to distinguish some details, including pre- and post-mortem traces (e.g. from pathologies and respectively from slaughter) on the bones.

The archaeozoological analysis led to the identification of 1661 bone findings,1286 of which have been classified taxonomically (**Table 1**). The fragmentation was such that the percentage of bony portions in a condition to allow a useful measurement didn't go beyond 3,5% of the total.

Almost all the samples were found to belong to domestic species (86%). Among the species of domestic animals of economic importance, caprines are the most frequent taxon (57%), followed by cattle (39,5%), while pigs (2,4%) are rare. In turn, among the caprines, sheep far exceed goats, the ratio being 7:1. From a preliminary elaboration of the age of death calculated from the development of the mandibular arch of the caprines, it is clear that the majority of them were killed between 1 and 2 years, while young lambs and kids are absent or rare (**Table 2**). The presence of dogs among the rests likely testifies their use as shepherd dogs. The structure of animal husbandry suggests a pastoral society based on sheep and cattle breeding.

Among the big game, which are less then 5% of the total, aurochs are the most frequent (about 60% of the big game), followed by red deer (16%) and wild sheep and goats (4%). The plain where the site is located consisted of open woodland interspersed with areas of denser forests, probably in correspondence with the rivers that crossed it. The presence of wild caprines shows the proximity of the mountain slopes. The presence of hare (16%) which suggests a more open environment, may be linked with the expansion of agriculture. The presence of badger bones may be intrusive from later times. The presence of bear rests is worth highlighting even they are represented by a single tooth of a very old specimen.

As far as the anatomical distribution of the bones is concerned, the analysis of the relationship between the portions of bones identified with that of those present in the skeleton and expressed in logarithms clearly indicates that the assemblage is composed of meals waste as, in fact, the most edible portions (categories A and B according to Uerpmann 1973) are the most represented (**Fig. 17**).

In the course of the archaeozoological study, some useful samples for a series of analyses to be performed in various laboratories in Italy and abroad were selected. In particular, these included samples to perform research on bovine DNA, for radiometric dating, and for ^{13}C and ^{15}N isotope analysis.

TSITELI GOREBI 5	NISP	%	% dom.
Cattle	463	21,7%	39,5%
Sheep	35	3,0%	
Goat	5	0,4%	
Sheep/goat	629	29,5%	53,6%
Caprines tot	669	31,3%	57,0%
Pig	28	1,3%	2,4%
Dog	13	0,6%	1,1%
Total domestic	1173	**% dom.**	**85,6%**
Equus sp.	1	0,0%	2,0%
Aurochs	29	1,4%	58,0%
Wild sheep	1	0,0%	2,0%
wild goat	1	0,0%	2,0%
Wild caprine	2	0,1%	4,0%
Cervus elaphus	8	0,4%	16,0%
Lepus capensis L.	8	0,4%	16,0%
Big game	**50**	**% big game**	**3,65%**
	1223		
Fox	6	0,3%	6,2%
Weasel	1	0,0%	1,0%
Badger	28	1,3%	28,9%
Polecat	1	0,0%	1,0%
Bear	1	0,0%	1,0%
Rodents	8	0,4%	8,2%
AVES	11	0,5%	11,3%
Testudo	17	0,8%	17,5%
Toad/frog	2	0,1%	2,1%
Molluscs	20	0,9%	20,6%
Pisces	2	0,1%	2,1%
Wild game	97	4,5%	7,08%
Total wild	**147**	**6,9%**	**10,73%**
Total identified bones	**1370**	**64,2%**	
Small mammals unid.	18		
Large ungulates unid.	293		
Medium ungulates unid.	489		
Unidentified	15		
Total unidentified	**815**	**38,2%**	
	2135		

Table 1: Tsiteli Gorebi 2018-2019, taxonomic distribution of animal remains.

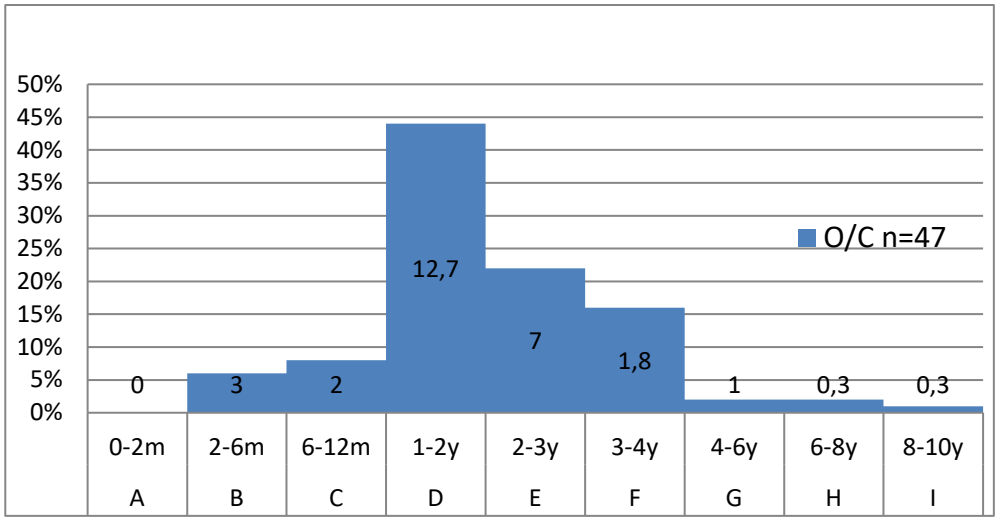
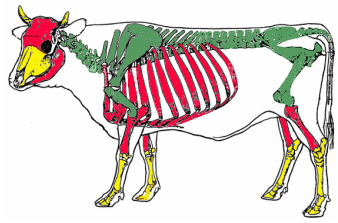


Table 2: Tsiteli Gorebi 5 2018-2019, caprines kill-off pattern. Category A includes individuals between 0 and 6 months of age; category B between 6-12 months; category C between 12-18 months; category D between18-30 months; category E between 30-48 months and finally category F is composed of all the individuals over 4 years.

A



B

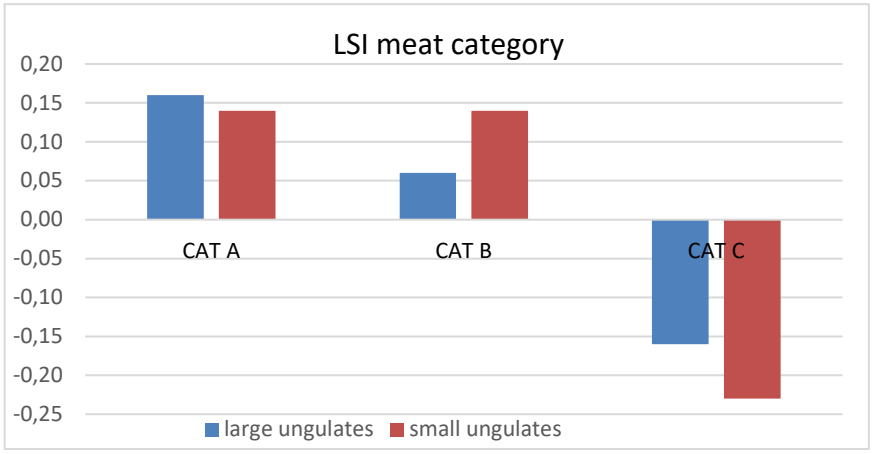


Fig. 17. A. Body parts categories: green = A category, the most valuable parts (vertebrae, shoulder and pelvic girdles, rib, humerus and femur; red = B category skull bones, jaws, ribs, radius, ulna, tibia and fibula); yellow= C category: lesser or no meat production (horn cores, loose teeth, carpal and metacarpal, tarsal and metatarsal bones, phalanges) (Uerpmann1973). B. Log size index (LSI) of body parts. The bones thus grouped (x) were placed in logarithmic ratio with normal anatomical proportions of a whole skeleton (s) (log.x/s) as already illustrated by Meadow (1999). The positive value indicates a larger presence and the negative a less than normal skeletal structure.

3D scanner experiments (Flavia Amato)

During the 2019 field season, Flavia Amato tested the potential of the David 3D scanner recently acquired by the expedition, working on different materials such as pottery, flint, obsidian, animal bones and clay objects both from the Lagodekhi local Museum and from the Georgian-Italian excavations at the Tsiteli Gorebi 5 site (**Fig. 18**).

The David 3D scanning software and camera assembly is a Structured Light Setup that generates 3D models and meshes that can be exported into well-known file formats and can be imported and processed in most 3D applications, such as the open source system MeshLab, a useful tool for processing and editing 3D triangular meshes and also for preparing models for 3D printing. The 3D scan creates a cloud of points from data from the surface of the objects, and thus allows us to analyse the precise morphology of archaeological finds and makes the identification of features hardly distinguishable by the naked eye much easier. Furthermore, the 3D model, which is very precise in size and shape, can be transformed by the help of a further software in 2D drawings, thus allowing the comparison with traditional drawings.

In the near future, all the 3D models may be inserted into a specific software that could categorise the finds and create hierarchical groups by discerning similarities and differences among them. An automatic classification of the finds will thus be developed, with may be useful for chrono-typological analyses.

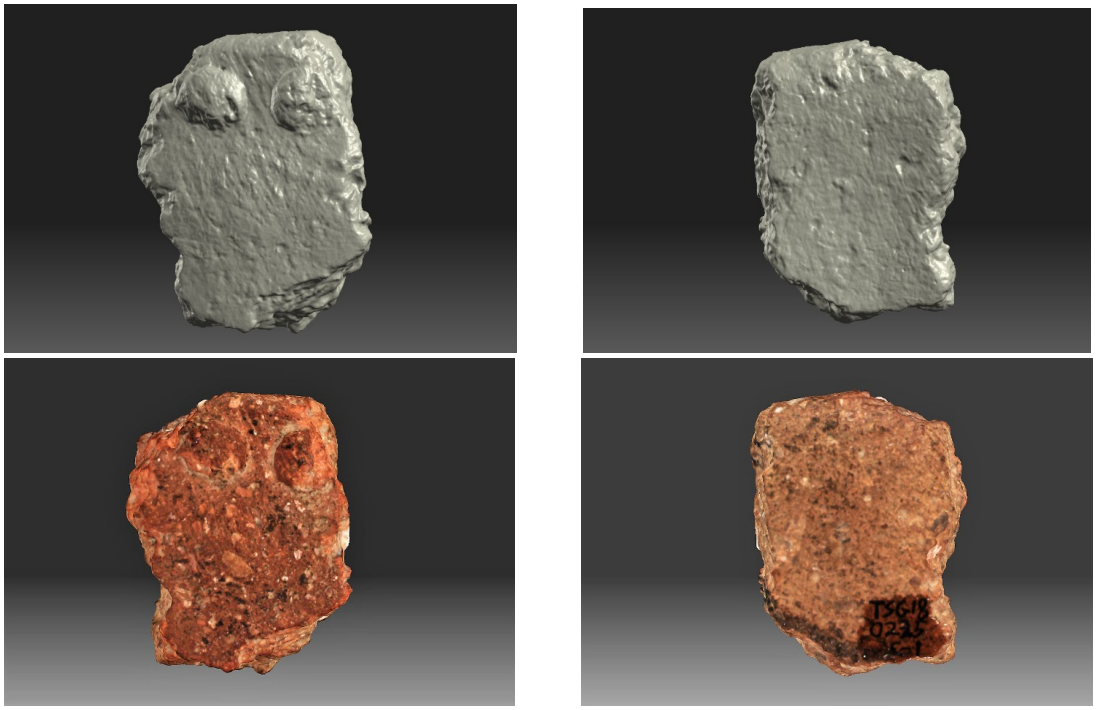


Fig. 18. 3D scan text on sherd 0225-C-1 from Tsiteli Gorebi 5 2018.

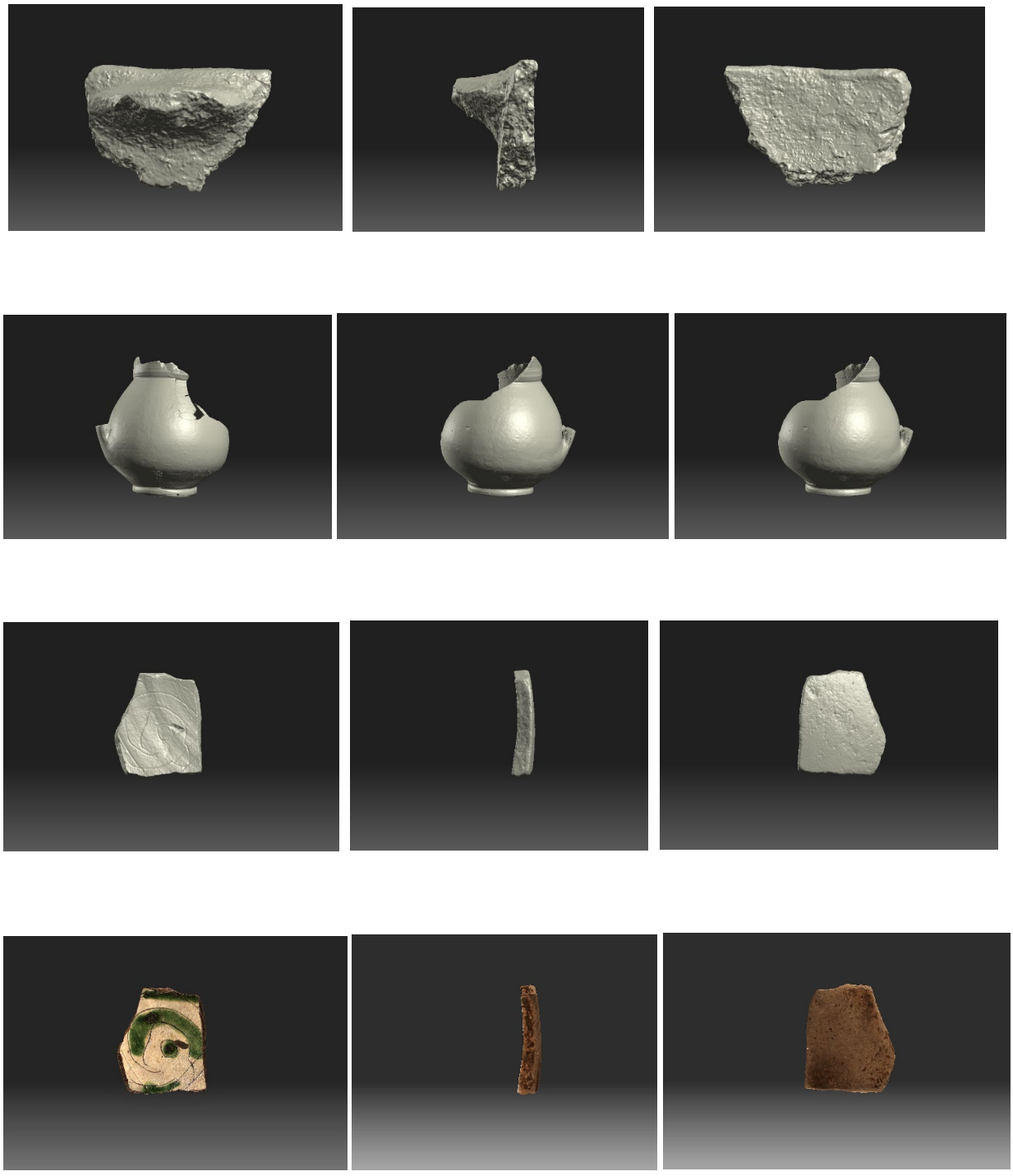


Fig. 19. Other 3d scan tests on pottery.

In addition to obtaining a 3D image, the scanner also allows to record of the texture and the colour of the objects. This is rather easy to obtain in the case of materials like pottery (**Fig. 19**).

In other cases, for example when the material of the object is black and reflectant, like in the case of obsidian, this is impossible. In such cases it is necessary to add the photos to the image at a later time, by using a different software, such as MeshLab (**Fig. 20**).

We have also tried the 3D scan on animal bones and on bones objects (**Fig. 21, Fig. 22)** with very brilliant results. The 3D models are incredibly accurate, and make all the measurement easier, allowing for a complete analysis of the item and of its geometry.

Finally, the experiments carried out during the 2019 field season allowed us to obtain 3D images of objects which are very difficult to draw by hand, such the clay lion from Lagodekhi Local Museum, which is the symbol of the Georgian Italian Lagodekhi Archaeological Project (**Fig. 23**).

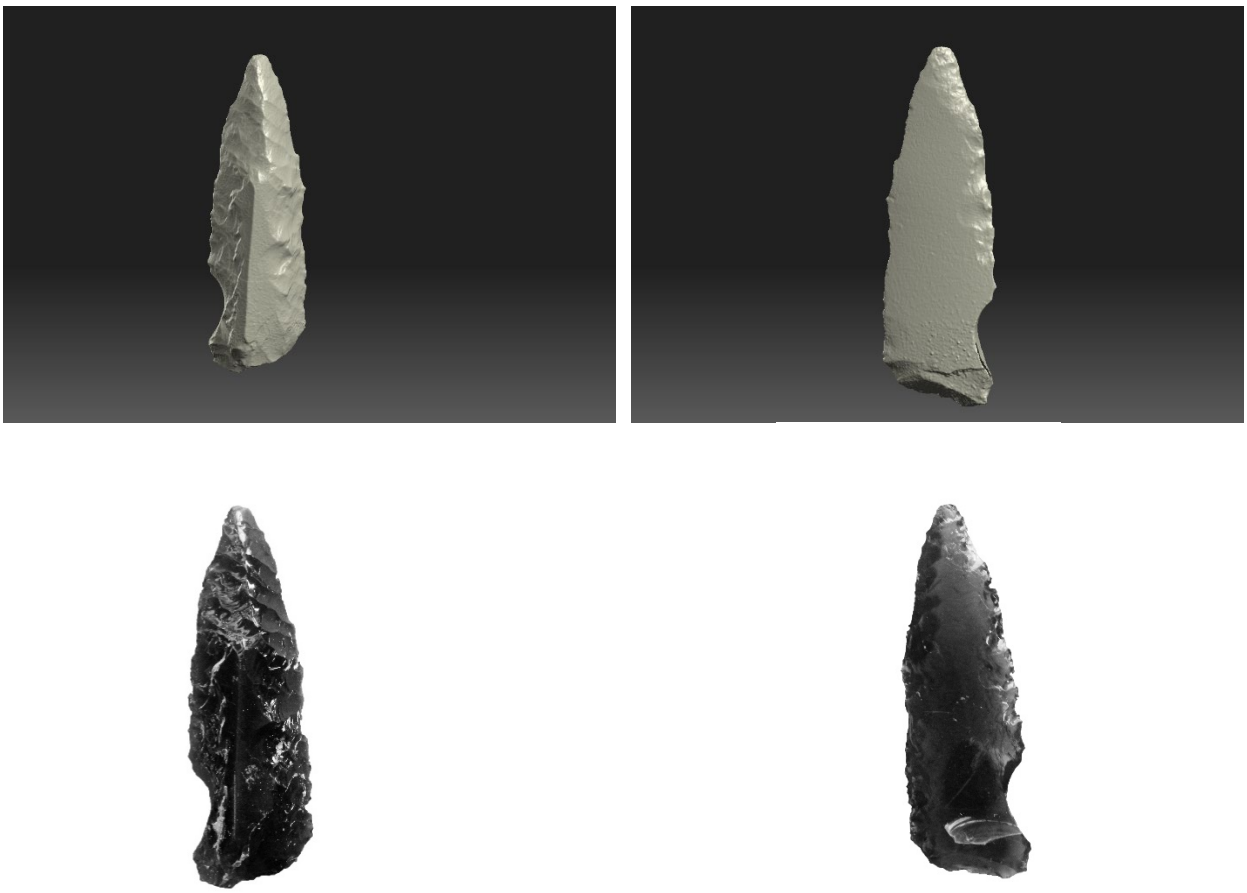


Fig. 20. 3D scan text on obsidian blade 0253-M-4 from Tsiteli Gorebi 5 2019.

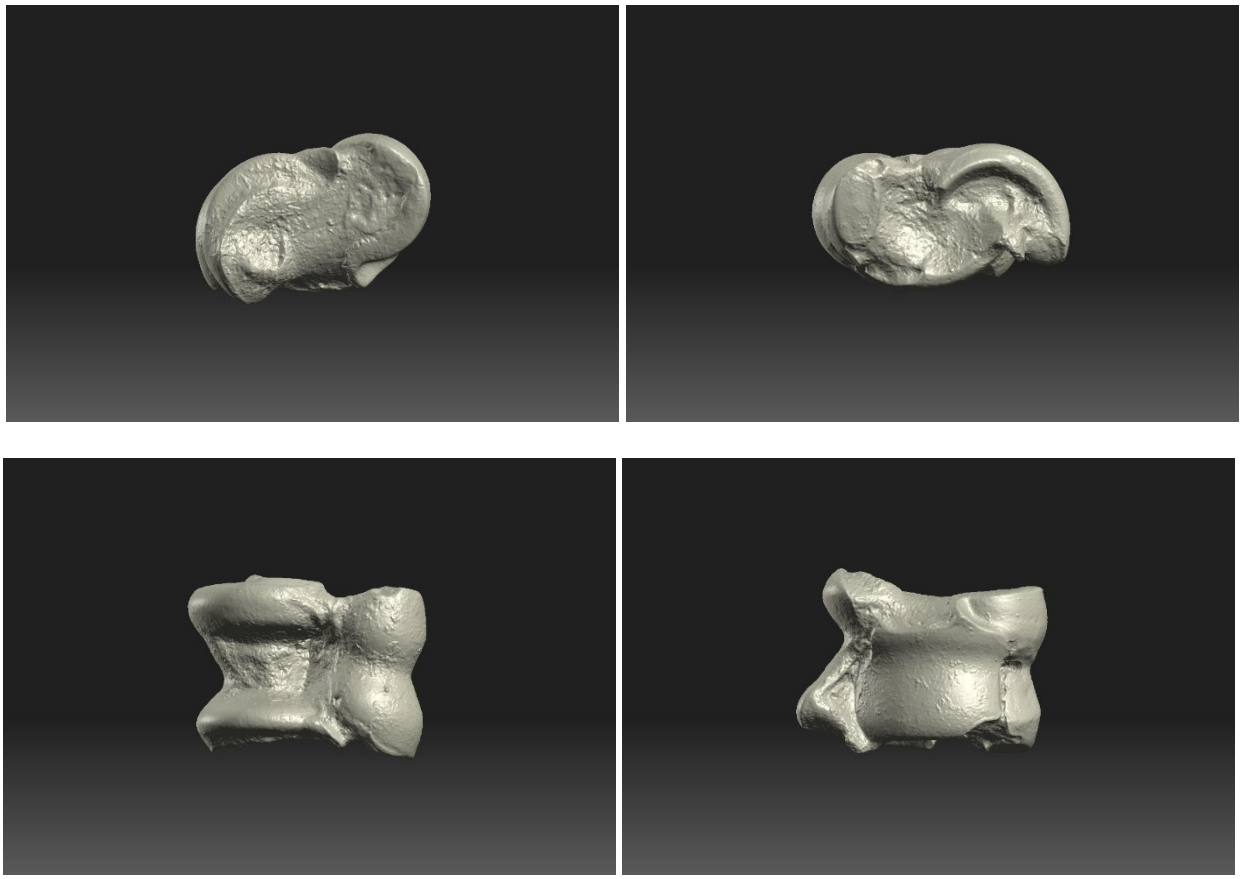


Fig. 21. 3D scan text on animal bone 0302-E-4 from Tsiteli Gorebi 5 2019.

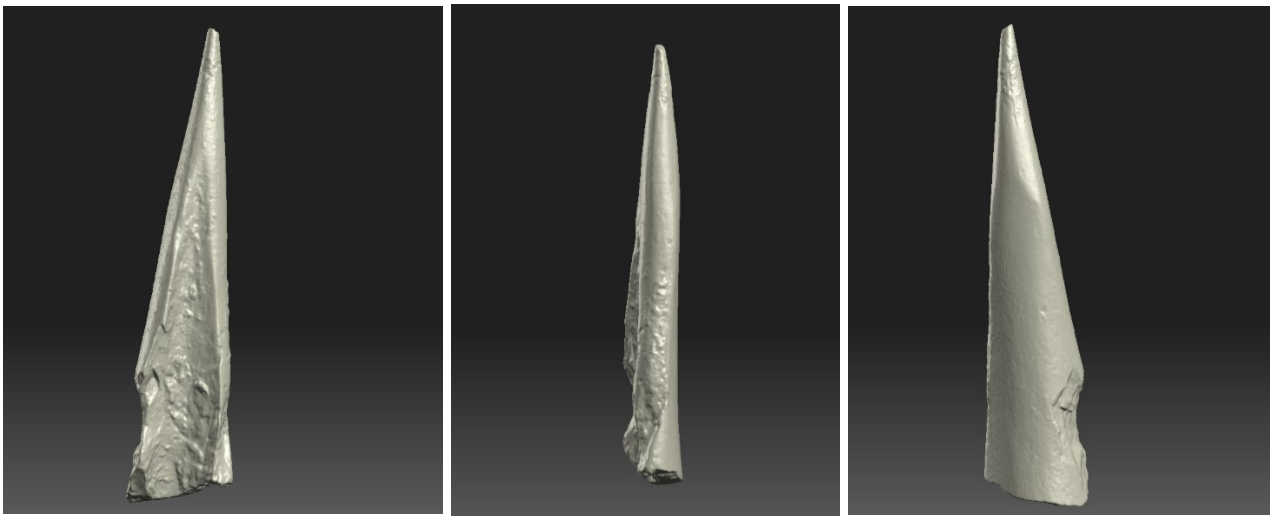


Fig. 22. 3D scan text on bone awl 0302-M-6 from Tsiteli Gorebi 5 2019.

The scanner acquires different scans represented by the different colours and then aligns all of them to create the mesh.

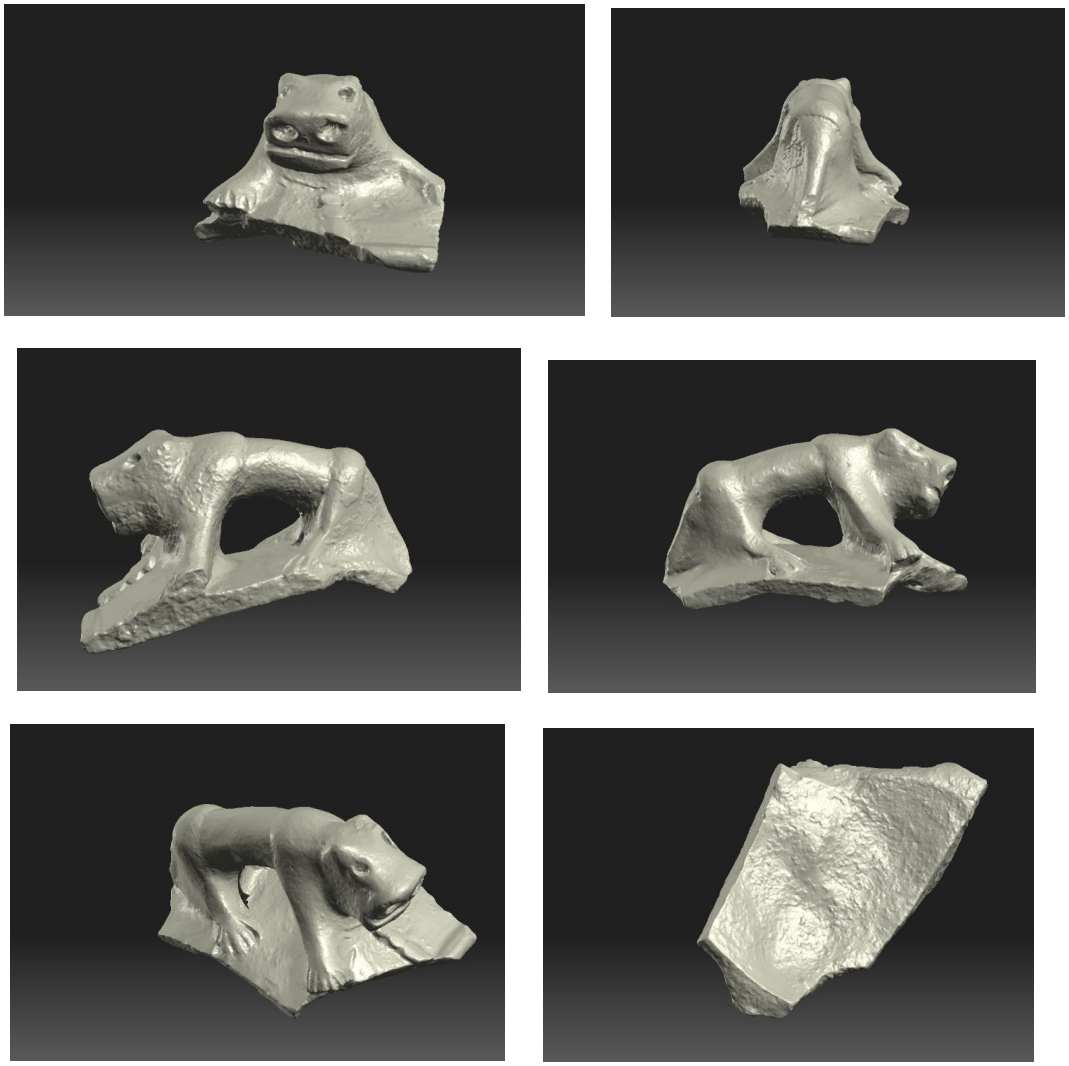


Fig. 23. 3D scan text on the pottery lion from the Lagodekhi Museum.

Preliminary Report on Geoarchaeological Research (Giovanni Boschian**)**

Geoarchaeological fieldwork during the 2019 GILAP expedition focussed on two main points:

1) The geological and geomorphological survey of the areas neighbouring the excavation site of Tsiteli Gorebi 5 (TSG5) and nearby sites, aimed at reconstructing the landscape settled by the Chalcolithic people.

2) contextual stratigraphic and sedimentologic examination of the excavation areas, in order to extract information about site formation processes, area use, and settlement catchment.

Geomorphology of the area

Geomorphological observations on the site surroundings were based on intensive examination of the area microrelief, over a roughly rectangular surface limited to the east by the river Kviriatskhali and extending for about 6-700 m to the north, south, and west of the site. Altitude variations were put into evidence by *ad hoc* low precision GPS survey, whose measures are reasonably reliable at local relative scale over short time and distance measurements (**Fig. 24**).

This survey put into evidence a scarp, about 2 m high, rather smooth due to agricultural reworking, which probably represents the western bank of the maximum flood area of the river Kviriatskhali. This scarp runs few tens of metres east of TSG5 and of site LS023, which is another high spot – also yielding archaeological remains – situated about 250 m SSE of TSG5. The two sites represent topographic maxima of the area west of the scarp (*i.e.* outside the maximum flood area), which is largely flat and subhorizontal, representing a terrace of the river. North of TSG5 the scarp turns smoothly westwards and becomes somewhat lower, until it disappears in a low area characterised by small depressions limited by minor topographic highs.

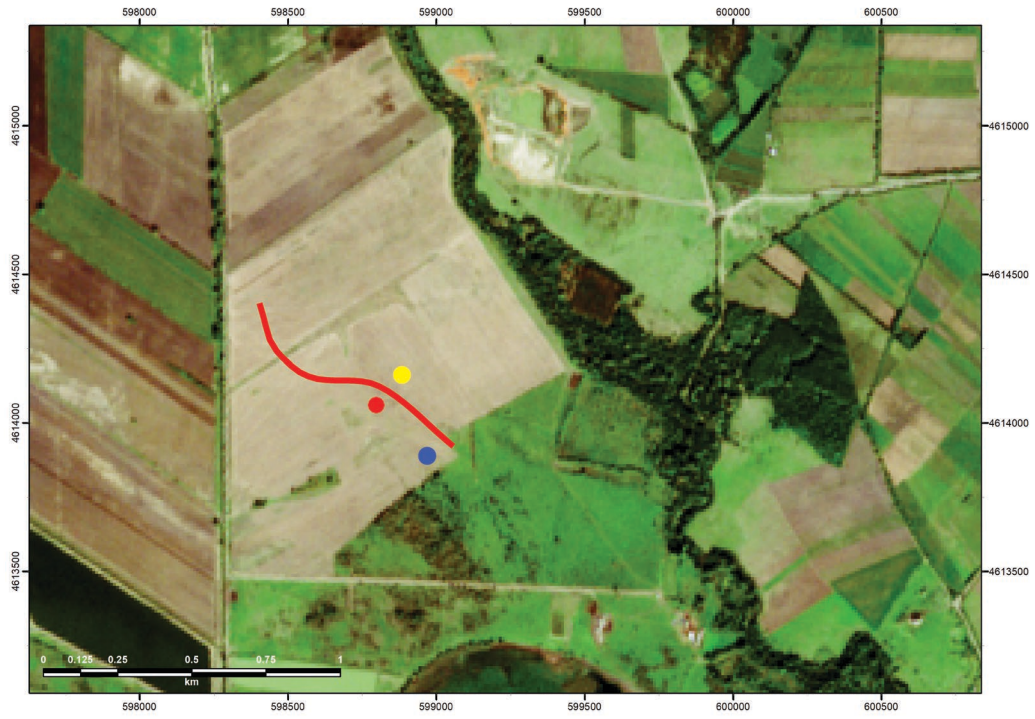


Fig. 24. Sentinel 2 image of the surveyed area. Red line: scarp; red dot: excavation site TSG 5; blue dot: site LS023; yellow dot: geotrench.

An explorative sondage excavated in the maximum flood area E of TSG5 found the water table at -1.40 m (**Fig. 25**). The sediments put into light are mostly fluvial, including a fining-upwards layer of coarse/fine grey sand at the base of the observed sequence, overlain by alternating greyish and yellowish silty clay loam with reddish redoximorphic features. The sequence is closed by a dark brown clay layer, very compact and homogeneous. It is worth noting that this sequence resembles rather closely what was observed in deep sondages excavated within the site area in 2018. The top of the grey sand is at 201.90 m in the sondage, at 202.14 in the 2018 Sounding 1 and at 202.5 in the deep sounding of 2019 in quadrant 100.103d.

Fig. 25. North profile of the geotrench excavated within the lowest spot of the river Kviriatskhali plain.

The overall morphology of the plain and the almost coinciding heights of the grey sand layer in distinct far away profiles suggest that all grey sand layers can be correlated. Consequently, it can be hypothesised that the yellowish silty clay loam sediment occurring in thick layers in the TSG5 area is the remain of a relatively old river sediment that was removed by erosion east of the scarp. At present, the age of this erosional process cannot be ascertained; however, excavation at TGS5 in the scarp area may indicate whether the site develops on it, or if the scarp itself marks an erosional limit of the settlement.

Excavation area observations and sampling

Micromorphological sampling (**Fig. 26**) was carried out in various areas of the site with the following purposes.

1) ascertaining the nature of the walls put into light in quadrant 100.102b. Possible organic or specific mineral component used in preparing the silty loam mixture used for making the walls are expected to appear in thin section. To this purpose, reference samples of the natural yellowish silty clay loam bedrock – possibly used as raw material – were systematically collected along a profile in area 100.103d, where the natural sediment and soil sequence is well represented.

2) verifying whether the top of he natural bedrock sequence was in some way modified by human activities. The aforementioned systematic sampling of the bedrock will be used also for this purpose.

Fig. 26. Micromorphological sampling of the bedrock silty clay loam in quadrant 100.102b.

3) assessing the nature of the layered infilling found in a long and narrow ditch occurring in quadrant 100.103d. The base of the infill is layered, with brownish loamy layers including fragments of the substrate, and dark brown clayey layers, whose alternating pattern suggest cyclical process of infill caused by moderate-energy events followed by slow deposition of clay in still environment. Micromorphological observations should put into evidence the nature of the infilling processes. On the other hand, the sedimented material may suggest the nature of the activities that were carried out in the site.

Archaeological Survey of the Lagodekhi Municiplaity (Stefania Fiori)

The continuation of the 2018 archaeological survey of the Lagodekhi municipality was postponed to a second field season, to be carried out in collaboration with Kristen Hopper of Durham University in October-November 2019 in order to take advantage of the better conditions of visibility on the occasion of the ploughing of the fields.

In the course of the summer season, activities were limited to the following:

1) re-checking a few sites located in close proximity of Tsiteli Gorebi 5, in particular of site LS023, located in the neighbouring field to the south, which had been preliminarily identified as a possible kurgan,

and

2) a one day visit to some areas known by the inhabitants of the neighbouring village as being archaeological sites, with the aim or marking their GPS location in order to visit them in the fall.

Concerning site LS023, the recovery of a large amount of daub and obsidian fragments suggested the presence of a well preserved prehistoric settlement, which may become the aim of a future excavation season.

During the one-day survey that took place on July 22nd, the expedition visited five places, four of which hadn't been recorded in the 2018 survey season. These sites have been recorded with exact GPS coordinates and tentatively dated according to the material found on the surface. Since this was just a preliminary visit, they have been named according to a different, temporary numbering system, waiting for their integration in the general list of survey sites on the occasion of the October-November field season.

Fig. 27. View of site 1001

Site 1001 (UTM 38N 598059.05 E 4612677.26 N)
(Fig. 27)
This place was known by locals because during the building of a small water reservoir they found entire pottery vessels. During the survey, material attributable to the Middle Bronze Age, Late Bronze Age, and to the Medieval period was collected from it.

Site 1002 (UTM 38T 599162.58 E 4612383.59 N)
(**Fig. 28**)
Some years ago, some tombs (probably small kurgans) were found here. Because of the recent arrangement of the water reservoir, it was not possible to collect any surface material, even though a large number of not-local stones were found on the surface.

Fig. 28. View of site 1002

Fig. 29. View of site 1003

Site 1003 (UTM 38N 595574.19 E 4618698.74 N) (**Fig. 29**)
A little female statue was discovered in this field 40 years ago. During the survey, it was possible to attribute the site to the Hellenistic period. In addition, some fragment of pottery were collected, which allowed us to trace a Late Bronze Age frequentation.

Site 1004 (UTM 38N 596222.72 E 4615950.57 N) (**Fig. 30**)
During the 2018 survey, this place was recorded as a possible kurgan (LS029), but because of the dense vegetation, no material was collected from it. On the contrary, this year Late Bronze Age ceramic and several fragments of obsidian and flint were found.

Fig. 30. View of site 1004

Fig. 31. View of site 1005

Site 1005 (UTM 38N 595877.48 E 4613396.20 N) (**Fig. 31**)
The owner of this land found gold coins and a Hellenistic tomb while they were building the edge of the water reservoir. The material found in surface confirmed the allocation of the site to the Hellenistic period.

Sampling for palaeoenviromnental research, archaeometric analyses, radiometric dating

Sampling for different types of scientific analyses was also carried out in the course of the season in order to implement the corpus of data collected during the 2018 campaign at Tsiteli Gorebi 5 and during the previous years in the Shida Kartli region with the aim of investigating the relationship of the ancient inhabitants of Georgia to their natural environment and their use of available natural resources.

30 samples of Late Chalcolithic sherds from Tsiteli Gorebi 5 were selected for archaeometric analyses to be carried out in Italy, and 20 obsidian samples were collected for provenance analysis to be performed by Bernard Gratuze, IRAMAT, Institut de Recherche sur les Archéomatériaux, Centre Ernest Babelon, C.N.R.S., Université d'Orléans, France. A sequence of 23 palynological samples (to be processed by Eliso Kvavadze, Georgian National Museum) was collected from the eastern profile of quadrant 100.103d, which included the whole filling of the Chalcolithic ditch 0434. In spite of the poor preliminary results obtained from the 2018 samples, they will hopefully provide some information on the vegetation cover contemporary with the Chalcolithic settlement.

Since preliminary analysis of the animal bones collected in 2018 showed that despite their fragmentary conditions and the presence of abundant surface encrustations they contained a sufficient amount of collagen, we decided this year to adopt a wider sampling strategy on palaeofaunal material. We collected a total of 51 animal bone and teeth samples, to be subjected to the following analyses: stable isotopes analysis (by Paola Iacumin, University of Parma, Italy) in order to trace movements of people and animals, as well as herding systems in the Chalcolithic periods, DNA analyses (by Ino Curik, Agronomski Fakultet of Zagreb University, Croatia, and Eva-Maria Geigl, Institut Jacques Monod, Paris) in order to reconstruct the diffusion of domestic animal races. Animal bones samples will also be used for radiometric dating (under the responsibility of Elisabetta Boaretto, Weizmann Institute of Science, Rehovot, Israel), in order to compensate for the almost complete lack of other types of organic materials (seeds, charcoals) at the site.

Didactical activities (Megan Willmes)

The Georgian-Italian Lagodekhi Archaeological Project (GILAP), together with Lagodekhi Museum and its director Davit Kvavadze, conducted student workshops for local youth over a period of three days (July 4th-5th and 7th). The activities were aimed at high-school aged students, with the goal of educating them about GILAP, archaeology, and the functions of museums. Over the three days, eight youths participated in the program, held at both the Lagodekhi Museum and at GILAP's excavation house (**Fig. 32**).

The workshops each day comprised a lecture and hands-on experiments. During the first session, students were introduced to the discipline of archaeology, excavation techniques, and scientific dating analyses. Divided into pairs, they had a topographic map and had to choose a limited number of squares to survey, simulating what archaeologists do in real life. Next, the students were tasked with excavating their own "site": a box prepared in advance with different soil types, structures, and artefacts hidden in the sediment. They had to apply what they had recently learned in the lecture and excavate their box, paying attention to stratigraphy and record keeping.

On the second day, the students were exposed to three specialty topics: stratigraphy, museum theory, and an introduction to GILAP's work at Tsiteli Gorebi 5. Elena Rova led the lecture on Tsiteli Gorebi 5. Students also watched the animation called "Jack and Matrix", which was created in collaboration with the Italian Embassy of Georgia, about sites in Georgia excavated by the Italian archaeological expeditions.

Fig. 32. Students drawing pottery fragments at Lagodekhi Museum.

For the final day, students visited GILAP's expedition house. They visited each expedition member to learn about their work for the excavation, including artefact drawing, ceramic analysis, and artefact photography. The youth also had the chance to do a bit of work themselves; they washed and left out to dry the artefacts from that day's excavation.

The 2019 youth program headed by GILAP and the Lagodekhi Museum acquainted students with the current activities of the expedition and highlighted the collaboration between countries inherent in many archaeological expeditions. Students had the opportunity to participate in hands-on experiments and perform tasks normally completed by experienced archaeologists. The expedition hopes to continue the successful youth programs in the coming years in partnership with the Lagodekhi Museum.

Results and Future Perspectives

The second season of the "Georgian-Italian Lagodekhi Archaeological Project" confirmed the interest of the Lagodekhi region for a long-term project of archaeological investigation. Large-scale excavations at Tsiteli Gorebi 5 confirmed the presence, for the first time in the region, of rectilinear architecture of the Chalcolithic period, and allowed for a better understanding of the general layout of the settlement. Unfortunately, however, they also confirmed the limited thickness of the anthropic

layers, the extensive damage caused to it by Soviet-times and later mechanised agriculture, and the generally poor preservation of the Chalcolithic remains due to both soil and climatic conditions.

It also allowed to implement the assemblage of Chalcolithic artefacts (ceramics, lithics and worked bone material) recovered in 2018 for chrono-typological analysis aiming at a better contextualisation of Tsiteli Gorebi 5 within the Chalcolithic cultures of the Southern Caucasus, and to collect further samples for reconstructing the palaeoenvironment and subsistence economy of the ancient population and for absolute dating.

To the present stage of research, artefacts from the site look very similar to those from the other sites of the Tsiteli Gorebi cluster and would suggest a rough contemporaneity with them. This may indicate a pattern of occupation, as previously suggested for different Ceramic Neolithic cultures from Upper Mesopotamia to the Caucasus, where the same community occupies a small territory by settling in small, ephemeral and frequently shifting settlements. Other elements of continuity with the Ceramic Neolithic tradition can be seen in the presence of ditches, as well as in some features of ceramic production. All this would suggests a date in the early 5th millennium BC which, if confirmed by ongoing ^{14}C analysis, would allow to identify a previously unknown phase between the Ceramic Neolithic and the still elusive "Sioni Culture".

The next campaigns of the Georgian-Italian Lagodekhi Archaeological project will focus on better understanding the general settlement pattern of the Chalcolithic period in the Tsiteli Gorebi region by carrying out soundings at other sites attributed to the same general period with the aim of highlighting possible chronological differences and/or mutual relations among them. In particular, it is our intention to carry out some investigations at site LS023, where surface material suggests the presence of wattle-and-daub structures (*i.e.* built in a different building technique) associated with pottery and lithics at first sight resembling those from Tsiteli Gorebi 5. The survey campaign which is foreseen to take place in October-November 2019 will hopefully allow to highlight further topics of investigation, to be followed during the next field seasons.

Fig. 33. Group photo of the Georgian-Italian Lagodekhi Archaeological project 2019 Field season team.

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