

## **Report on the Activities of the Fifth Field Season of the Joint Shida Kartli Project (2013)**

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### **Introduction**

The fifth field season of the Shida Kartli project of the Ca' Foscari University of Venice (Italy) in cooperation with the Georgian National Museum (Georgia) took place from June 16th to July 31st, 2013.

The Italian team arrived in Tbilisi on July 16th, and reached the town of Kareli on June 18th. Excavation activities started on June 21st and were completed on July 27th. On July 30th, the team returned to Tbilisi. The Italian team was composed by: prof. Elena Rova (co-director, chief of the Italian group), Angelo Di Michele and Katia Gavagnin, PhD, Lorenzo Crescioli, PhD candidate, Martina Babetto, Mirko Furlanetto and Veronica Scandellari, MA, Annapaola Passerini, Erica Scarpa, and Laura Tonetto, MA students at Ca' Foscari University (archaeologists), prof. Giovanni Boschian, geoarchaeologist, drs. Matteo Massironi, Giovanni Monegato and Stefano Furlani, geologists, dr. Elisabetta Boaretto (Weizmann Institute of Science, Rehovot, Israel), C14 specialist, and Laura Mafizzoli (MA student in Anthropology at Ca' Foscari). Prof. Marilyn Kelly-Buccellati (University of Los Angeles) joined the team from 13/07/2013 until the end of the season.

The Georgian team included dr. Mindia Jalabadze (representative of the Georgian National Museum), Davit Darejanashvili MA (PhD candidate at Ca' Foscari University), and the following students in Archaeology at Tbilisi Ivane Javakhsishvili State University: Mariam Eloshvili, Saba Jokhadze, Tamar Shanghelia, Ketevan Bulukhia, joined for shorter periods by Tamar Meladze, MA, and Zviad Sherazadishvili, PhD candidate. 10 workmen from the villages of Doghauri and from the town of Kareli were engaged in the excavation; Mr. Emzari Tzulukidze and Mr. Rolandi Taniashvili drove the mission's minibus and took care of logistics.

The expedition received the visit of the following colleagues: dr. Zurab Makharadze (GNM) and prof. Marina Puturidze (Tbilisi State University), co-directors of the project; prof. Michael Vickers (Oxford University) and Mr. Davit Naskhidashvili, prof. Walter Kuntner (Innsbruck University) and his team, prof. Gregory Aresian (Cotsen Institute of Archaeology, UCLA, Los Angeles) and dr. John Kitiashvili (Khashuri Museum), and, on 25/07/2013, of the following television teams: Pirveli, Rustavi 2, Imedi, Maestro, 9th Channel.

During 15 days in the course of the campaign, a team from the Ilia Chavchavadze State University headed by prof. Iulon Gagoshidze and dr. Mindia Jalabadze conducted independent excavations on the Eastern section of the Late Hellenistic/Early Imperial building at Aradetis Orgora.

This year's activities of the Georgian-Italian archaeological expedition were the following:

- 1) Excavations at Aradetis Orgora (Dedoplis Gora);
- 2) Geoarchaeological and soil micromorphology analyses;
- 3) Archaeometric analyses and paleoenvironmental research, collection of samples for radiometric dating;
- 4) Completion of the geological survey of the Kareli district.

### **Excavations at Aradetis Orgora (Dedoplis Gora)**

Aradetis Orgora is a large site located in the district of Kareli, on the left bank of the Western Prone River, near the confluence of the latter with the Kura. The main mound (also known as Dedoplis Gora) (Fig. 1) has a roughly triangular shape with quite steep sides, and is approximately 70-80 m long and 34 m high on the present level of the river.



Fig. 1. View of the Aradetis Orgora (Dedoplis Gora) mound, from NW.

It had been repeatedly investigated, since 1926, by different Georgian teams. Regular excavations have been carried out at the site, since 1985, by prof. Iulon Gagoshidze of the Georgian National Museum (see Gagoshidze et al., *Iberia and Rome*, Langenweißbach 2008). They have revealed the ruins of an important palace of the Late Hellenistic-Early Imperial age, which occupied the present top of the mound. According to the previous excavators, the archaeological levels at the site amounted to a maximum thickness of 14 m, and included remains of the (Chalcolithic), Early Bronze, Late Bronze, Early Iron, Hellenistic, Roman Imperial and Early Medieval periods. River erosion on the SW side of the mound produced an exposed section, which revealed an imposing sequence of layers spanning from the 4th to the 1st millennium BC.

The main aim of the 2013 excavation at the site was to verify the settlement's occupational sequence, the extension of its pre-classical occupation and the state of preservation of the earlier (especially of the 3rd and 4th millennium BC) levels and, at the same time, to obtain a corpus of stratigraphically secure artefacts and ecofacts from the different occupational phases of the site. In order to accomplish these aims, two different soundings were opened at the opposite sides of the mound (Fig. 2).

The first one (Field A) was located on the South-Western slope of the mound, at a point where this was especially steep, and where in situ Early Bronze material (notably Kura-Araxes and Bedeni pottery) were noticed on the exposed section on the occasion of a visit to the site by the expedition team in 2009. It consisted of a 5 x 5 m quadrant (097.100d) which was progressively enlarged in S direction, as excavation proceeded, to part of a second 5 x 5 quadrant (097.099b). The excavation of three additional quadrants (097.100a, b, and c) had been planned, but had to be abandoned soon after its beginning because of the presence of substantial remains of the Late Hellenistic/Early Imperial palace, which could not be removed.

The second sounding (Field B) was situated on the Eastern mound's slope, and consisted of a sequence of four 5 x 5 m squares (103.099d, 104.099b, d and 105.099b), oriented in East-West direction, in the area outside of the Hellenistic period palace. On this slope, surface material was very scanty, so the first aim of the investigation was to verify the presence and extension of the pre-Hellenistic occupation.

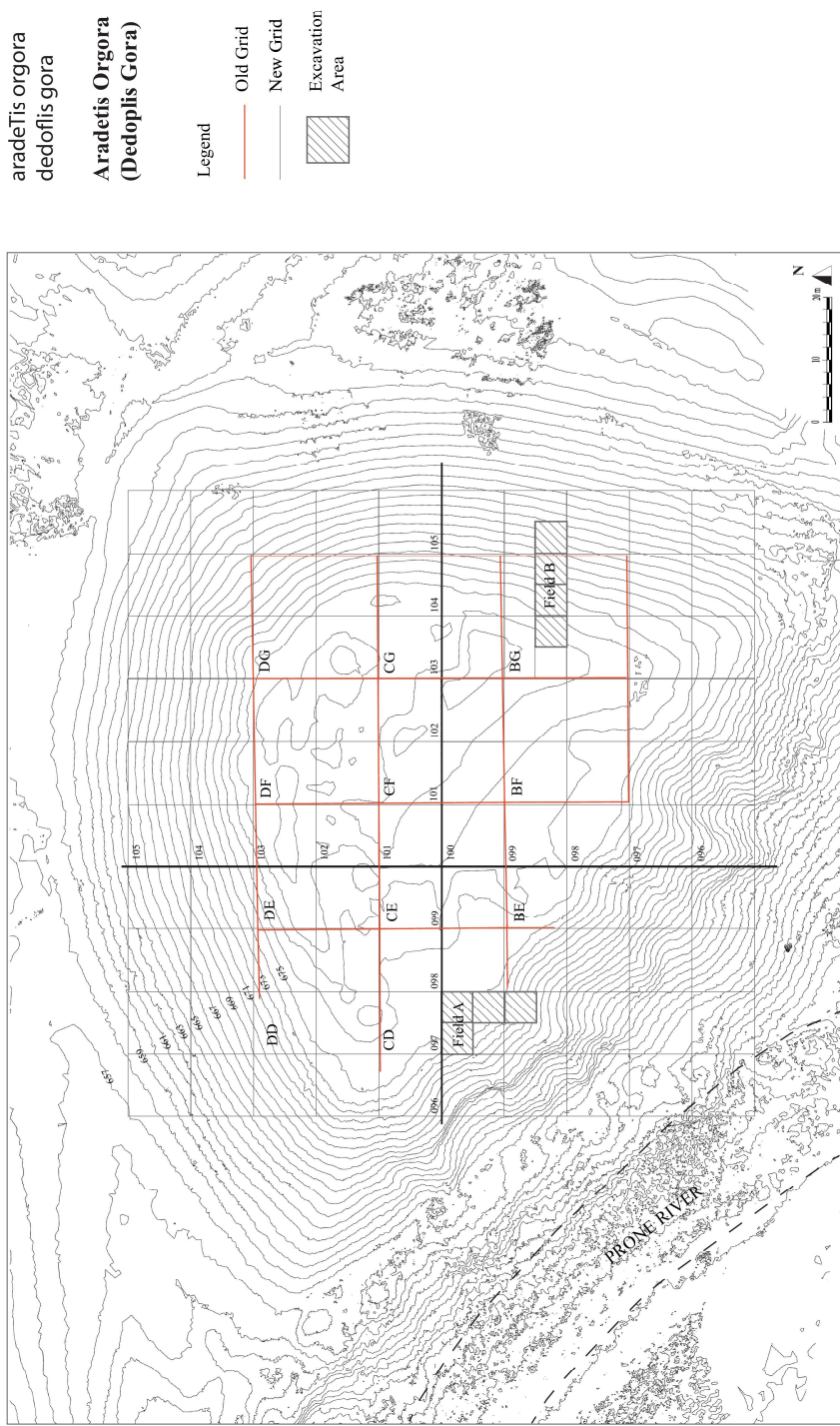


Fig. 2 Contour map of the Aradētis Orgora mound with excavation areas highlighted. New excavation grid (Georgian Italian Shida Kartli expedition) in black, old excavation grid (I. Gagoshidze's excavations) in red.



## Field A

The depth of archaeological layers investigated in Field A amounted to more than 3.00 m, from 672.50 m a.s.l. - this corresponded to the bottom of the Late Hellenistic palace investigated by the Georgian expedition, of which the base of one of the courtyard's pillars was cleaned in quadrant 097.100b - to 669.20 a.s.l. A total of 6 main occupational layers were investigated, spanning from the Hellenistic to the Late Bronze period.

During the Iron Age, the investigated portion of the mound was occupied by a thick sequence of horizontal surfaces belonging to open spaces paved with grit or small pebbles or plastered with mud, sealed by thicker pebbles layers, with only scanty remains of stone or mud-brick walls and installations (see Fig. 3, N section). A considerable number of pits, most of them for cereal storing judging from the large amounts of charred seeds which were recovered inside them, concentrated in the Southern part of the excavated area, near the present eroded slope.

The transition between the Late Bronze and the Iron Age period is marked by a significant discontinuity in the occupational sequence of this part of the mound, which corresponds to an eroded sloping surface covered by an up to 1 m thick layer of small pebbles (locus 1258, 1262, Fig. 3). Future analysis of the stratified pottery from the area, coupled with a sequence of 14C dates from the same levels, will offer the possibility to obtain a reliable ceramic sequence for the Shida Kartli region in the late 2nd and 1st millennium BC, to be compared, e.g., with that of the neighbouring settlement of Khovle Gora, for a better defining of the Late Bronze/Early Iron Age transition in the area.



Fig. 3. General view of quadrant 099.100d, with Iron Age levels visible in the N section; pebble layer 1258-1262 in the W section, Late Bronze Level 5 in the background, and slope 1361 in the foreground.











არადეთის ორგორა  
დედოფლისგორა

Aradeti Orgora  
(Dedoplist Gora)

Field A

Level 1 Hellenistic

Legend

-  = Stone
-  = Brick wall
-  = Pottery
-  = Pit
-  = Wood remains
-  = Limit of Square
-  = Limit of Quadrant
-  = Limit of Excavation

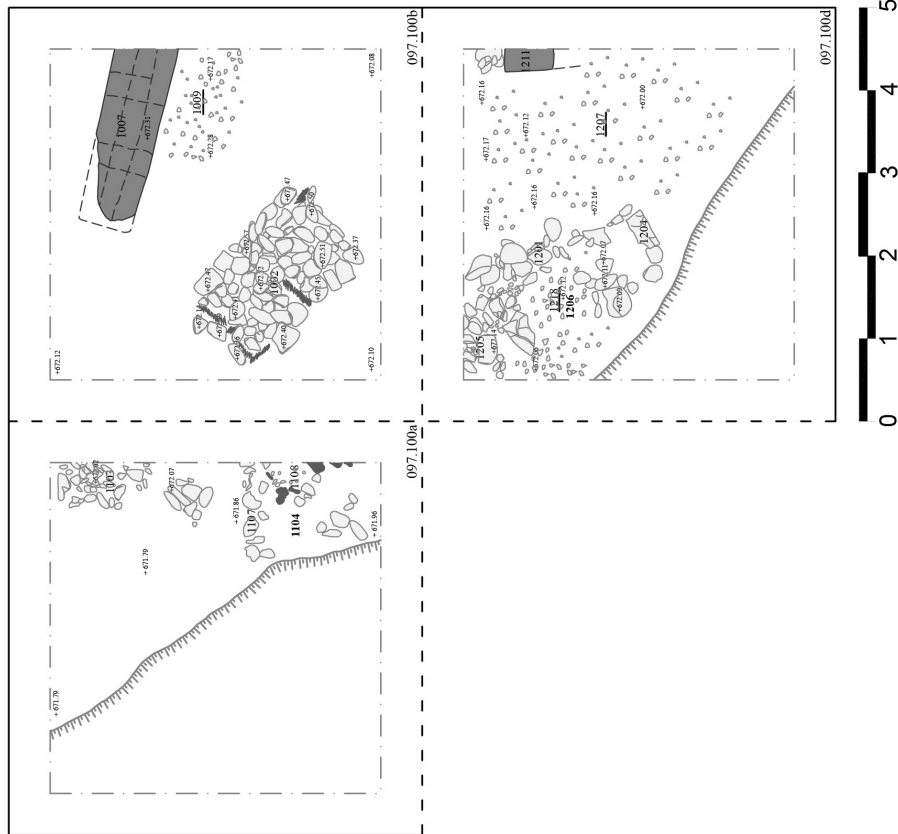


Fig. 4. Field A, plan of Level 1 (Hellenistic period).

The latest level (Level 1) dates to the Hellenistic period, previous to the construction of the Palace excavated by the Georgian mission. It was partially exposed over three 5 x 5 quadrants (Fig. 4) and consisted of an open area paved with small pebbles and grit, with partially preserved rooms oriented in NE-SW direction delimited by stone walls (loci 1104, 1206) and scanty remains of mud-brick walls.

The following levels (2 to 4) have been attributed to the Iron Age, preliminary attributions to different phases of the latter being only tentative at this stage of the analysis. They have been excavated over a 5 x 5 m surface, corresponding to quadrant 097.100d.

Level 2 (Fig. 5) has been provisionally dated to the Achaemenid/Early Hellenistic period. During this phase, the excavated area was crossed by a grit and pebbles-paved path (locus 1263) running in NW-SE direction, on both sides of which there were a number of grain-filled pits. The bottom of the level was marked by a thick layer of pebbles which covered the whole area. The layout of the area at the time of Level 3 was similar to that of Level 3: a central area, sparsely paved with sherds and pebbles and oriented NW-SE, was flanked on both sides by a large number of storage pits.

Another layer of pebbles separated Level 3 from Level 4. This was tentatively attributed to the earlier Iron Age (10th-8th centuries BC ?) and showed at least two different phases. During the later one, the North-Eastern E portion of the quadrant was occupied by a clay floor covered by a thin layer of burnt soil. Two different firing installations were lying on this floor: the first one (locus 1299) consisted of a small mud-brick ring, while the second one, which reused some stone walls belonging to the earlier phase, was used as a kiln, to judge from the large amount of slags which were recovered in its filling.



Fig. 5. Field A: Quadrant 097.100d, general view of quadrant with pebble-paved path 1263 and pits (Level 2), from E.



The South-Eastern part of the quadrant was occupied by a large number of pits cutting each other; an irregular alignment of stones appear to have divided the two areas.

During the earlier sub-phase, divided by another pebble layer from the later one, the area had a similar layout; the North-Eastern portion of the quadrant was occupied by the corner of a room with stone walls (1305), which was later re-used as a firing installation. Some ephemeral mud-brick walls appear to have been connected with this room; the North-Western part of the quadrant was occupied by a simple clay surface, and its whole southern part, similar to the later phases, by a large number of pits.

Level 4 was the earliest level attributed to the Iron Age. As we anticipated, it was underlain by an extremely thick layer of pebbles (locus 1358-1362), which marked a complete discontinuity in the area's occupational sequence and was not even disturbed by any later pit. The top of the pebble layer was horizontal, while its bottom was heavily sloping both toward the South and the East, and covered what we interpret as an old surface of the mound (1361) which, to judge from the smooth appearance of its top, must have remained exposed for a considerable lapse of time.

Surface 1361 sealed a sequence of successive levels belonging to the Late Bronze Age. Two of these were exposed on a limited surface on the top (Level 5) and, respectively, on the bottom (Level 6, Fig. 6) of the slope. It is to be expected that additional LB layers will be discovered between Levels 5 and 6, after the former will be excavated next year (Fig. 7).

Level 5 yielded four mud-brick walls oriented in slightly NW-SE direction. Level 6 had two different sub-phases: the upper one yielded a complete room of squared shape with mud-brick walls (space 1393), measuring ca 2.00 x 2.00 m, while the second one was characterised by substantial stone walls originally covered with mud-bricks (1388, 1402, 1401, 1406), the continuation of which is still covered by surface 1361.



Fig. 6 Field A, quadrants 097.100d, 097.099 b, general view of quadrants with Level 6 (Late Bronze) remains, from N.



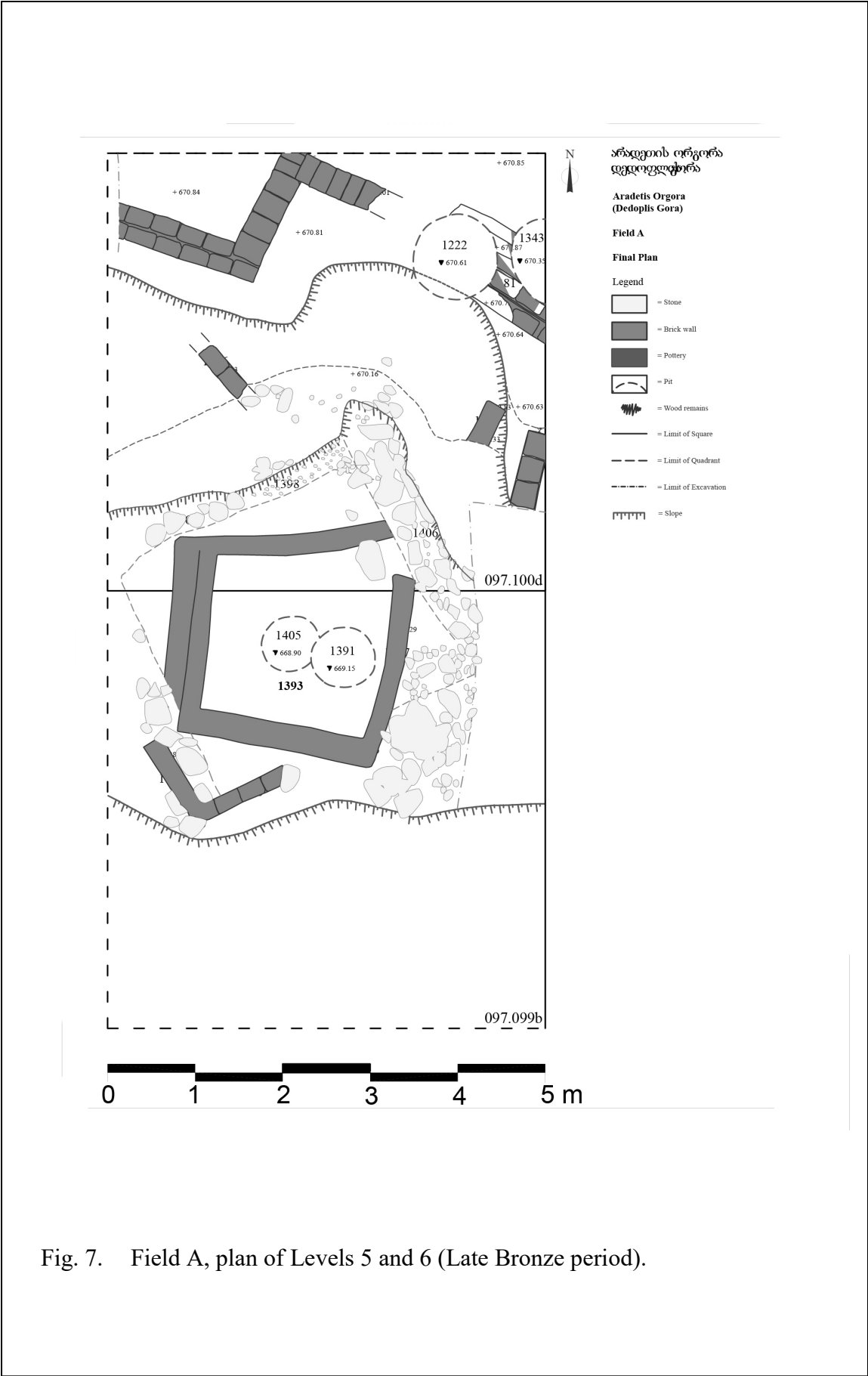


Fig. 7. Field A, plan of Levels 5 and 6 (Late Bronze period).

Excavation in Field A stopped at alt. 699.20 a.s.l. To judge from preliminary observations of the exposed section of the Prone River, virgin soil in the area would lie about four meter deeper, the earliest levels which have been hitherto recognised belonging to the Kura-Araxes period. The task for the next excavation campaign, which is foreseen for June/July 2014, will be to excavate the rest of the Late Bronze and the Early Bronze (Bedeni and Kura Araxes) levels, and to verify the possible presence of still earlier occupational layers.

Among the most significant finds from Field A, especially interesting is the head of a small terracotta figurine of very fine manufacture (1366-M-1, Fig. 8) coming from an Iron Age pit.



Fig. 8. Head of ceramic figurine from Iron Age pit in Field A.

## Field B

Since the slope on the Eastern side of the mound was less steep than on the Western side, a different excavation strategy, namely that of a "step trench" was adopted in order to reach the earlier levels. The top of the excavation area lay at alt. 676.65, its bottom at alt.: 665.65, corresponding to a total depth of excavated layers of 11 m (Fig. 9).

Excavation of the first "step" (quadrant 103.099d) was stopped after exposing the top of the remains (burnt brick collapse and top of collapsed stone walls) of the Late Hellenistic/Early Imperial palace, which will be excavated by the Georgian team in the future.

The collapsed walls of this building extended also in the Western part of the next quadrant (104.099b), which was abandoned for the same reason. Under the Hellenistic/Early Imperial layer, in the Eastern part of the quadrant, a succession of late (?) Iron Age external surfaces (2012, 2015, 2019), interspersed with pebble layers was brought to light. These were underlain by an up to 1.95 m high sequence of pebble layers (locus 2036), underlain by a layer of reddish clay (locus 2038), at the level of which excavation stopped.

In the following quadrants, the whole surface of the mound under the humus layer was covered by a layer of small pebbles, at least partially deposited by slopewash activity, the origin of which is most probably connected to layer 2036 described above. Under these, in quadrant 104.099d a sequence of horizontal surfaces with scanty architectural remains (mud-brick and stone walls), separated by pebble layers was brought to light, which according to the recovered pottery date back to the earlier (?) Iron Age (see Fig. 10). The earliest of these layers appears to have been cut, possibly in connection with the construction of the large stone wall (2202) located in the next quadrant 105.099c, the filling of which continues in the Eastern half of 104.099d.

The most interesting results came from the last quadrant of the sequence, 105.099c. Here, a huge stone wall (2202, bottom alt.: 668.27) running in NS direction, which we tentatively attribute to the Early Iron Age, was unearthed just under the subsurface soil. The Eastern face of the wall was made of squared blocks of sandstone, ca 50 cm wide and more than 20 cm high, and its filling consisted of large pebbles, which continue into adjacent quadrant 104.099d. Wall 2202 overlay the partially collapsed remains of stone constructions (walls 2210, 2211 etc.), up to 1.20 m high, which according to the pottery recovered in them can be attributed to the Late Bronze Age. These has been built on an ancient slope of the mound (locus 2215), which to judge from its smooth appearance had been exposed for a certain amount of time, and had partially collapsed over the latter. The foundations of the Late Bronze structures, which continue in the unexcavated area covered by wall 2002 and could therefore not be completely excavated, deeply cut into the levels sealed by surface 2215.

These consisted of a sequence of thin compacted occupational layers dated to the Kura Araxes period (early 3rd millennium BC). In the first of these, only scanty remains of collapsed mud-bricks and/or wattle-and daub structures could be identified, while the second one yielded two small rooms delimited by thin mud-brick walls. These were lying on a thick white-plastered surface (locus 2236), which was in its turn underlain by a floor of small pebbles (locus 2238). The last layer excavated in this area yielded two thick pisé walls (2242, 2243), which formed a right corner; the space between them was filled with grey ashes.

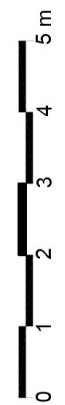
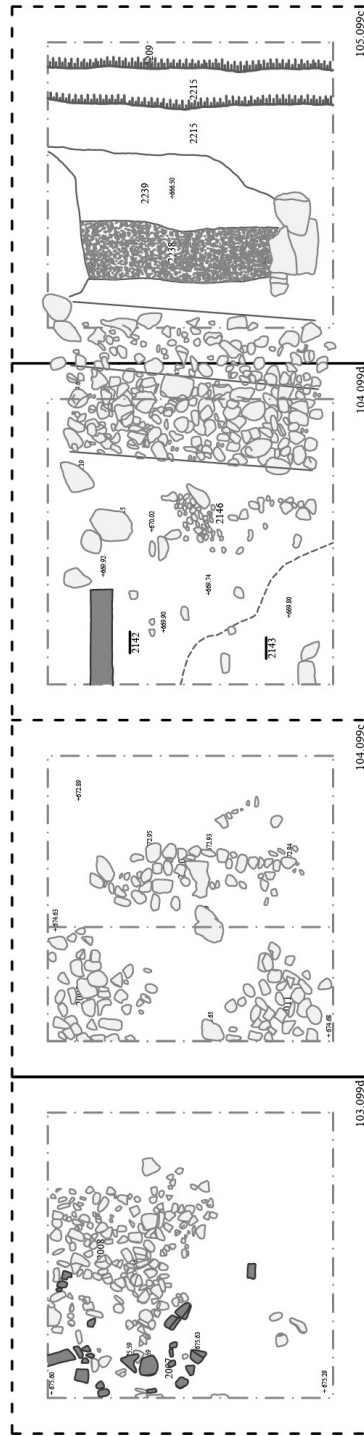
Finally, it is to be mentioned that a few out of context Bedeni sherds were also found in this quadrant, mostly among the collapse of the Late Bronze structures.



არადეტის ორგორა  
 Aradētis Orgora  
 (Dedoplist Gora)  
 ანჯაფრის ორგორა  
 Anjafris Orgora

Field B

Final Plan



- Legend
- = Stone
  - = Brick wall
  - = Pottery
  - = Pit
  - = Wood remains
  - = Plaster
  - = Limit of Square
  - = Limit of Quadrant
  - = Limit of Excavation
  - = Slope

Fig. 9. Field B. General plan of excavated area (final state of excavation).



Fig. 10. Field B, View of the W section of quadrant 104.099d.



Fig. 11. Field B, view of the W section of quadrant 105.099c, with wall 2202 on top, Late Bronze walls in the centre, Kura Araxes levels in the lower part.



## Conclusions

In conclusion, the 2013 investigations at Aradetis Orgora proved beyond doubt the existence of well preserved 4th-3rd millennium BC levels, overlain by a sequence of levels of the 2nd and early 1st millennium BC, at least over the whole South-Western and Eastern sides of the present mound, and thus confirmed the supposed importance of the site as a regional centre since at least the end of the Late Chalcolithic period. It is also to be underlined that the site has provided evidence for still earlier human frequentation, as shown by two stone tools, possibly dating back to the Palaeolithic period, one of which has been reused in a pebbles floor of the Kura-Araxes period in Field B, and the second one (Fig. 12) was casually discovered in the E slope of the mound.

This rare situation offers very promising opportunities for future investigations at the site, which undoubtedly has the potential to become a key-site for the archaeological periodisation of the Shida Kartli region, the only difficulty being the thickness of the later levels which should be removed in order to investigate the earlier ones on a wider surface.

Our aims for the next (2014) season are therefore:

- 1) to continue excavation in Field A until reaching the virgin soil.
- 2) to expand the excavation area in Field B by a) opening a new quadrants (105.099d) in E direction, in order to reach the virgin soil in this area, and b) opening two new quadrants N and/or S of 105.099d, in order to increase the exposed surface of the early 3rd millennium layers excavated there.
- 3) To deepen excavation in the upper quadrants of Field B, with the aim of reaching the Early Bronze layers there.
- 4) Finally, we do not exclude to investigate a small area between the Aradetis Orgora settlement and the new highway trench, to the N of the former, with the aim of excavating some Kura-Araxes graves.



Fig. 12. Stone palaeolithic (?) tool from the Eastern slope of the Aradetis Orgora mound.



## **2) Geoarchaeological and soil micromorphology analyses**

Geoarchaeological studies were started on the Aradetis Orgora mound site in 2013 under the supervision of prof. Giovanni Boschian (University of Pisa). The main aim of these studies is to elucidate the influence of past human activities on sediment production and deposition and on the site formation processes, in order to understand the use of the site and of the surrounding areas.

Geoarchaeology and deposit stratigraphy are powerful tools in assessing the sequence of natural and anthropogenous processes that formed the archaeological sequence, and contribute to the assessment of the relative chronological framework of the site. The soil micromorphological technique can be applied in order to find clues to these issues, because several types of traces of human activity can be put into evidence at microscopic level, including ash, phytoliths, dung remains, trampling, etc.

In 2013, the work was focused mostly on three aspects:

- assessment of the general geological framework of the site, by the identification of the characteristics of the bedrock, and on its influence on local geomorphology. Large part of fieldwork was devoted to this aspect, because the archaeological sequence is still short, mostly including recent occupation phases, and the sounding-like strategy applied to the excavation has not put into light significant activity areas.
- geoarchaeological examination of the sediment sequences in areas A and B, with identification of the macroscopic characteristics of the sediments, description of the lithology of the lithostratigraphic units and stratigraphic control over the different steps of the sounding in area B.
- micromorphology of floor construction and use, mostly as indicators of possible differences in site use between the various occupation phases. In this perspective, some prepared floors were sampled, with special attention to a precise determination of their age and cultural attribution, in order to compare them to similar installations of other sites (basically Natsargora, sampled in 2011-2012) and of other cultural phases.

Floor sequences were sampled within excavation area A of the site, where the stratigraphic relationships are clearer and the installations found can be easily attributed to distinct activities. Samples for micromorphological analyses are usually undisturbed sediment blocklets approximately 9 x 6 x 6 cm that are carved out from excavation profiles or surfaces. The preparation of the samples is carried out in specialised laboratories; after thorough drying, the monoliths are impregnated by polyester resin at low pressure, cut into slices by diamond disks, polished by corundum abrasive and glued on microscope slides. Their thickness is then reduced to 30 micrometres by grinding on corundum. The slides are finally covered by a thin glass slide. These thin sections can be observed under a standard polarising microscope and described following standard procedures.

## **3) Archaeometric analyses and paleoenvironmental research, collection of samples for radiometric dating**

Animal bones from the excavation at Aradetis Orgora were analysed by Veronica Scandellari. The analysis done upon the animal findings consisted in preliminary observations of the animal bones both on the field and in the house laboratory. The bones were washed, restored, photographed and then recognised by direct observation (A. Von Den Driesch, A guide to the measurement of animal bones from archaeological sites”, Peabody Museum Bulletins, 1, Harvard University, 1976), paying special attention to the possible presence of cut and bite marks on the surface of the bone, with the aim to recognise anthropic activity.

When possible, measurements were taken using the guide edited by the Peabody Museum of Archaeology and Ethnology; for teeth findings, special analyses concerning the dental wear stage were made, with the aim to identify the class age of the animal at death.

In general, the samples consisted in small and medium amounts of small and medium fragments of bones, in a bad condition of preservation. Some contexts yielded large amounts of fragments and/or large complete findings, but those cases represented a minority of the total sample. The surface of the bones was generally very eroded, and presented wide crackings, due to high weathering incidence on the preservation. The majority of the fragments from the top levels showed also evidences of burning and they were usually covered by thick layers of ashes.

Faunal analysis revealed the presence of the usual domestic species of the area (*Ovis/Capra*, *Bos*, *Sus*, *Cervus*, *Lupus*, *Lepus*, *Equus*), with some exceptional cases of unusual animals: rodents (*Mus/Sorex* and possibly *Castor*), birds (in particular an individual of Mute Swan, *Cygnus olor*) and amphibious (possibly frogs, *Rana*). Three human bones (a first and a second phalanx from left hand, and a left scapula) were also recognised, but their presence is difficult to interpret because of their sporadic nature.

The presence of the various species by the numerical representation is the following:

- *Ovis/Capra*;
- *Sus*;
- *Bos*;
- *Cervus*;
- *Lupus*;
- *Lepus*;
- Rodents;
- Birds;
- *Equus*;
- Amphibious.

Because of the very damaged conditions of preservation of the animal bones, and of the scarcity of measurements it was possible to make, it is for the time being impossible to outline a diffusion scheme of the animal presence at the site: deeper analyses will be necessary to accomplish this aim.

Charcoaled wooden beams and other kind of charcoaled *fragments* were sampled in order to recognise the plants used for buildings and fuel, with the aim to reconstruct the ancient environment surrounding the site. Seeds were collected and delivered at the end of the excavation season to Dr. Nana Rusishvili (GNM), who will analyse them in the course of the following year, while other vegetal remains (charcoals, wood fragments), as well as shell fragments, were exported to Italy in order to be analysed there. Sequences of samples for palinological analyses were collected from the sections of the two excavation fields and delivered to Dr. Eliso Kvavadze (GNM), who will take care of their analysis.

Samples for archaeometric analysis of pottery of different phases (Hellenistic-Roman, Iron, Late Bronze and Early Bronze), obsidian and metal samples from different layers were collected to be analysed in Italy.

Samples for 14C analysis from Aradeti Orgora were collected on the field by Elisabetta Boaretto during one week and, before and after her departure, by the team's archaeologists. All of them will be analysed at the Weizmann Institute of Science, Rehovot, Israel. In addition, on the occasion of her visit to the Archaeological Centre of the Georgian National Museum in Tbilisi, Elisabetta Boaretto collected some 14C samples from monumental barrows (kurgans) of the Early Kurgan period excavated by Georgian expeditions.

## 5) Completion of the geological survey of the Kareli district

Drs. Matteo Massironi, Giovanni Monegato and Stefano Furlani completed the geological survey of the area surrounding the site of Aradetis Orgora, which had been started during the previous campaigns.

The site is situated near the junction of the rivers Kura, Eastern Prone and Western Prone. In particular, it is located on a mound isolated from the surrounding river terraces, which are presently delimited by the course of the Western Prone river, and by two deep incisions oriented in N-S and E-NE directions. The first of them represents the Eastern limit of the site, and is presently not occupied by any water course, while the second one, on its northern site, is occupied by a small stream, which originates from a number of small springs situated along the above-mentioned paleo-incision.

During the 2103 season, the site and the surrounding area have been the object of a survey, which allowed to establish the stratigraphy of the outcropping succession. A detailed analysis was also performed on the open trench for the new highway located ca 500 m to the NW of the site. A useful exchange of data and information took place with the team of geologists from Ilia State University of Tbilisi, who provided us with high-resolution seismic profiles of the site and detailed DTM. Finally, explorative surveys in adjacent areas were also performed, as well as statistical counting of the pebbles from the present neighbouring rivers (Kura, Western Prone, Eastern Prone e Liakhvi), in order to compare these deposits with the sandy and pebbly layers outcropping at the site and in its immediate surroundings.

The analyses have highlighted the presence of a quite complex geological history of the area which, due to intense tectonic activity, witnessed to significant phenomena of river migration during the late Quaternary. At the site in particular, petrographic analysis has shown that the gravel body on which the ancient settlement was founded belongs to the Liakhvi river. These deposits lie on a sandstone substratum ascribed to the Miocene. A similar sedimentary body crops out in the terrace located to the East and on the top of the terrace located to the NW of the site. The stratigraphy of the latter terrace is more complex, due to the presence of a fault corresponding to the location of the ENE-WSW incision, which is responsible for a ca 5 m displacement of the Miocene sandstones in comparison with those at the base of the Aradetis Orgora main mound. The Miocene sandstones of the NW terrace are overlain by ca 5 m of gravels, the composition of which is comparable with those from the Western Prone River, and by ca 1.5-2 m of light-coloured carbonate silt, inside which deformed fossilised roots have been found. The sequence is closed by the Liakhvi river gravel body.

In the highway trench the gravel body of the NW terrace is only 2 m thick in the S portion, but its thickness increases significantly moving toward the N along the trench, where it reaches a maximum depth of 10 m. The gravel unit of the terrace can be attributed to the Western Prone River. The presence of a well developed soil with a calcic horizon on the surface indicates that the age of these deposits is almost certainly older than that of the fluvial units outcropping at the Aradetis Orgora site.

Structural analysis confirmed the presence of the above mentioned fault near the site (this is also visible in the seismic profiles by the Ilia S.U. team) and, along the highway trench, of a number of deformations both in the Miocene units and in the Quaternary deposits. As indicated by the direction and geometry of the faults, the deformations observable near the sites can be attributed to the southwards propagation of the front of the Greater Caucasus range. The analysis of surface morphology, thanks to the detailed DTM, showed how the incisions surrounding the site are probably related to the erosion connected to a local ephemeral drainage originating to the N, which must have taken place after the migration of the Liakhvi River to the East, that caused the abandon of this reach.



The difference in elevation between the creek originating from the springs near the site and the present course of the Western Prone is mostly due to fault displacement. It is therefore to be excluded that the incisions have been artificially deepened by the ancient site's inhabitants.



Fig. 13. View of the left cliff of the Western Prone River and of the Aradetis Orgora site; notice how the Miocenic sub-stratum in the foreground is very high, while in the background, on the mound's slope, it is present only near the river.

## Acknowledgements

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