REPORT ON THE SECOND SEASON OF EXCAVATIONS AT GIRDI QALA AND LOGARDAN

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EDITOR

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'FROM VILLAGE TO STATE IN THE NEAR AND MIDDLE-EAST'
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The site of Logardan, from the West - at the top, Trench D in excavation (October 2016).

DIRECTORATE OF ANTIQUITIES OF SOULEYMANIEH
GENERAL DIRECTORATE OF ANTIQUITIES OF KURDISTAN REGIONAL GOVERNMENT

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Introduction

Régis Vallet

The second campaign of the archaeological mission to Girdi Qala and Logardan (fig. 1) lasted from 25 September to 25 October, 2016, through five weeks of fieldwork. The team, under the responsibility of Régis Vallet (CNRS/University of Paris 1), gathered 17 researchers and engineers from France, Belgium, Italy, Syria and Iraq (by alphabetic order): Rateb al Debs (archaeologist), Adel Hama Amin (Directorate of Antiquities of Souleymanieh, epigrapher and archaeologist), Johnny Samuele Baldi (IFPO, archaeologist and ceramologist),

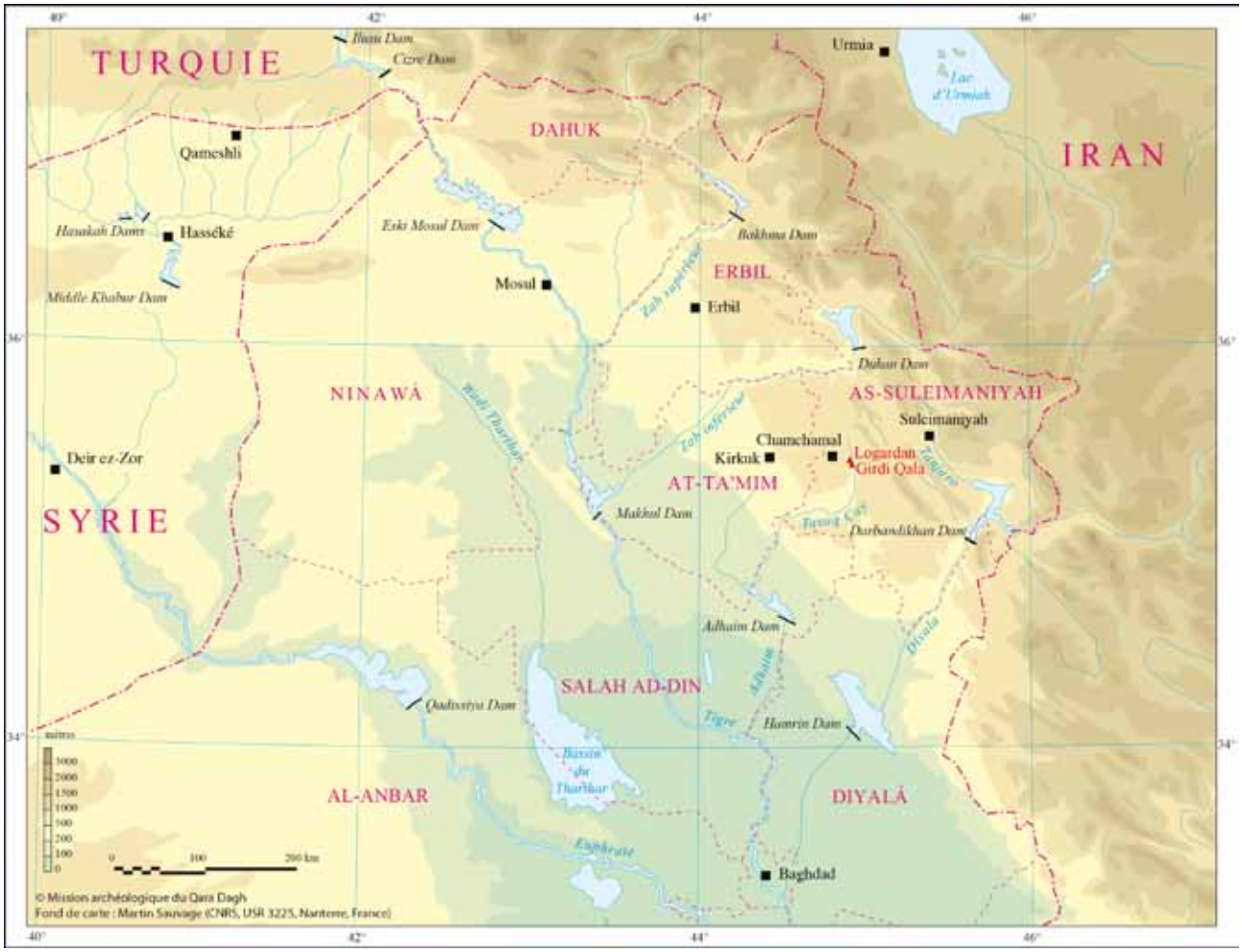

Fig. 1 - Map of Nothern Irak showing the localization of the sites.

Victoria de Casteja (CNRS, database expert), Laurent Colonna d'Istria (University of Liège, epigrapher and archaeologist), Lionel Darras (CNRS, geophysicist), Elise Devidal (drawer), Alisée Devillers (University of Liège, archaeologist), Hawzen Jalaj (Museum of Sulaymaniah, archaeologist), Micheline Kurdy (architect), Hugo Naccaro (University of Paris 1, archaeologist), Clélia Paladre (University of Paris 1, archaeologist), Kamal Rahoof (Directorate of Antiquities of Soulaymaniah, archaeologist), Bahra Salah (Museum of Sulaymaniah, archaeologist), Martin Sauvage (CNRS, archaeologist) and Melania Zingarello (University of Roma La Sapienza/Paris 1, archaeologist and ceramologist) (fig. 2). Mustafa Ahmad (IFPO/

Fig. 2 - Part of the team of the 2016 season (from left to right): Régis Vallet, Elise Devidal, Rateb Al-Debs, Bahra Salah, Johhnny Samuele Baldi, Laurent Colonna d'Istria, Alisée Devillers, Mélania Zingarello, Micheline Kurdy, Martin Sauvage, Victoria de Casteja, Clélia Paladre, Hugo Naccaro.

University of Lyon 2, archaeologist and ceramologist) joined us later on for a short study season. The logistic team was composed by Saleh Fatiah (Directorate of Antiquities of Souleymanieh, driver), Hallo Wasie Karim (cook), Faizulla Abdullah Muhammad (driver) and Jamal Jalal Muhammad (sites and storage keeper). The whole team was accommodated in the city of Chamchamal, close to the sites, few kilometers to the south-east (fig. 3).

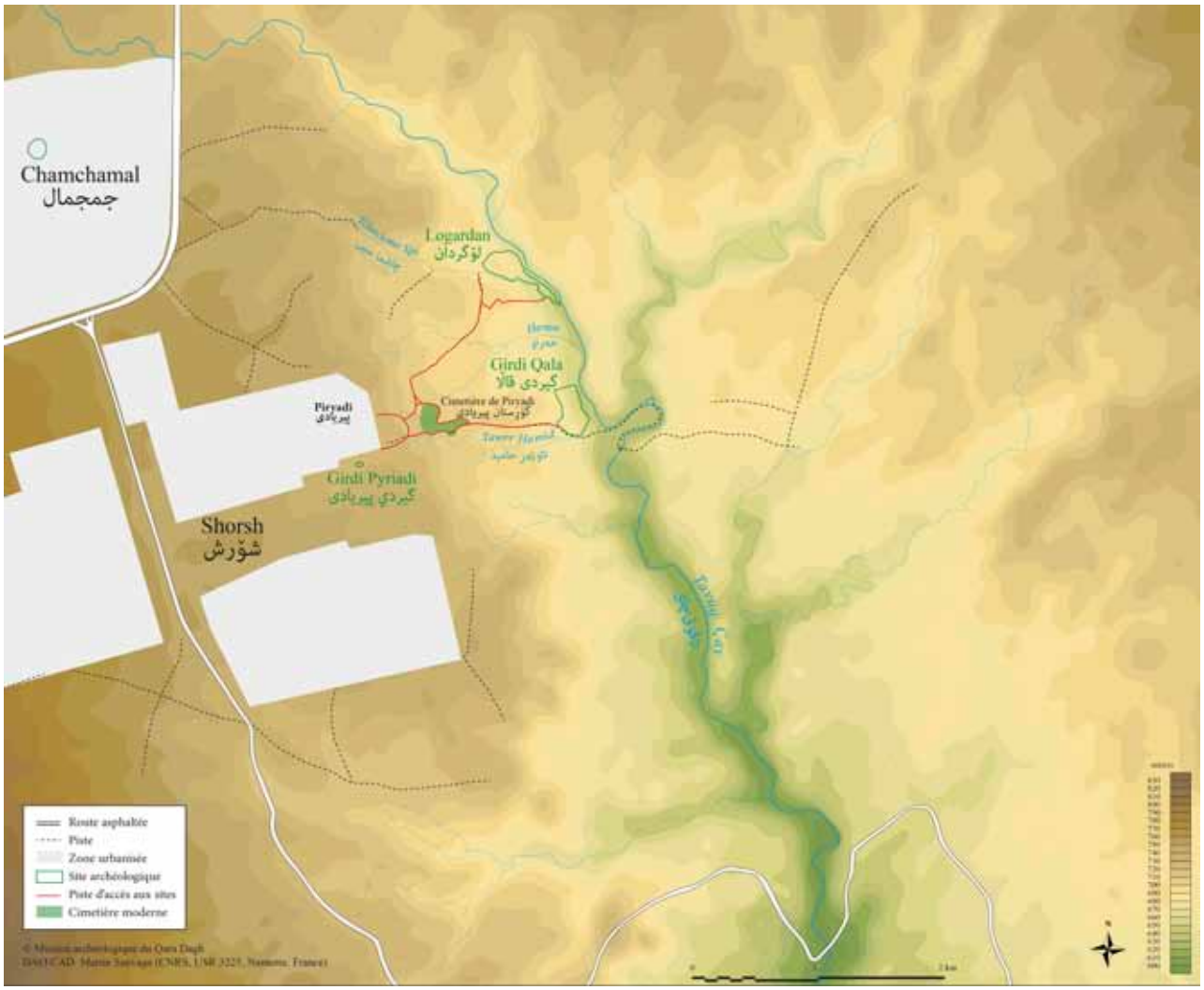

Fig. 3 - Map of the upper Tavuq Cay Valley..

Excavation on the sites of Girdi Qala and Logardan started in fall 2015, after two brief surveys in 2014 and 2015. The scientific purpose of this new project is to study the formation of complex societies, the appearance of territorial polities and long-term intercultural processes. Indeed, despite recent developments (Kopanias and MacGinnis 2016), southern Kurdistan remains poorly documented. The project is more specifically focused on the Chalcolithic, following on from our previous work at both ends of the Fertile Crescent, at Tell el 'Oueili in southern Iraq and Tell Feres in northern Syria, and on the Bronze Age, two periods for which the redefinition of cultures on a regional basis is a major issue[1]. The main goal of the first campaigns was to begin to establish the sequence of the sites, by excavating well-preserved in

1. For an extensive presentation of the problematics of the project, see our 'scientific proposal'. The project is funded and supported by several institutions. In France, these are mainly the 'Commission des fouilles' (Excavations committee) of the Ministry of Foreign Affairs (MEAE), but also the CNRS, Paris 1 University and the IFPO, and in Belgium the University of Liège. We would like to express our warmest thanks to our Kurdish partners, the DGA in Erbil, above all to Kamal Rasheed and his team at the Directorate of Antiquities of Souleymanieh, whose continuous support was greatly appreciated by all of us. We wish to thank Adel Hama Amin, Kamal Rahoof and Bahra Salah who were precious collaborators at all times. Lastly, we are very grateful to the authorities of Chamchamal and Shorsh for their support, the people of Chamchamal for their friendly welcome and, last but not least, the 15 fine workers that we were able to recruit there.

situ levels. In 2016, at both sites, after a geophysics and archaeological survey, we opened or reopened two trenches[2].

At Girdi Qala (fig. 4), at the top of the main mound (15m), we abandoned Trench A that gave inconclusive results to concentrate the work on the long-term stratigraphic objectives of Trench B (L. Colonna d'Istria and A. Devillers). Trench B was enlarged over 50 sq. m and

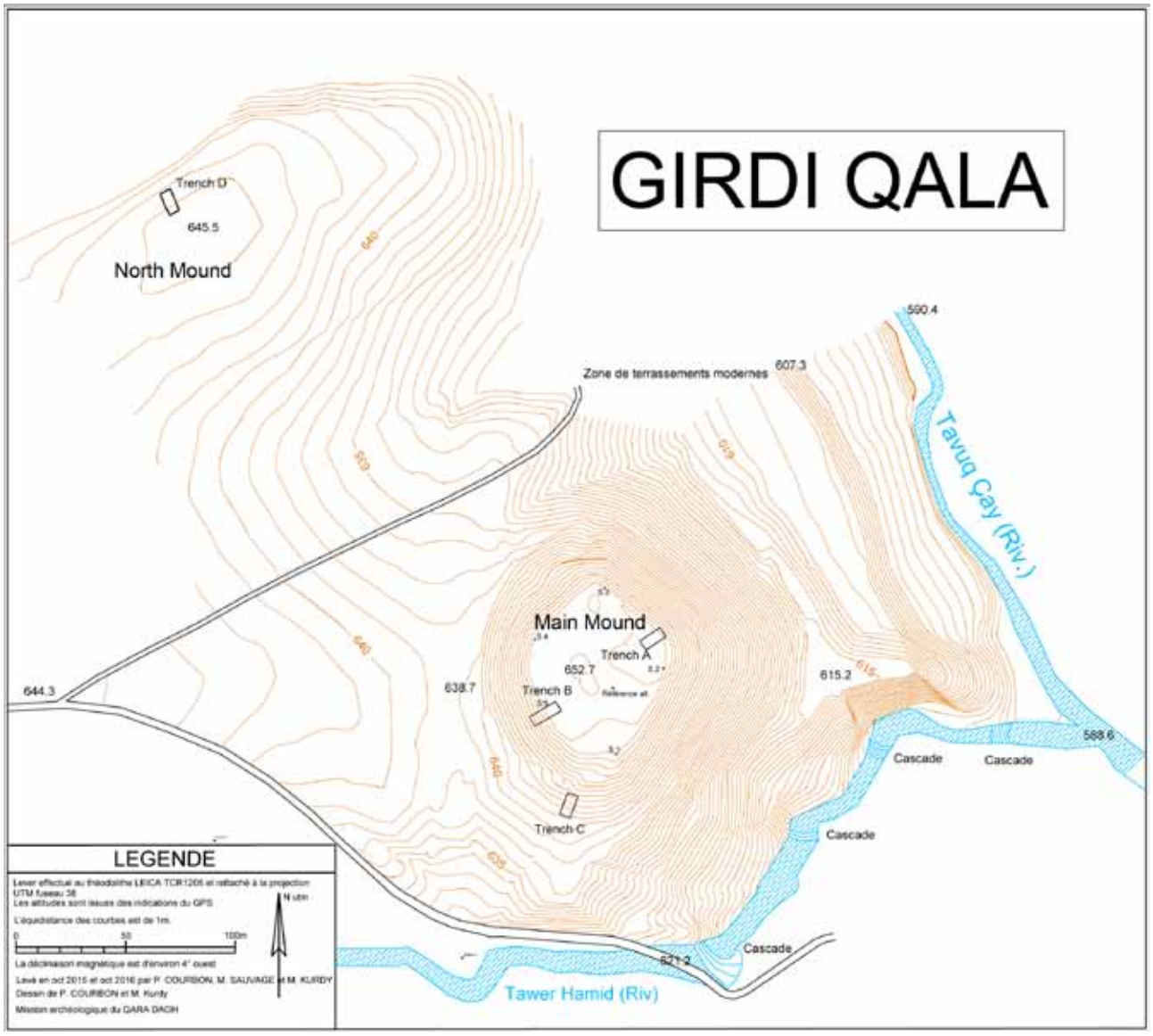

Fig. 4 - Topographical map of Girdi Qala.

excavated to a depth of two meters that delivered six successive Islamic, Sasanian and Hellenistic levels (fig. 5). In particular, Level 5 contained a large mudbrick Sasanian building (with the intrusive tomb of a dog), while the Hellenistic occupation (level 6) dates back to the early phase of the period (late 4th-early 3rd c. BC). The types and fabrics of the pottery indicate that Girdi Qala was an important site in the network of Hellenistic sites in the region (M. Ahmad). The exploration of these late phases of occupation, badly preserved on the periphery of the high mound but particularly interesting, should continue in the next seasons.

2. For a physical description of the sites and their natural settings, see our previous report, Vallet (ed.) 2015.

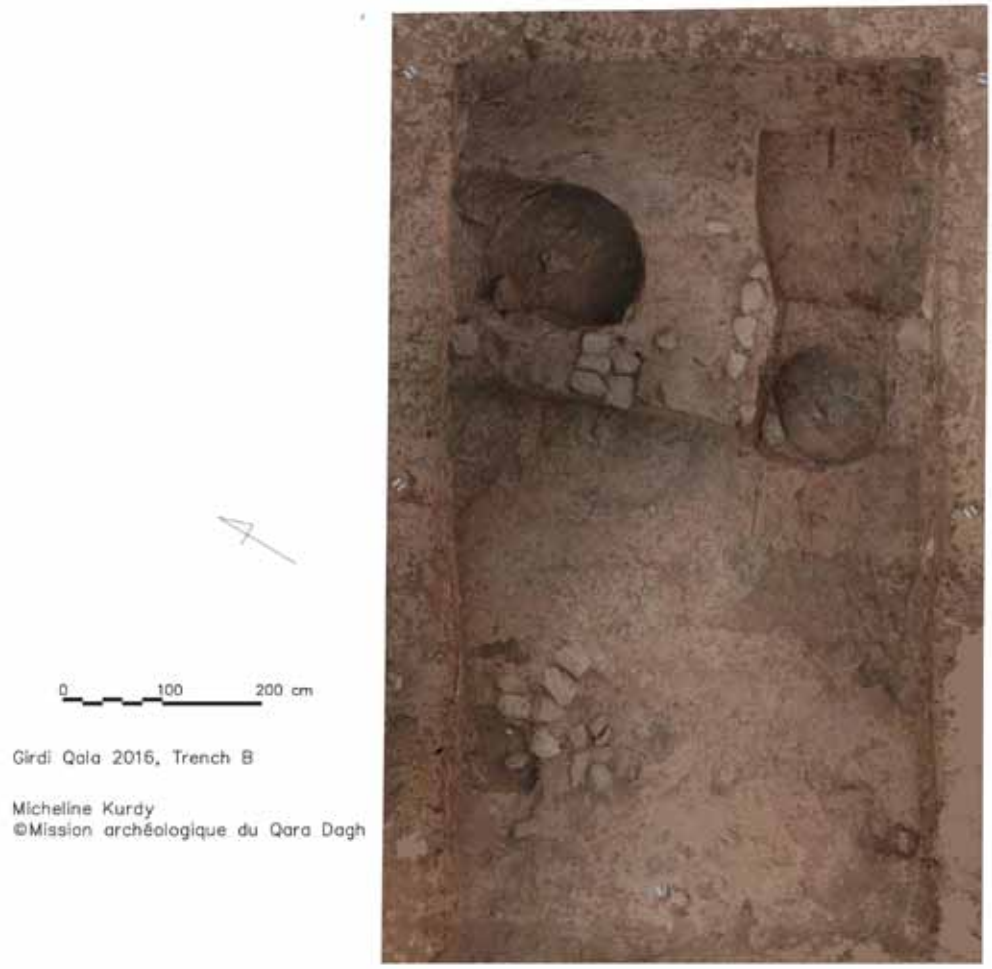

Fig. 5 - Girdi Qala Trench B, orthostatic view, 2016.

At the foot of the Main Mound, we know since 2015 that the southeastern slope was the center of large-scale pottery production during the first half of the fourth millennium BC. The excavation of Trench C had enabled to identify ten well-preserved overlapping layers close to the surface and almost the whole sequence has shown pottery production or firing structures. Although it is likely that the Main Mound of Girdi Qala was an indigenous Late Chalcolithic settlement (LC 2-3) the large majority (70%) of the ceramic assemblage collected in Trench C belongs to South Mesopotamian (Uruk) classical traditions, which shows that Uruk pottery was made on-site by resident craftsmen. Thus, the search for a residential area of the South-Mesopotamian settlers was amongst our main goals, and the settlement located on a secondary North Mound was opened this year.

A comprehensive survey of the site, geophysical (L. Darras and C. Benech) and archaeological (C. Paladre, R. al Debs and A. Hama Amin) was carried out. Its combined results allowed us to identify an Ubaid settlement in the west part of the mound (probably the original village that moved to the main mound during the LC1 period), but also, and more important, the precise limits of an Uruk enclave. It covers the elongated summit and northern slope of this low mound, over less than 1 ha. The geophysical image is very homogenous, and matches perfectly the pottery distribution, but spotted three denser areas, one of which was selected for a first test trench (Trench D), on the north slope of the mound, not far from a (natural ?) ramp leading down to the river along the abrupt north flank of the mound.

Fig. 6 - Girdi Qala North Mound, Trench D, from the north.

Trench D (fig. 6) gave five successive levels of middle-Uruk domestic architecture (C. Paladre, R. al Debs, A. H. Amin and R. Vallet), with features such as pottery pipes (level 3, the oldest known of this type[3], fig. 7) or a carefully pebbled street (level 5), but the sequence continues below. The most significant feature is that any local shapes or wares are virtually absent: the pottery belongs exclusively to Southern Uruk traditions (J. S. Baldi). The domestic areas exposed in Trench D of Girdi Qala northern mound constitute the first evidence of a south-Mesopotamian Middle-Uruk settlement east to the Tigris River and north to the Hamrin basin.

Fig. 7 - Clélia Paladre unblocking the 4th mil. pottery pipes.

3. Level 3 produced a C14 dating, consistent with its Middle-Uruk assemblage, see Appendix B.

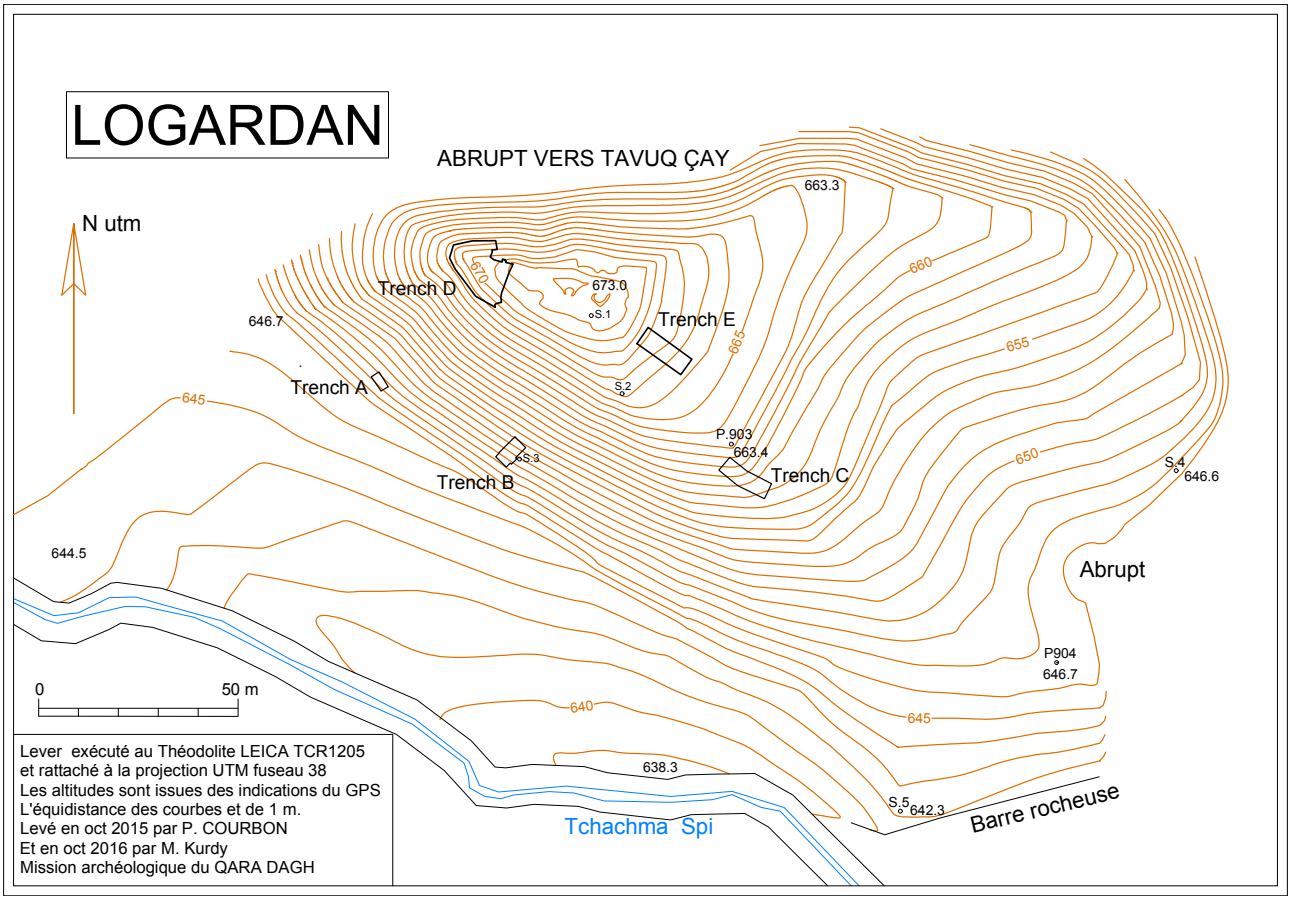

Fig. 8 - Topographical map of Logardan.

At Logardan (fig. 8), the 2015 campaign provided also clear evidences for a very early Uruk presence, with a stone ramp to access the site (Trenches A and B). In 2016, a Trench D opened at the top (30m) excavated on four levels (fig. 9), on a surface of 250 sq. m with a height difference of about 5 m between the surface and the deepest vestiges (J. S. Baldi, H. Naccaro and K. Rahoof). Three Early Bronze Age levels, labeled 1-3 from top to bottom, the last of which divided into three phases (a-c), saw the construction and use of more than 15 pottery kilns, some of them offering a unique perspective on firing technologies that were not documented until now for the 3rd millennium. The pottery assemblage finds the most consistent parallels in the ED IIIb to post-Akkadian phases of the Tigridian Region, with connections with

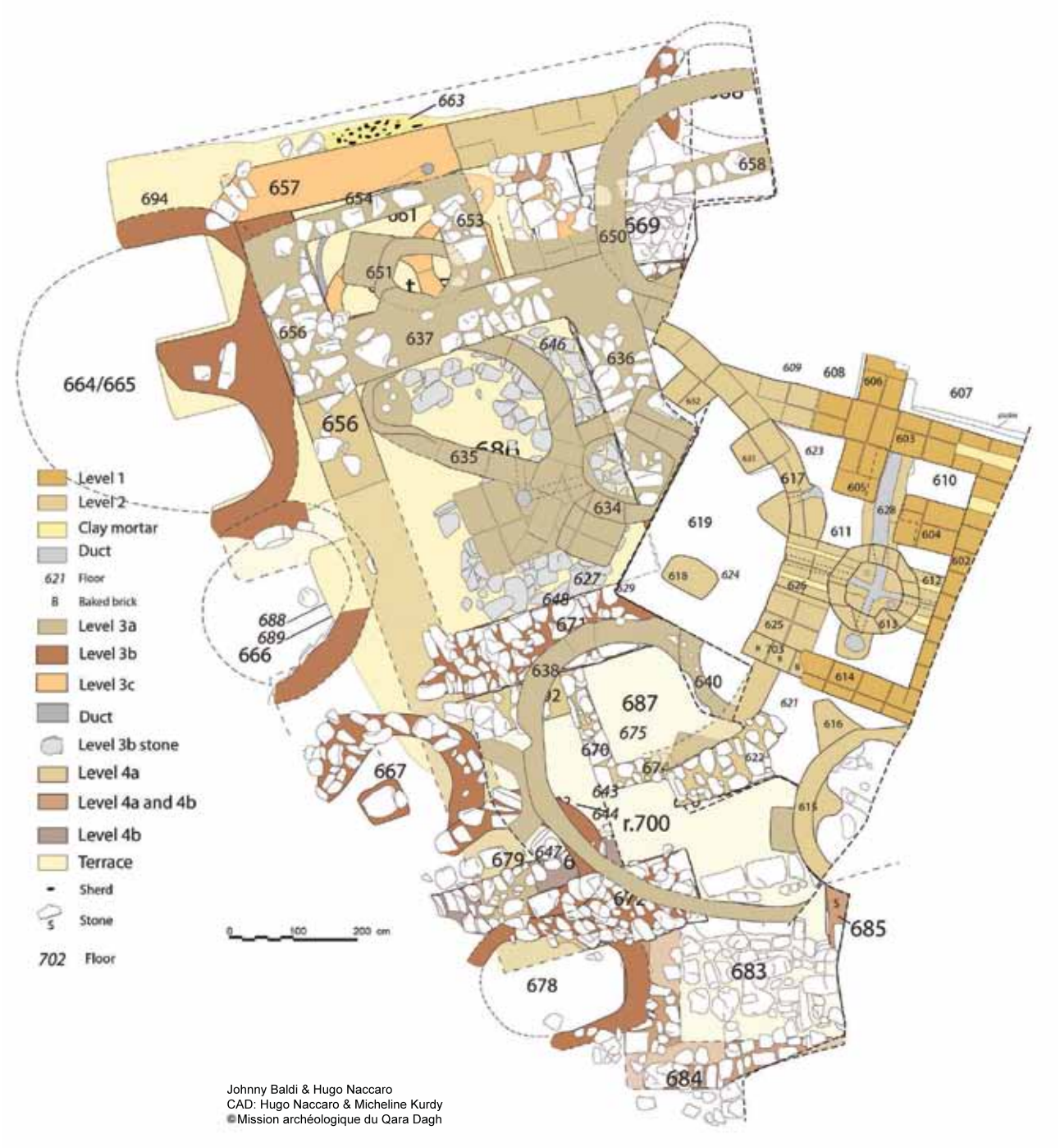

Fig. 9 - Logardan Trench D, composite plan of the successive architectural levels.

the neighboring areas (M. Zingarello). Levels 3a and b provided two C14 dating consistent with their respective assemblage (Appendix B), as well as a cylinder-seal of an Akkad imperial official (C. Paladre), for we know that the site was not restricted to industrial activities (Trench E). The earlier ceramic workshop area was built through Level 4 building, whose ruins were reused and partly adapted: a monumental Early Uruk public building, provided with massive stone foundations resting upon a recessed mudbrick terrace (fig. 10). Moreover, unlike Trench C at Girdi Qala, where a local LC2 tradition was also documented, Level 4 of Logardan Trench D yielded exclusively south-Mesopotamian-related shapes (J. S. Baldi).

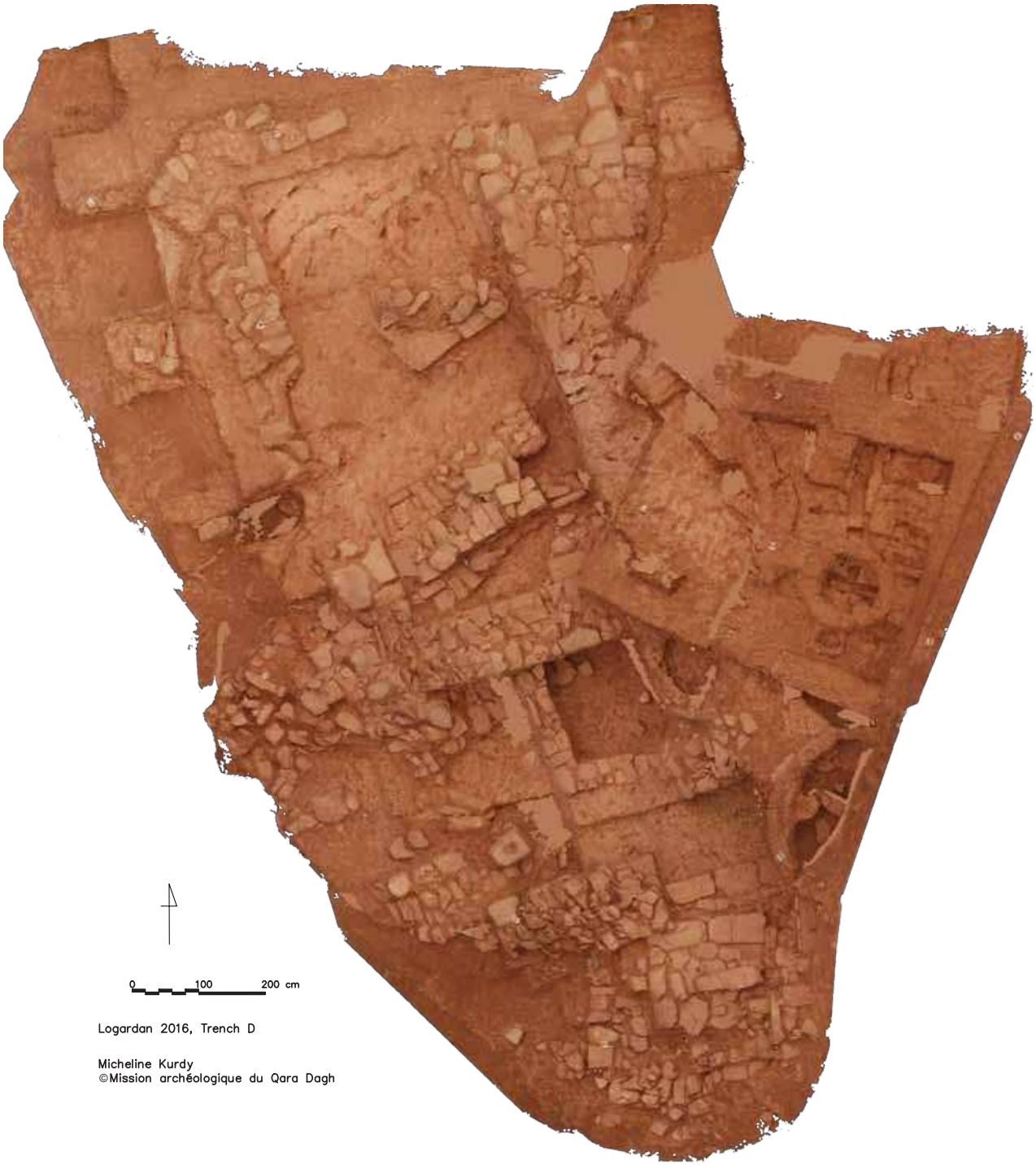

Fig. 10 - Logardan Trench D, orthostatic view.

The presence of such early and massive architectures in central-northern Mesopotamia is an unexpected discovery. For the moment, it has no parallel north of Tell Uqair.

In order to obtain more information on the Bronze Age occupation of the site, we launched another operation, on the upper terrace, right next to the hilltop. The survey (M. Sauvage, M. Zingarello and B. Salah) has indicated a probable occupation of the Halaf and Ubaid periods in the northern part of the terrace (and a possible Uruk occupation at the junction of the upper and the median terraces), but the entire central part of the terrace appeared to have been lastly occupied by Bronze Age structures. It was therefore decided to lay a NW/SE Trench E (10 x 5m) from the 'citadel' to a building identified by the geomagnetic survey. Trench E (M.

Sauvage, M. Zingarello and B. Salah) encountered five successive Early Bronze Age levels, at the foot of the retaining wall of the 3rd millennium 'citadel', a massive mudbrick structure with a stone basement and a passageway provided with a set of steps made of rammed earth. A street, littered with material, accessed it. At the SE of the trench, the corner of a storage yielded seven jars (and three smaller pots), under the remains of the collapsed earthen roof that sealed the room (fig. 11). Several jars have a characteristic appliqué motive of 'snakes', ED III to late third millennium in date (M. Zingarello), but the area disclosed also some Late Bronze Age material whose context is still unclear due to the limited stretch of the excavation (possibly from late pits). However, since Trench C we know that the upper part of the site was occupied and fortified in the Late Bronze age (Vallet ed. 2015).

Fig. 11 - Logardan Trench E, the storage room in excavation, from left to right : Bahra Salah, Mélania Zingarello and Martin Sauvage.

Therefore, the four trenches conducted in 2016 have produced interesting results and shall be continued and extended next year. The most unexpected discoveries concern the Uruk presence that the excavations are just starting to reveal. Despite longstanding assumptions that the Uruk expansion began during the late LC3 phase, it is now clear in the Qara Dagh area that contact with Southern Uruk people occurred from a very early period (late LC2). In terms of absolute chronology, the Uruk expansion at Girdi Qala and Logardan does not appear ca 3600 BC, but rather ca 3900 BC. Incidentally, the Qara Dagh seems to represent the limit of this expansion in the late LC2, as there is not (yet) evidence of a Southern Uruk manifestation east of this range before the LC3. Girdi Qala and Logardan have already provided and should continue to provide in coming years startling new archaeological evidence, re-opening the debate on the Uruk expansion and interactions between Southern and Northern Mesopotamia.

Magnetic Surveys on the Archaeological Sites of Girdi Qala and Logardan

Lionel Darras and Christophe Benech

From September 25th to October 14th, a second campaign of geophysical survey has been carried out in the frame of the French archaeological mission of Girdi Qala and Logardan in Iraki Kurdistan, directed by Régis Vallet (CNRS). The goal was to complete the results of the 2015 campaign: at Girdi Qala, only the main tell and its immediate vicinity was covered and according to the observations of the pedestrian survey, it appeared particularly interesting to extend the survey to the northwest to another eminence limited to the North by an abrupt slope. In the case of Logardan, the first purpose was to link the two magnetic maps of 2015 to follow the layout of the structures detected on the southern slope. An extension of the survey was also carried out to the southeast to check if there is –or not- an extension of the settlement in this direction.

Methodology

The geophysical survey was carried on by using the magnetic method that proved its speed and efficiency in this archaeological and environmental context. The principle of the magnetic method is to measure the local variations1 of the Earth magnetic field due to the presence of iron oxides in the soils and in the archaeological structures. The magnetic survey has been carried out with a cesium gradiometer G858 (Geometrics Inc) with a mesh grid of 1 m x 0.10 m interpolated at 0.50 m.

Results of the magnetic survey

Girdi Qala (figures 1a-e)

In 2016, a surface of 4 ha has been covered by magnetic survey at the north of the main tell (figure 1a). The magnetic map (figure 1b) shows a very clear image of the archaeological settlements rarely disturbed by modern activities or erosion layouts.

Three areas with different kinds of magnetic anomalies can be identified (Figure 1d):

- Area with a high density of magnetic anomalies, possibly showing an organized settlement, well delimited on 3 sides (1st area, red outline).
- Area with punctual anomalies of different sizes and high amplitude (2nd area, pink outline).
- Less dense area characterized by some linear anomalies excepted in the southern part marked by a set of small punctual anomalies (3rd area, blue outline).

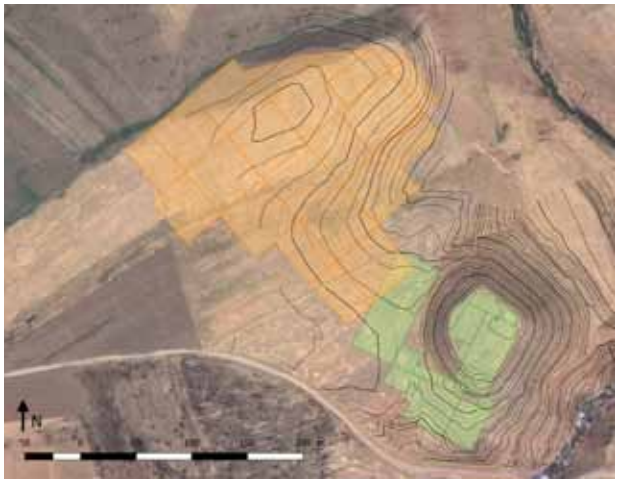

Fig. 1a - Magnetic survey implantation on the site of Girdi Qala in 2015 (green) and 2016 (orange).

Fig. 1b - Magnetic survey results on the site of Girdi Qala (-5nT(White)/+5nT(Black).

Fig. 1c - Location of non-Archaeological anomalies in the site of Girdi Qala North.

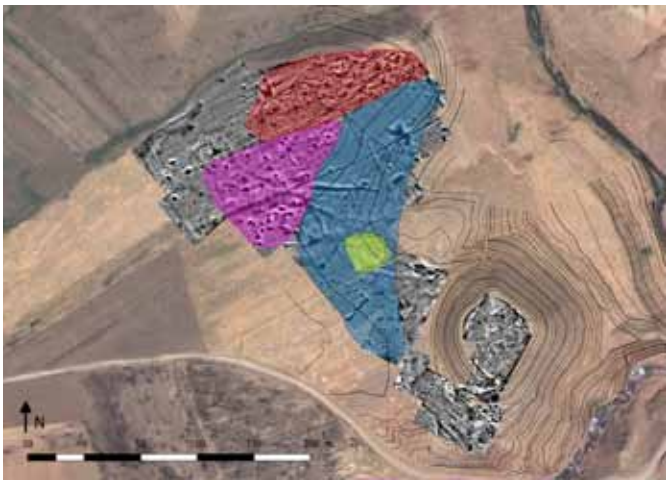

Fig. 1d - Location of interesting magnetics anomalies on the site of Girdi Qala North.

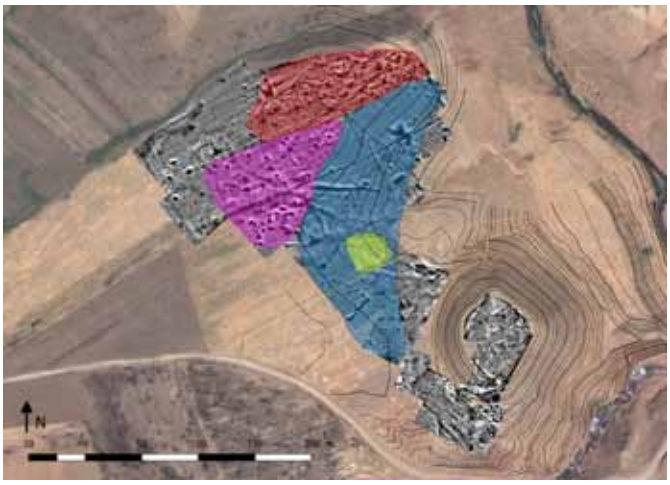

Fig. 1e - Magnetic map of Girdi Qala and location (in red) of the Trench D.

Some magnetic anomalies (figure 1c) can be interpreted as channels (light green lines) for field's irrigation, road tracks (yellow lines), ploughing (blue lines) and modern fences (orange lines). The erosion of the site due to water runoff is also visible on the magnetic map (dark green lines) to the northern eminence.

On the northern part (1st area), a set of aggregated magnetic anomalies might be related to a settlement from the Uruk period, according to the analysis of the ceramics collected during the pedestrian survey and the first archaeological sounding above the largest magnetic anomaly (diam. 10m and magnetic amplitude around 8nT)[1](figure 1e). It is very difficult to identify an organization through this set of anomalies, probably due to the erosion of the site, but they look also partly aligned. The observation was already done last year concerning the magnetic anomalies from the top of the tell corresponding to poorly preserved structures[2].

Nevertheless, these anomalies are also well delimited in a specific area even if a fence or a ditch does not mark this delimitation. Cautious must be taken in the interpretation of the alignments of this area: they are indeed partly due to modern ploughing.

Immediately to the South of this probable settlement, there is an area with numerous punctual anomalies always apart from each other at least from few meters: here again, they are delimitated inside a specific area even if this delimitation is characterized by a specific structure. These anomalies are rather similar in terms of size and magnetic amplitude (diam. 4m and magnetic amplitude around 15-20nT). These characteristics are also very close to the anomalies detected at the bottom of the tell: according to the archaeological sounding opened during the last campaign in this area[2], close to the surveyed one, these magnetic anomalies could match to fireplaces. These anomalies are in the same size than fireplaces identified last year[2] (diam.3-4m and magnetic amplitude around 6nT), but with a stronger magnetic amplitude. This area could be therefore identified as artisanal area whose exact function is still hypothesis according to the magnetic results. Between these anomalies, we can also observe some linear negative anomalies which might correspond to walls of houses.

A long magnetic anomaly (blue line) (length: 60m, thickness: 4m, and magnetic amplitude around 20nT) could perhaps indicates the location a ramp. Its shape and magnetic amplitude is therefore similar to the one identified on the southern slope of the tell.

To the East, in the 3rd area, small punctual anomalies similar to those observed in the previous area (even if a little bit smaller) are visible but they don't appear as belonging to a coherent and well delimited group. There is also a big anomaly (extension around 10m, and magnetic amplitude around 5-10nT) whose shape is particularly irregular and does not help for its identification: it could be a ruined building as well as a waste deposit of magnetic material from any historical period.

To the South, a set of linear and more punctual anomalies seem to delimitate two enclosures. The first one, to the East, has a semicircular shape opened on its oriental side. The positive and rather thick anomaly might indicate the presence of a ditch. The western limit is more surprising with a set of small anomalies but also very clear. The interior of the enclo-

1. About the results, see in this report the chapter "Archaeological Survey of Girdi Qala North Mound" pxx-yy.
2. About the results, see Vallet (ed.) 2015, pp. 48-52.

sure is also scattered by some small and positive anomalies (pits?). The other enclosure, to the West, looks widest even if its western limit is beyond the surveyed area. The southern limit appears very clearly with a linear anomaly whereas the other sides are marked by more punctual anomalies: it could possibly be traces of an eroded ditch. Nevertheless, there is no evidence to propose a date for these both structures.

To the southeast of this last enclosure, several small anomalies (diam.1m and magnetic amplitude around 5nT) could be pits: there are also located in a well delimitated area, at the bottom of the eastern slope of the tell (blue outline, south part).

Logardan (figures 2a c)

Last year, in 2015, a geophysical survey (figure 2a) contributed to retrieve some information about the organization of the site and help to choose the location of the first archaeological soundings. During this campaign, the goal of the geophysical survey was to complete the results by linking the two parts of the magnetic map for a more homogeneous vision and to check if there was –or not- an extension of the settlement to the East.

The results of the magnetic survey during both campaigns are displayed on figure 2b. Concerning the results of 2016, four specific areas can be identified (figure 2c):

- Area with a lot of small anomalies (diam.0.5 to 1m, magnetic amplitude around 3 or 4nT) which could be rubbishes or magnetic material (1st Area, green outline).
- Area with the prolongation of the water runoff (2nd Area, red outline).
- Area with several circular anomalies (diam.3m, magnetic amplitude around 10-20nT) which could be fireplaces (3rd Area, blue outline).
- Area without specific anomalies which probably confirms the southeastern limit of the settlement (4th Area, yellow outline).

Conclusion

The magnetic map reveals the presence of different types of structures, although it is not sure at the moment that they all date from the Uruk period. Only the northern part, where an archaeological survey has been carried out, is for the moment well-documented. This sector is characterized by a high density of magnetic anomalies but does not however allow a detailed view of the organization of the constructions. Contiguous to this sector, a series of strong magnetic anomalies seems to signal the presence of a series of furnaces, close in dimensions to those excavated in 2015 at the foot of the tell. Further to the south, two well-defined forms could correspond to enclosures, without being sure that they are not more recent. They are adjoined to the south by a set of point anomalies, less magnetic than those described above, which could therefore rather correspond to pits.

On Lugardan, the magnetic survey achieved the exploration with no more significant information. In the southern part, a set of small anomalies could correspond to backfills. On the eastern side, there is no specific sign of an extension excepted only isolated anomalies.

This campaign achieves the magnetic survey as planned in the program of the archaeological mission. Next step will be a more detailed interpretation of the results by the joint analysis of geophysical data and the results of current and forthcoming archaeological soundings: it will make possible a better characterization of the origin of the magnetic anomalies and extrapolate the extension and the organisation of the excavated structures.

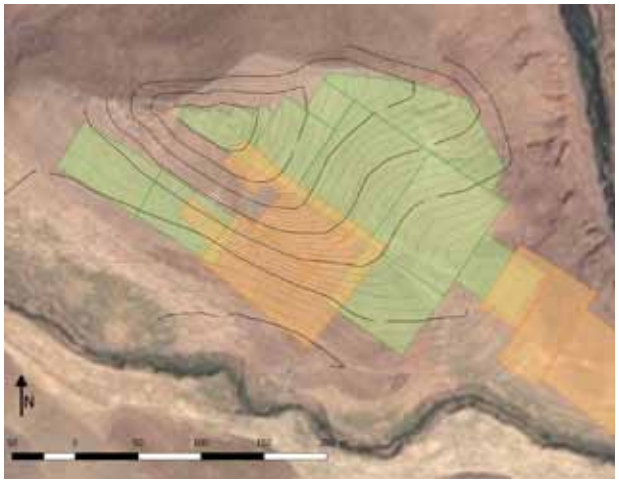

Fig. 2a - Magnetic survey implantation on the site of Logardan in 2015 (green) and 2016 (orange).

Fig. 2b - Magnetic survey results on the site of Logardan (-5nT(White)/+5nT(Black)), and location of the Trenches D & E (in red) excavated during this campaign.

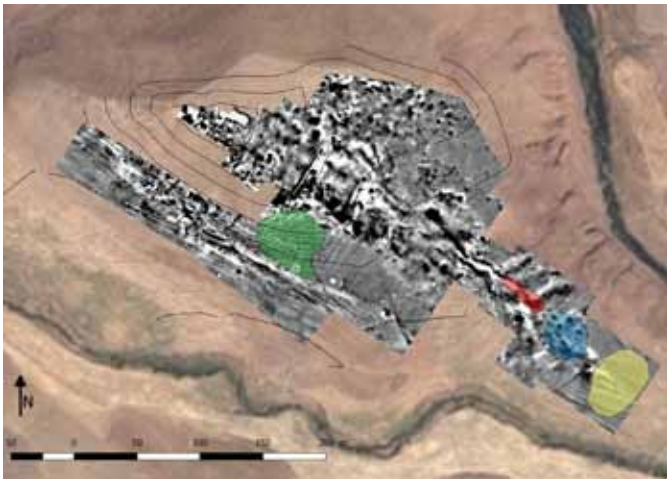

Fig. 2c - Interpretation of magnetic survey result on the site of Logardan.

Logardan Trench D: Stratigraphy and Architecture

Johnny Samuele Baldi, Hugo Naccaro and Kamal Rahoof

The excavations have been carried-out during 4 weeks in October 2016 in the aim to identify the whole stratigraphy of Logardan on its western edge. In this area, the top of the hill is badly disturbed by several recent large illegal excavations. First, a 10x10 m trench was opened, but this initial sounding has been progressively enlarged to assure a better understanding of the architectural remains, especially of those of Levels 3 and 4. At the end of the 2016 campaign, Trench D had a surface of about 250 m^2, excavated on 4 levels with a height difference of about 5 m between the surface and the deepest vestiges. This extensive excavation allowed us to recognize different phases of occupation between the beginning of the 4th and the second half of the 3rd millennium BC at the top of the site. The size of some structures requires further widening of the investigated area during the next campaign.

Level 4 is represented by two distinct architectural phases of a monumental early Uruk complex (Fig. 1). The presence of such early and massive architectures in central-northern Mesopotamia is an unexpected discovery, which opens completely new perspectives on the so-called Uruk expansion. Indeed, it is the first time that in this area monumental buildings are discovered associated to early 4th millennium ceramic materials belonging to a south-Mesopotamian tradition. An important early 4th millennium southern Uruk presence in the Qara Dagh region was documented since the discovery, in 2015, of the complex pottery kilns in the basal levels of Trench C at Girdi Qala. But architectures as ancient and important as those of Logardan Trench D Level 4 are an unforeseen discovery which, for the moment, has no parallel north of Tell Uqair. The northern and western sectors of the complex are severely damaged, both by the reuse of the structures in later levels 3a and 3b, and by the strong erosion on the slopes. Therefore, an enlargement of the excavated surface is needed in the next campaigns to better understand the structural organization of the monumental area.

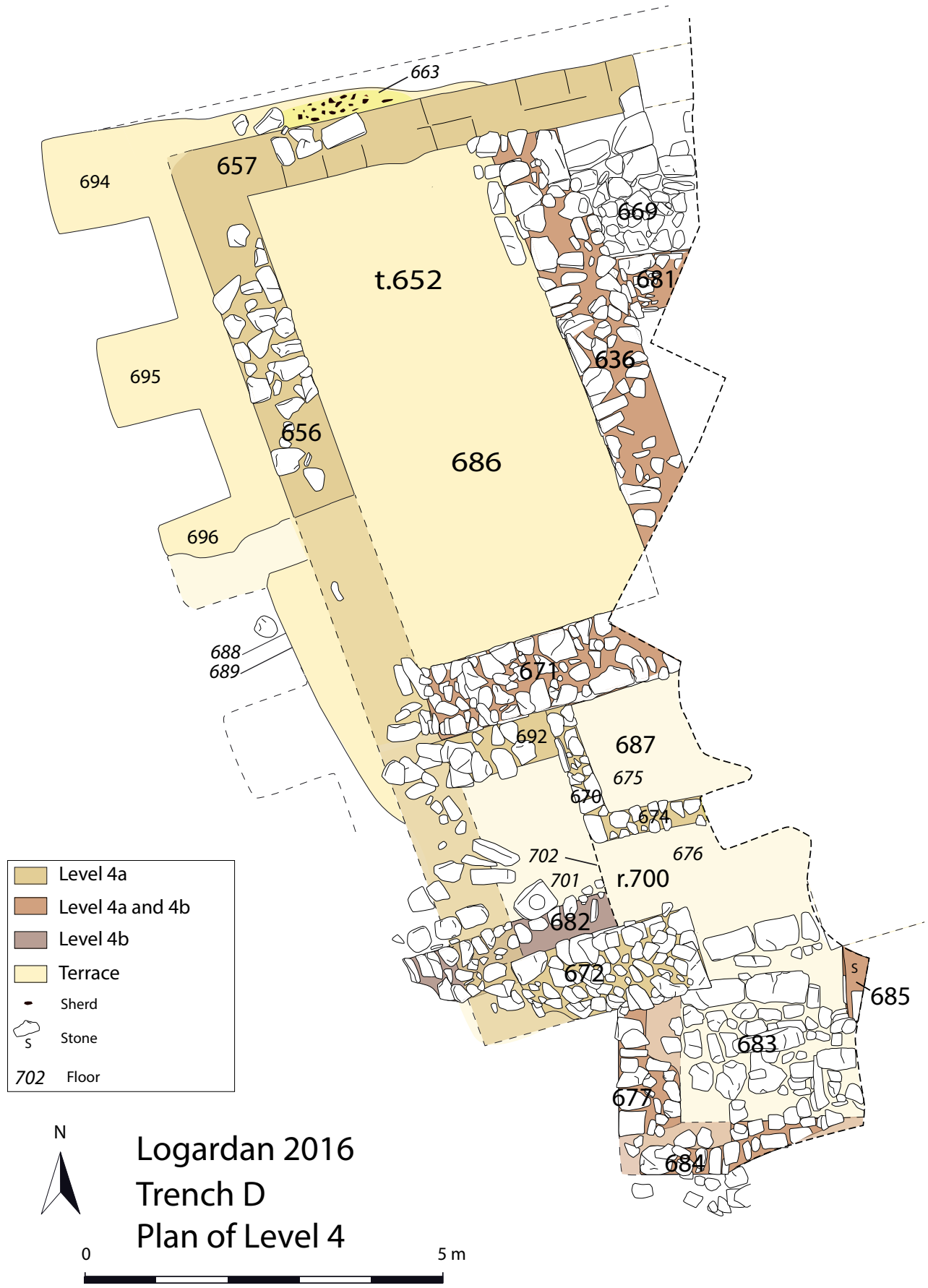

Fig. 1 - Plan of level 4.

During a first phase (Sub-level 4b), it is possible to recognize the west wing of a large complex built on a terrace in mud-bricks (652) laying on a quite flat floor (688). The construction of a terrace on the edge of Logardan constitutes in itself a significant architectural work, whose aim is not simply to create a basement for the construction of the building, but also to level the entire area. The main walls (656, 657, 671, 636 and 682)[1], with foundation trenches dug deep into the mud-brick terrace, are between 80 cm and 1 m thick and are made of large-sized flat stones (Fig. 2 and 3). They define the west wing of a roughly north-west – south-east oriented complex. It is difficult to offer an accurate reading of this construction both because of the poor state of preservation of the northern and western structures, and because of the impossibility during this campaign to push further east the eastern limit of the excavation by removing Level 2 structures. In this sense, it is not yet clear whether Wall 636 and 682 are connected or whether Wall 636 simply forms an angle with Wall 671 and does not continue towards the south. Likewise, the kilns of Level 3b have almost completely erased the segment of Wall 656 south of its angle with Wall 671. The enlargement of the trench during the next campaigns could offer a different overview because if Walls 656 and 636 do not continue to the south, the monumental complex could consist of two separate buildings. The considerable thickness of wall 671 could also be considered as a clue in this sense. Nevertheless, for the moment, some evidences suggest that it is reasonable to consider the architectural complex as one large edifice. First of all, even if Wall 656 is not preserved in its southern sector, its

Fig. 2 - Level 4 - loc 636.

1. Walls 656 and 657 were observable in their second stage (Level 4a, see below) even if their emplacement and foundation trenches were the same than in Level 4b.

Fig. 3 - Level 4 - loc 671.

foundation trench continues south of the angle with Wall 671. Moreover, the western façade of the mud-brick terrace was reinforced by a series of regularly spaced large (1,6 m thick) buttresses and, despite the erosion of the slope, a slight trace of one of these buttresses has been identified exactly where Wall 656 probably formed an angle with Wall 682. Not only the presence of a buttress at this place would be coherent from an architectural point of view, but it also respects the regular distance between the buttresses. Therefore, it seems that, for the moment, the complex can be interpreted as a bi-partite building. To the north, the main room of the west wing (686) has an internal size of about 7 m x 3,5 m. The structures of Level 3 (especially the stone pavement made reusing the masonry of Wall 656 – see below) have erased any kind of floor of Room 686, but an external floor (663, associated to the foundation trench of Wall 657) laying on Terrace 652 and connected to the building has been identified north of Wall 657 (Fig. 4). This one constitutes

Fig. 4 - Level 4 - loc 663.

the northern façade of the edifice even east of its angle with Wall 636. Despite the limited surface excavated in this central sector of the building, it has been possible to recognize Wall 681 (with 8 layers of stones for a 1,6 m of preservation): it is roughly parallel to Wall 657 and connected to Wall 636 (Fig. 5). The space defined by these three walls is paved with stones (669) amongst which some in-situ early 4th millennium ceramic materials have been recovered.

South of Room 686, the space between Walls 671 and 682 (Fig. 6) is very poorly known for

Fig. 5 - Level 4 - loc 681.

Fig. 6 - Level 4 - loc 682.

the Sub-level 4b. However, even if the later Wall 672 overlaps it and makes difficult to verify its connections, Wall 682 is associated to a southern paved space delimited by the north-south oriented Walls 677 and 685, as well as by the east-west oriented Wall 684. No trace of the mud-brick Terrace 652 has been identified south of Wall 682. Therefore, the forecourt paved with large-sized stones between Walls 677, 684 and 685 seems to represent the southern limit of the architectural complex in this sector. Since the different orientation between the paved forecourt and the building respects the shape of the hill in this area, it is not a problematic element in itself. Anyway, it confirms that for the moment our understanding of the first stage of Level 4 is quite partial.

In a second moment (Sub-level 4a), the whole complex was restructured. Walls 656 and 657 are erased. Then, on the whole surface of the sector north of Wall 671, Terrace 652 was partially stripped and rebuilt by replacing 4 layers of bricks. On the western face of Terrace 652 a clear distinction is visible between its basal floor (688) and the base of the four layers of bricks added in Sub-level 4a (Floor 689). Starting from this level (689) the masonry of the western buttresses, which in Sub-level 4b were leaned against the terrace, is intertwined with the terrace itself. Because of the atmospheric erosion and the very strong slope, it is impossible to know whether a similar renovation also occurred north of wall 657: the mud-brick terrace extends beyond this wall, but any kind of structures (or possible buttresses) on its northern face is definitely lost. Once restructured the terrace, Walls 656 and 657 were rebuilt upon it using both bricks and large-sized rounded stones: for this reason their masonries, even if absolutely solid, are visibly different from Walls 636 and 671, which remained unchanged. East of Wall 636, Wall 681 and the paved room 669 seem to have not been affected by the renovation. On the contrary, the entire space south of Wall 671 has undergone a dramatic transformation. The mud-brick terrace was almost completely dismantled over several layers of bricks without being rebuilt. Wall 682 was destroyed and replaced by another roughly east-west oriented and thick wall (672), which is built without a foundation trench and simply lays on what was left of Terrace 652. It is likely that the new east-west oriented Wall 672 and the reconstructed north-south oriented Wall 656 did not form an angle because of an access door crossing through Wall 656 in its closest segment to Wall 672. In this area, a big stone used as pivot for a door could be in its primary deposition context (Fig. 6). Actually, the southern room of the west wing becomes a transit zone within the complex because the forecourt delimited by Walls 677, 684 and 685 becomes a monumental staircase (683) (Fig. 7). The orientation of this space remains unchanged (i. e. north-south oriented, divergent if compared to the rest of the edifice and defined by Wall 672 and the cornerstone facing it), but the steps of the staircase go east and progressively change their orientation. Each of them is formed by some elongated stones: the first and lower one is perfectly aligned with Wall 672, the second step turns slightly to the east, the third one turns in an even more pronounced way and so on. In the next campaigns, it will be necessary to verify if the staircase leads to an upper terrace.

During the last phase, the space between Walls 671 and 672 (Room 700, with different floors as 702) laying on what was left of Terrace 652, has been divided by the construction of two little walls. The first one (670) is perpendicular to Wall 671 (Fig. 3), while the other one (674) is parallel to the big wall 671. They delimited a little room (687) whose floor (675) has

Fig. 7 - Level 4 - staircase 683.

Fig. 8 - Level 4 - floor 675.

yielded some in-situ bowls (Fig. 8). The construction of this closed space dates back to the same period of the construction, along Wall 671, of a solid wall in bricks and stones (692). All these walls laid on Floor 702 without any foundation trench and were associated to an external 8 cm thick grey floor (676) representing the later phase of occupation of Room 700. Floor 676 was also associated to Staircase 683, which is still in use in this phase (Fig. 7). But it seems evident that the presence of these domestic or craft structures, devoted to a merely functional use partially cluttering the area in front of Staircase 683, indicates the beginning of the re-use of the monumental complex following the loss of its primary function.

Level 3. Since the erosion of the slope had erased the structures of Level 2 on the western portion of the initial 10x10 m trench, two sections have been cut deep into the filling layers east of the preserved structures of Level 2. It allowed us to uncover the remains of Level 3.

First (in Sub-level 3c – Fig. 9), two medium-sized sub-circular kilns (659 and 660) were built close to the ruined Wall 657 (Fig. 10). Both these firing structures were two-storey up-draught kilns: even if they were independent from each other (initially 659 had a *praefurnium* pit on its northern side, while the mouth of 660 was on the southern side), they shared a portion of their external wall and a subterranean duct to evacuate the smokes. This channel was physically connected to Kiln 660 and emerged from underground with a chimney resulting from the reuse of the ruined Wall 657.

Fig. 9 - Plan of levels 3b and 3c.

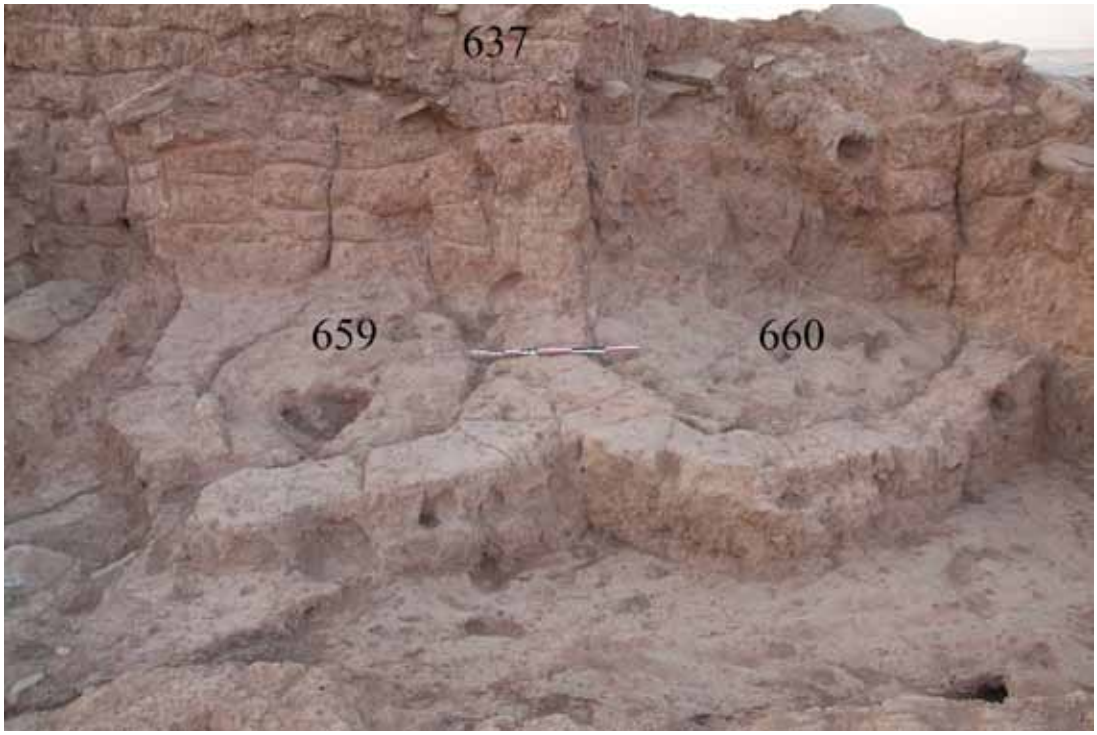

Fig. 10 - Level 3c - Kilns 659-660.

Later (Sub-level 3b) a massive wall (637) was built on the southern side of Kilns 659 and 660. Likewise, the northern portion of Wall 656 was also rebuilt. Wall 637 is a roughly east-west oriented and almost 1 m large structure, built of bricks and reused stones (of Level 4). Even if it overlaps the southern portion of Kilns 659 and 660, they are restructured and remain in use, with firing chambers covered by domes recessed into the northern face of Wall 637. Therefore, this sector becomes a closed workspace (661) defined by three walls (656, 657 and 637). But the architectural transformations in Level 3b are not limited at the northern sector of Trench D. On the contrary, this phase is represented by a generalized reuse of the ruins of Level 4 (particularly Walls 671, 672, 636, 681, 657 and the northern portion of 656) to create a huge workshop for firing ceramics. The strong erosion and the very steep slope on the northern and western sides have severely damaged the firing structures, but the architectural and functional organization of the workshop is clear. The firing structures were aligned along the exterior sides of the ruined building of Level 4 to facilitate the evacuation of the fumes along the edge of the hill, while inside the ancient building of Level 4 the space was used to manufacture and dry the vessels. To the north, besides the restructured kilns 659 and 660 in the room 661, a one chamber oval kiln (668) was associated to a production unit located east of the Wall 636. To the west, several kilns (664-665, 666, 667, 678, 679) were arranged in a row along ancient Wall 656 of Level 4 (Fig. 11). The ruins of this wall,

Fig. 11 - Level 3b - Kiln 667.

was reused to sustain the domed roofs of the kilns. The largest amongst them (the enormous structure 664-665, with a diameter of about 4 m) was covered by a double dome reusing an external buttress of the Level 4 building. In the same way, to the south, Kilns 678 and 679 reused the Wall 672 to sustain their domes (Fig. 12). The presence of different typologies of potter's kilns confirms the complexity of the ceramic workshop. Despite their architectural and dimensional differences, furnaces 659, 660, 664-665, 666, 667 and 678 were two-storey up-draught kilns, with a lower partially buried heating chamber and an upper domed firing chamber[2]. On the other hand, kilns 668 and 679 were one chamber firing structures with a domed roof covering a space dedicated both to the fuel and the ceramic materials[3]. East of this row of furnaces, the ruins of the previous level were adapted to define different production units. South of the Room 661, the space between Wall 671, 636 and 637 was carefully paved with large stones taken from the ancient Wall 656 (which was rebuilt in stones and bricks in Level 4a). Its northern portion was restructured, but the large majority of its stone masonry was reused to build Wall 637 and make the stone Floor 673 (Fig. 13). South of this room, between Walls 671 and 672, there was another production unit that, unlike the paved space 673, had an ashy clay soil. Probably, this architectural difference depends on the different functions of the two units. Indeed, several potter's

Fig. 12 - Level 3b - Kiln 678.

Fig. 13 - Level 3b - loc 673.

2. For Early-Dynastic Two-storey kilns see at Tell Hazna (Bader, Merpert and Munchaev 1997-98: fig. 6), Tell Banat (Porter and McClellan 1998: fig. 2-4), Uch-Tepe-Tell Razuk Level VB (Gibson 1981: pl. 27), Tell Madhhur (Killick and Roaf 1976: Abb 183), Khafajah (Delougaz 1940: plan IV, VII; Delougaz 1942: plan VII, fig. 17.i; Delougaz 1967: plan. VII, 8, 9), Abu Salabikh (Postgate and Moon 1981: fig. 7), Tell Barri (Pecorella 2004: fig. p.18).
3. For Early-Dynastic one chamber kilns see for instance at Tell Banat (Porter and McClellan 1998: fig. 5), Tell Chuera (Moorgat and Moorgat-Correns 1976: Abb. 27), Khafajah (Delougaz 1942: fig. 21.a-b), Tell Barri (Pecorella 2004: fig. p.15).

tools – especially scrapers, spherical stone pestles and shells – come from the southern space, while some little complete vessels (as the little painted jar LOG_D.243.1) come from the stone-paved northern unit (Fig.14). It could suggest that the southern room was used for operations inherent to the shaping, while the northern space was rather dedicated to finish, dry, decorate and store the pottery.

Fig. 14 - Level 3b - loc 649 - painted jar.

Sub-level 3a (Fig. 15) represents a later occupation that occurred after an abandonment of the workshop. When the area was reoccupied, the profile of the hill, determined by the accumulation of the previous structures of Levels 4 and 3c-b, was very sloping, both towards the north and the west. Instead of levelling the whole sector, the artisans of level 3a chose to adapt their new workshop to the topography: they reused some parts of previous structures and built new kilns adjusting the slope. To the north, Room 661 and its kilns (659-660) of Level 3b were replaced by a smaller space with just one medium-sized kiln (651). Like the earlier kilns in this same area, this firing structure is partially recessed into the wall 637: two thin walls (653 and 654) built with recycled materials close a room whose southern corner is formed by walls 636, 637 and 656. Actually, the upper part of 637 is further restructured in Level 3a, while the northern portion of Level 4 Wall 656 is the only segment still existing of it. The absence of the Level 4 large walls, which were reused in Level 3b, determines a total change of the previous structural organization of the workshop. To the north, in the area previously occupied by the stone floor 669 and Wall 681, the 3 m large Kiln 650 is associated to a workbench along Wall 637 and uses the corner between Walls 636 and 637 (as well as the ancient Level 4 Wall 681) to sustain its domed roof. This sub-circular structure is built in a sector of the hill where the steep gradient is very strong and the traces of the dome in the eastern section of the trench show that this kiln was about 3,5 m high. It would be a very important size even for a two-storey kiln with two superposed chambers separated by a pierced sole. But Kiln 650 did not have any sole and its chambers were not perfectly built one on the other, but they formed a sort of stairs. A wall (658) runs through the structure and constitutes a 1,30 m high step between the lower chamber and the upper one. Therefore, this firing structure is not an up-draught kiln, but rather a furnace where draught was almost horizontal. Although with a lower internal slope, the kilns inside the space delimited by walls 636 and 637 were built according with the same criterion on the stone-paved space 673. In this sense, structures as 634

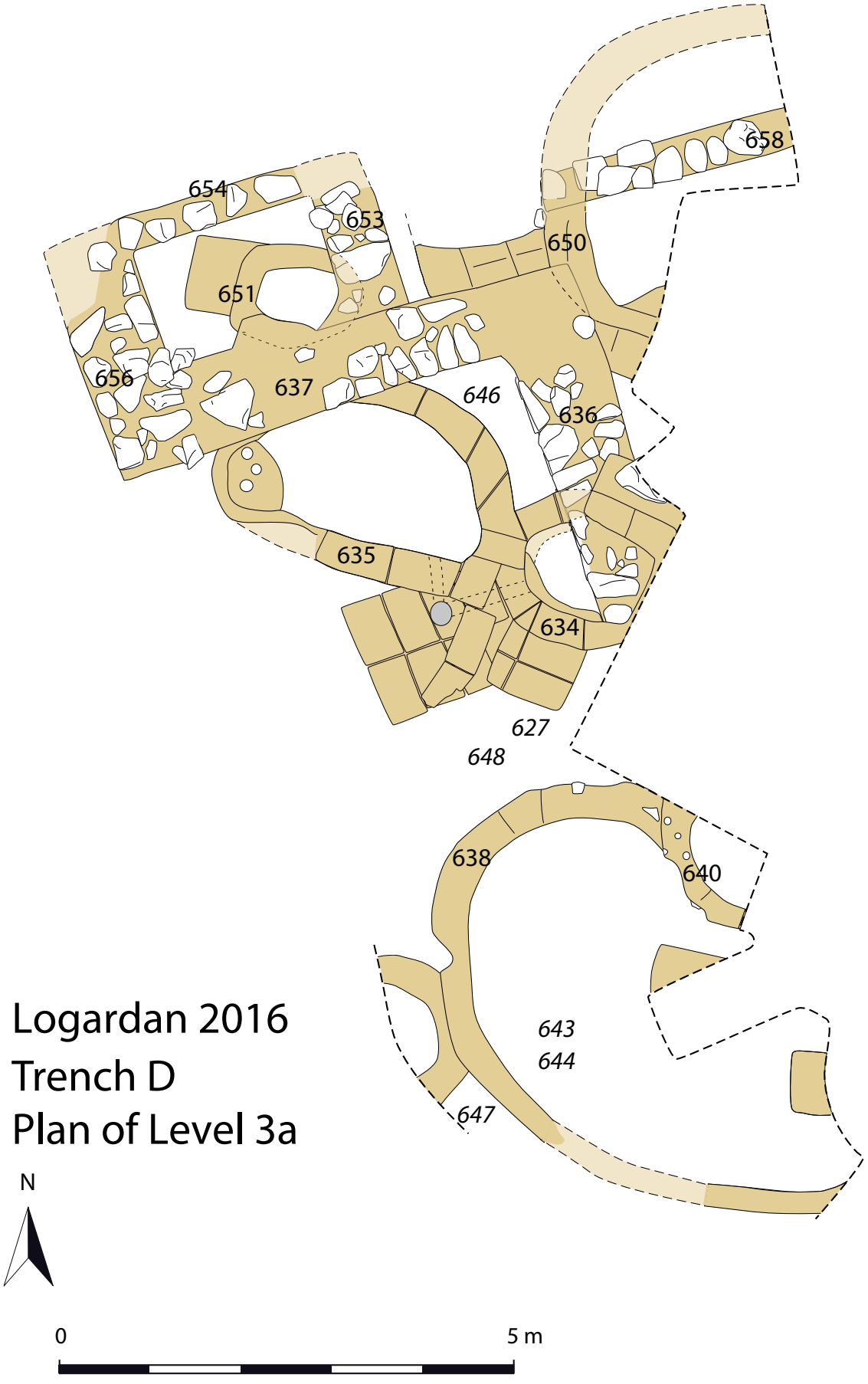

Fig. 15 - Plan of level 3a.

and 635 were not independent furnaces, but parts of one sloping kiln (Fig. 16 and 17). The oval fireplace 635 was used for the fuel, as indicated by its *praefurnium* pit on the western side. During the firing cycles, the heat rose-up towards Chamber 634, where vessels were stacked on two different levels. In fact, this chamber incorporates a segment of wall 636 using this Level 4 ruins as an internal step to facilitate the draught. On the western side, both the chambers (634 and 635) of this horizontal-draught complex kiln were connected to a bench in mud-bricks built around a vertical chimney which centralizes the evacuation of the smoke. To the south, another structure composed of different chambers (638-640) works in the same way (Fig. 18). Combustion began in a western *praefurnium* full of ashes; the fuel was loaded in an oval structure (638), whose floor, hardened and cracked by the heat, has been rearranged several times (internal floors 643 and 644); then heat attained another higher chamber (640), where vessels were fired. Given the size of the lower chamber (638), it is even possible that several upper firing chambers were connected to it. The two complex furnaces of this workspace (635-634 and 638-640) lay on the same external floor (648), worked during the same period and abandoned at the same time (as demonstrated by Floor 627, which covers the ruins of this late Level 3 occupation). Horizontal-draught kilns are documented in Mesopotamia since the Halaf-Ubaid transition at Tell Ziyada (Buccellati and Buia 1991: fig. 6), but they represent an extremely rare typology and become better documented

Fig. 16 - Level 3a - Kiln 634.

Fig. 17 - Level 3a -Kiln 635.

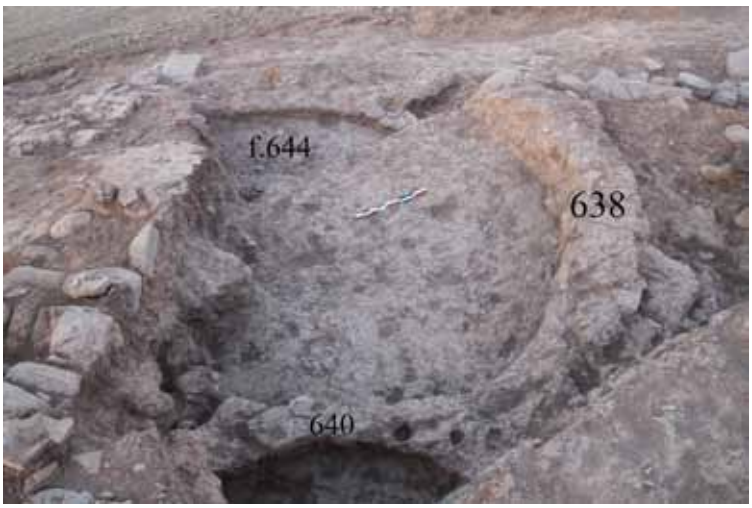

Fig. 18 - Level 3a - Kiln 638.

since the 2nd millennium BC[4]. Therefore, the kilns of Level 3a in Trench D offer a unique documentation about the evolution of this firing technology and allow to fill the absence of any archaeological record for the mid and late 3rd millennium BC[5].

▸ **Level 2** is clearly separated from Level 3 by a thick and regular clay floor (629, visible in section – Fig. 19) laying on the destruction of the previous structures. This level is represented by a ceramic workshop devoted to the firing of the vessels (Fig. 20). The explored area (about 48 m²) constitutes a little portion of a much larger complex, as suggested by the dimensions of some firing structures. In particular, it has been possible to identify a 3.6m large workspace (611) delimited by three walls: 602, 603 and 703. The roughly north-south oriented Wall 602 is conserved on 5 layers of bricks, but its width is unknown because of the proximity of the

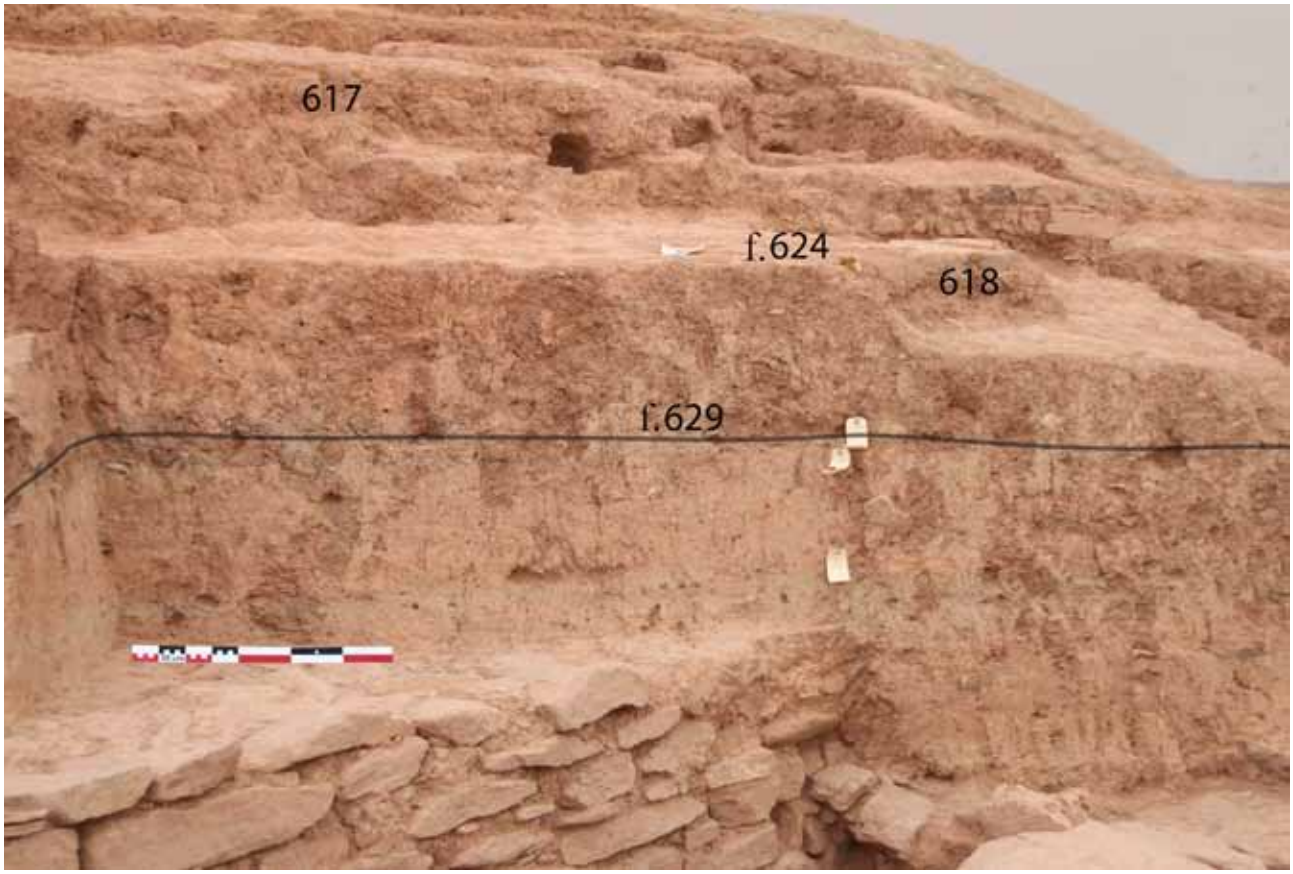

Fig. 19 - Level 2 - floor 629.

eastern limit of Trench D, which allows to recognize only the western side of Wall 602. The northern Wall 603 is 1.5 rows of bricks wide and visible over 5 layers of bricks in its eastern portion (where 2 of these layers belong to a later reconstruction in Level 1) and over just one layer of bricks to the west, where the slope is much more exposed to the atmospheric erosion. On the southern side of the workspace 611, Wall 703 has the same east-west orientation of Wall 603. The entire space was carefully built. Walls 602 and 603 were reinforced by internal

4. See for instance at Qatna (Middle Bronze I Furnaces SU1574-1576, or Middle Bronze II furnace in area J – Morandi Bonacossi 2003: fig. 5, fig. 11), Tell Barri (Mitannian Kiln 470 – Pecorella 1998: fig. pag. 81).
5. The only early 3rd millennium sample of horizontal-draught kiln is documented at Tell Karrana 3 (Wilhelm and Zaccagnini 1993: fig. 16).

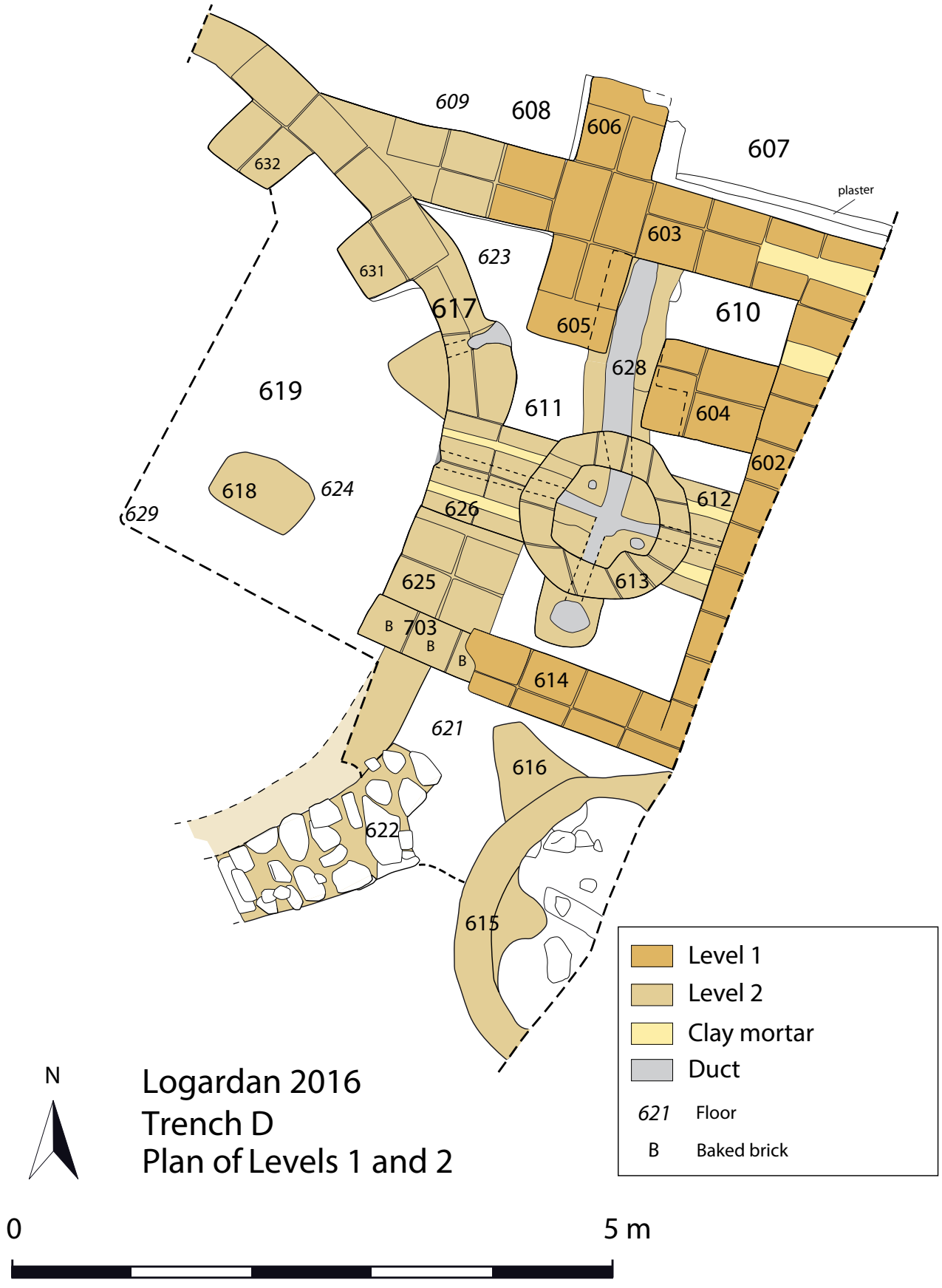

Fig. 20 - Plan of levels 1-2

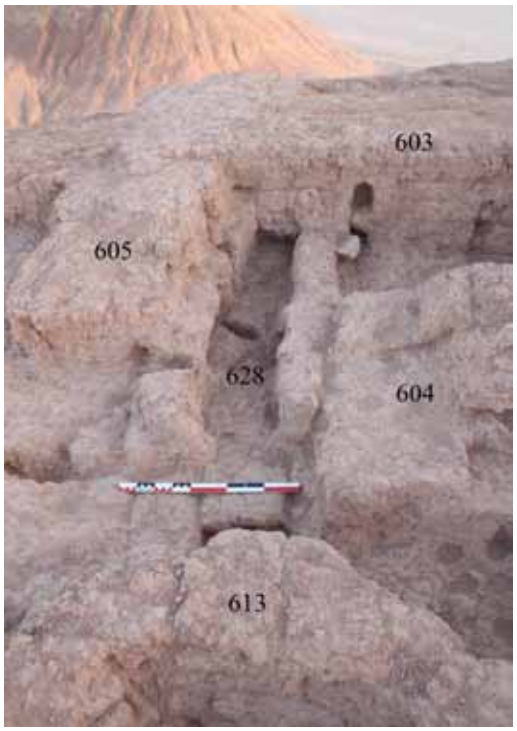

Fig. 21 - Levels 1 and 2 -duct 628.

buttresses (604 and 605) probably used as benches for drying and pre-firing vessels during the firing cycles, when the temperature inside the workspace 611 was high (Fig. 21). Both walls 603 and 703 were clay-coated on their inner face up to the ground and Wall 603 was well plastered on the exterior side. Indeed, to the north, the thick layer of green clay plaster applied to Wall 603 and the poorly preserved floor 609 suggest the existence of an open area, where an external pillar (606, corresponding to the inner buttress 605) defines two different working spaces (608 and 607). But the clearest proof that Room 611 was very carefully built is offered by the walls themselves: not only the masonries of 602, 603 and 703 were intertwined (i. e. designed and built as a single structure), but at this stage Wall 703 was constituted by yellowish 40x40x8cm well baked bricks (Fig. 22). The absence of plaster on its southern face suggests that, south of the workspace 611, there was another closed room.

This area is occupied by the large Kiln 615 (Fig. 23). This rounded structure close to the eastern limit of Trench D has been excavated in its western portion: it has a diameter of about 2 m, and it was visible over 3 layers of bricks on its exterior side (above Floor 621). Its lower chamber was dug deep into the soil and lined with bricks, while the pierced sole (whose fragments were sustained by a stone lintel and have been recovered in the lower chamber) was located at the same height than the exterior floor (621). Even if quite thin (only 1 brick large), the exterior wall is reinforced by two little pilasters, one on the interior side and the other (616) used as an external workbench. However, it seems that this area was strongly sloping, as it is still the case. Kiln 615 was dug deep into a filling layer used to level the ground and an 80 cm large stone wall (622)

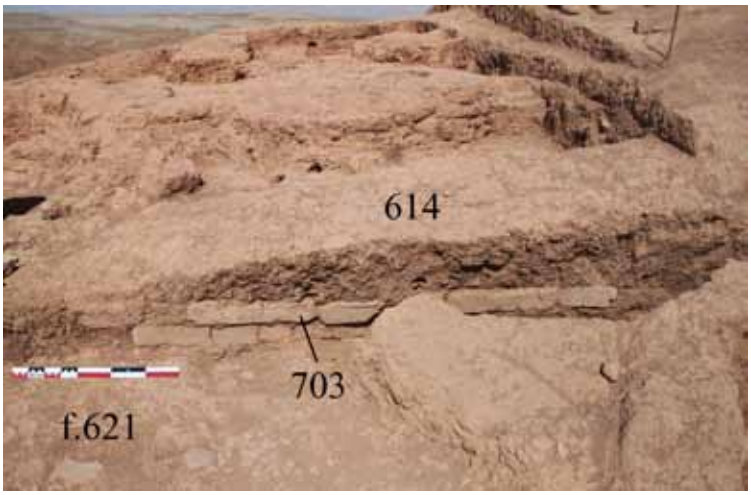

Fig. 22 - Levels 1 and 2 - loc 703 and 614.

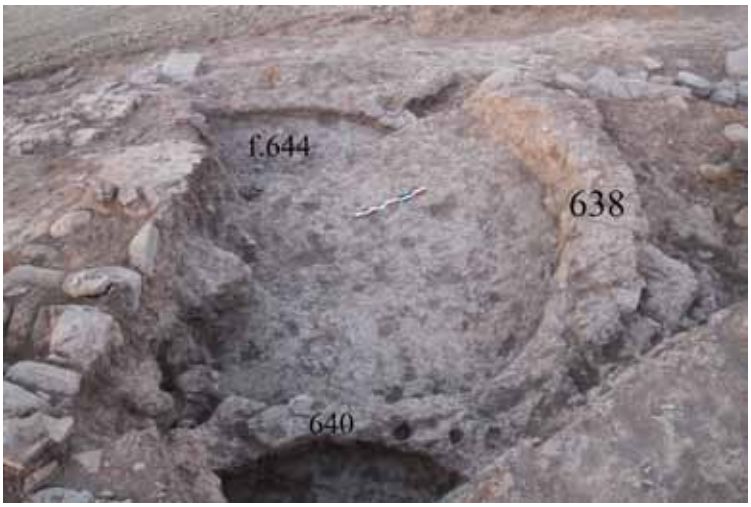

Fig. 23 - Levels 2 - Kiln 615.

separated this workspace from Kiln 617. It confirms that the whole workshop has been carefully built by means of considerable works.

The better evidence for massive dimensions and care for architectural details comes from Kilns 617 and 613. Kiln 617 is a huge roughly circular structure which was completely obliterated by the atmospheric erosion in its western portion. Based on the excavated sector, Kiln 617 had a diameter of about 8 m, with an internal space (619) constituted by a 8 cm thick clay floor (624) hardened by the heat. Its 1.5 bricks large external wall was reinforced by internal buttresses (632, 631). Some of these buttresses were hollowed structures used as chimneys to evacuate the smoke. Because of the enormous dimensions of kiln 617, the system of aeration and evacuation constituted a critical element both from the architectural and the physical point of view. The excavated surface allows us only a partial understanding of this extremely complex system. Kiln 613 is an example in this sense (Fig. 24). On the one hand, it is a medium-sized (internal diameter of about 80 cm) two-storey kiln, with a pierced sole separating the chambers and supporting the vessels during the firing cycles. But, on the other hand, it was also used as a way to evacuate the smoke of Kiln 617. In fact, under the pierced sole, the heating chamber of kiln 613 was not intended to contain the fuel: it was occupied by the intersection of two evacuation channels. Two little internal chimneys (about 20 cm of diameter) had the function of conveying the smoke outside from the firing chamber (the upper one) of Kiln 613. But the most impressive structures were represented by the system connected to Kiln 617. North of the Kiln 613, a north-south-oriented 20 cm large duct (628) formed an underground (under floor 623) conduit lined and covered by bricks that passed under Wall 603 and carried a part of the fumes to the outside (Fig. 21). South of kiln 613, this same duct was connected to a chimney. Likewise, a west-east oriented duct connected Kilns 617 and 613. It seems evident that the fumes passing through this channel were incandescent: to isolate this pipe, the connection between Kilns 617 and 613 is constituted of bricks hardened by the heat, laid sideways and separated by thick layers of clay mortar. This same structure continues to the east of the kiln 613 and passes under the wall 602, suggesting that other firing structures or chimneys were connected to kiln 617. The entire system – kilns 613-617, as well as the ducts 626-612 and 628 – was conceived and constructed as one huge structure, as demonstrated by the fact that masonries of kilns and channels were embedded to each other. Moreover, it is not occasional that the mouth through which the furnace 617 was supplied with fuel and vessels is located between Wall 703 and the channel (626) connecting Kilns 617 and 613. The hardened (or rather baked) bricks of the floor 625 constituted the entrance of the inner space of Kilns 617 and represent an additional evidence of the fact that the entire workspace 611 has been built to organize firing structures working together.

Fig. 24 - Level 2 - Kiln 613.

From a typological point of view, Kiln 615 (and Kiln 613, if considered as an isolated furnace) is an up-draught two-storey firing structure, a well-known kind of kilns since the Halaf phase in the 6th millennium BC (Hansen Streily 2000)[6]. Kilns with one chamber used both for the fuel and the vessels are also well documented in this period[7]. But the system constituted by kilns 617 and 613 is rather a cross-draught (or horizontal draught) kiln, where air flowed horizontally, from Kiln 617 through the duct 626-612 and kiln 613. Given the enormous dimensions of kiln 617 (more than adequate for a brick kiln)[8], able to contain hundreds of pots, the draught was not provided by a fan. On the contrary, the air movement was caused by the draught created by the chimneys. In this sense, the firing system of Level 2 offers a unique perspective on a firing technology that was not documented until now for the 3rd millennium.

Level 1 is represented by the reconstruction of walls 602, 603 and 614. The latter, whose first stage (Level 2 – 703) was in baked bricks, was rebuilt in 49x35 large mud-bricks (Fig. 22). The masonries of the three walls are embedded to each other as in Level 2, which suggests that Level 1 corresponds to a general reconstruction of the ceramic workshop. In the eastern corner of the excavation, both Walls 602 and 603 show regular fillings of mortar between some bricks, according to the same technique used in Level 2 for the isolation of the aeration duct 626-612. In the next campaign, it will be interesting to check if it is inherent to another firing structure further east.

6. During the second half of the 3rd millennium, similar two-storey kilns are widely attested, as at Tell Jigan (Kiln k3 – Fuji 1985: fig. 5), Tell Brak Area FS (Oates, Oates and McDonalds 2001: 64), Tell Bi'a-Tuttul (Strommenger and Kohlmayer 2000: Taf. 76.1-76.2).

7. See for instance at Tell Barri (Kiln 1140 – Pecorella 2004: fig. p.20), Tell Jigan (Kiln 2 – Fuji 1985: fig. 5), Tell Bi'a-Tuttul (Strommenger and Kohlmeyer 2000: Taf. 50.3-50.4)

8. Nevertheless, the entire area yielded exclusively large amounts of ceramic slags. Moreover, the rarity of burnt bricks in this period makes it unlikely the hypothesis that 617 was a brick kiln.

An Akkad Cylinder-Seal From Logardan

Clélia Paladre

Typological description

The object LOG D P 236.1 is a cylinder seal made of serpentine (Fig. 1) with a longitudinal perforation (0.6 cm in diameter). It is around 1.7 cm in diameter and 3 cm high. It was found in the Trench D of Logardan, among the stones of a collapsed layer (locus 600) of Level 3a (late Akkad), near the kiln 638.

The technique of execution is exemplary: we can see the utilisation of an abrasive (sand or quartz) which served the seal-cutter using two different methods: filling with a thin file and micro-chipping with a kind of spatula-shaped tool for the larger motives (bodies of the figures). The details were made with a thin tip certainly in metal (the tool traces are still visible). Finally, the seal was polished with stone polishers or powdered hematite ("jeweller's rouge")[1]. The creation technique of the star seems different; it has been made with a larger spatula-shaped tool with curved cutting edges that gives a gouged aspect to this motif. It could be a late addition, and shows no polishing. The seal perforation was drilled from each end with a drill tip (Fig. 2).

Fig. 1 - The cylinder seal LOG D P 236.1.

Fig. 2 - The perforation.

1. All these precisions about the creation techniques are possible thank to the discovery, in Ur, of an Akkadian bead-maker's grave where a tool kit was placed (Sax et al. 1998 p. 2).

The state of preservation is variable. One face is very well preserved whereas the other is heavily eroded and worn, like if it was studded. It could be explain by a long period of exposure to the heat (Fig. 3a and 3b).

Fig. 3a - Illustration of the preservation of the cylinder seal.

Fig. 3b - The "studded" face of the cylinder seal.

Dating

The strong parallels with the « classic akkadian style - [arad-zu]" seals allow us to suggest a relative dating between ca. 2250 and 2100 BCE. Indeed, this type of cylinder seal is associated with the radical change in the administrative practices under the reign of Naram Sin. So it was probably in use from this reign to the end of the Akkadian Empire, and certainly also during the post Akkad period. Frankfort dates this type from the "Mature phase" of the Akkad period (on the basis of stylistic criteria, the style becoming more and more modelled and realistic)[2] and Boehmer from the "Akkadische III period" (on the basis of iconographic features, compositions becoming more and more "simple" with only two pairs of contestants)[3]. However, most of those seals are dating from the reign of Shar-Kalli-Shari[4]. Thus, we can suggest a more precise dating around 2190 BCE. From a stratigraphic point of view, level 3a has provided a C14 dating, that fits perfectly well with our stylistic expertise of the object: 2201-2131BC (68.2% probability, see Appendix B).

2. Rakic 2003 p. 83 and p. 122.
3. Boehmer 1965 p. 136.
4. Rakic 2003 p. 336

Stylistic and Iconographic Description (Fig. 4 and 5)

Fig. 4 - The cylinder seal and its impression.

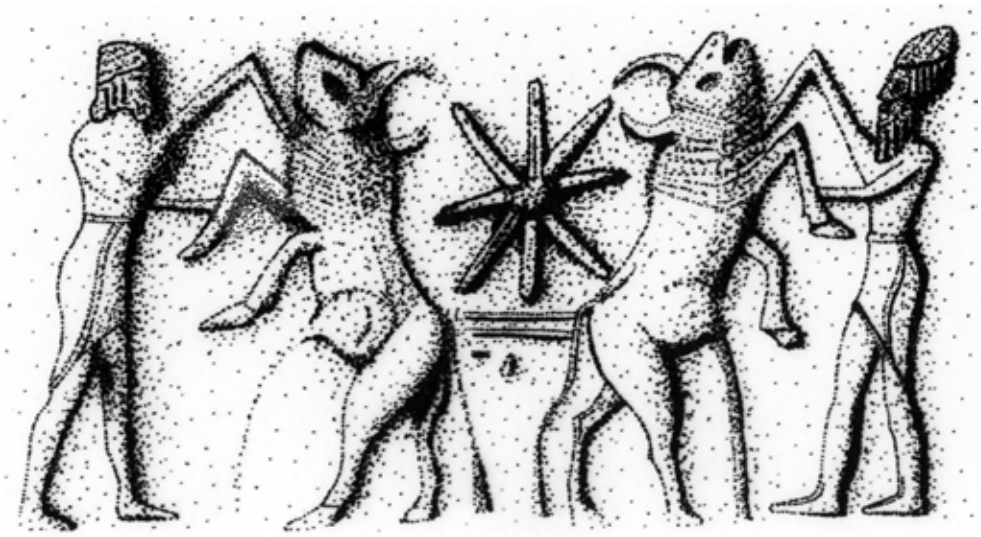

Fig. 5 - Drawing of the impression (C. Paladre).

The composition is symmetric, elaborated and elegant showing perfectly balanced figures. The style is precise with an emphasis on the physical details and on the modelling of the figures. Thus, an impression of strength and dynamism is put forward. The seal is a perfect example of the "mature Akkadian glyptic", which entire characteristics are here illustrated: details (anatomic features, clothes, hairs and hats ...), naturalistic rendering of the figures and emphasis on the muscles. However, the motif of the star is more schematic and crude. It can be characterised as a "gouged motif".

There are two pairs of contestants organized in a mirror-like composition. Two half faces bearded heroes are wearing a wrap-over skirt with curved ends and sandals. They are back-to-back. The right side hero is wearing a conical cap whereas the left side hero is wearing a bobbed hairstyle. Both are mastering a bull (*bos primigenius*[5]) with their hands holding one

5. Collon 1982 p. 35.

of the bull front legs. At the same time, they are hitting the bulls with a dagger. Bulls are standing on their hind legs with an impressive fleece on the chest. They are looking at the sky and ejaculating. Between these two contest scenes, we can see a star with eight points (a characteristic feature of the contest scene[6]). Just below, we can see two horizontal and parallel lines and a small circular depression (Fig. 6).

The composition could be understood as the struggle between wild and civilized worlds[7], it clearly expresses the power of the beasts as well as the completeness of its defeat.

Fig. 6 - The star, the two parallel and horizontal lines and the circular depression.

Discussion

This cylinder seal belongs to the "classic akkadian court seals" series. It is clearly related to the "[arad-zu] seals", intended for imperial officers, characterized by their compositions, consisting of two pairs of contestants, perfectly balanced, and by a framed inscription, that carries the name, the title and affiliation of the owner[8] (Fig. 7). The quality of execution and the material itself, since the serpentine is the most frequent material during this period, connect this seal to the official Akkadian production. The absence of inscription is singular but not surprising. Indeed, Rakic mention a subgroup with no inscription[9]. Instead of it stands a secondary motif, here a star (Fig. 8). This subgroup illustrates the iconographic influence, popularity and prestige of the Akkadian motifs in the peripheral regions. Thus, it should be a local production[10].

However, the presence of a roughly carved star that differs from the rest of the figures is not anecdotic. Two theories can here be suggested:

- It could be a failed seal. The two thin parallel lines and the circular depression would then be some mistakes made by the seal cutter, who drew the star in order to fill the space originally devoted to the inscription and transformed the seal into an ornamental object. By doing so, it prevented also to use the object as a seal. It could explain why the star is not polished. We can mention here an observation made by Zettler: the great majority of the seals and impressions with inscription [arad zu] presenting this kind of scene are well-planned, with a high quality and seem to be the product of a specific state-controlled workshop, since these seals were the prerogative of persons close to the royal administration[11]. Thus, it could be understandable

6. Rakic 2003 p. 81.
7. Rakic 2003 p. 78.
8. Pittman 2013 p. 334.
9. Rakic 2003 p. 117.
10. Rakic 2003 p. 369.
11. Zettler 1977 p. 36.

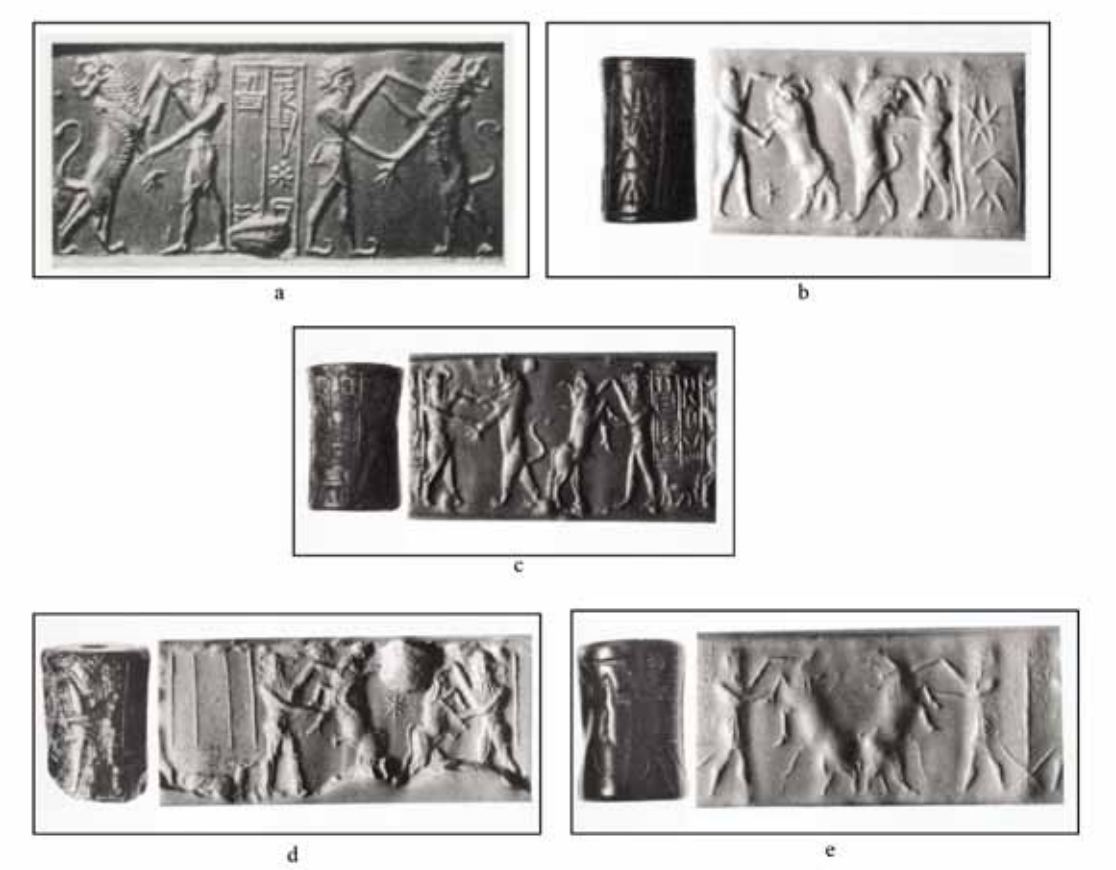

Fig. 7 - Examples of "[arad-zu] cylinder seals" – comparative plate.

7.a: cylinder seal, two pairs of contestants and inscription, Guimet Collection (abb. 195 taffel XVII Boehmer 1965).

7.b: cylinder seal, lapis lazuli, two pairs of contestants, star and inscription, British Museum (fig. 74 pl. X Collon 1982).

7.c: cylinder seal, green stone, two pairs of contestants and inscription, British Museum (fig. 83 pl. XI Collon 1982).

7.d: cylinder seal, serpentine, two pairs of contestants, a star and an empty frame for inscription, British Museum (fig. 99 pl. XIII Collon 1982).

7.e: cylinder seal, serpentine, two pairs of contestants and inscription, British Museum (fig. 100 pl. XIII Collon 1982).

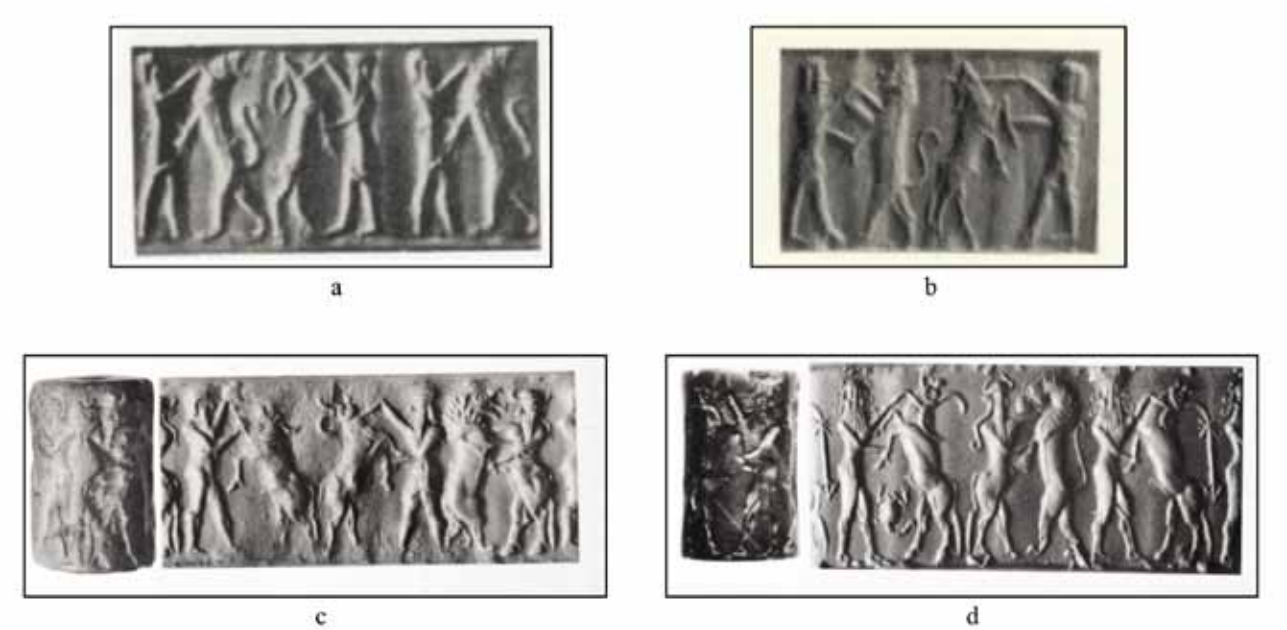

Fig. 8 - Examples of non-inscribed "contest scene cylinder seals" – comparative plate.

8.a: cylinder seal from Tello, two pairs of contestants (abb. 267 taffel XXIII Boehmer 1965).

8.b: cylinder seal from Kish, limestone, two pairs of contestants, Ashmolean Museum (fig. 309 pl. 25 Buchanan 1966).

8.c: cylinder seal, two pairs of contestants, British Museum (fig. 19 pl. IV Collon 1982).

8.d: cylinder seal, chalcedony, two pairs of contestants and scorpion, British Museum (fig. 33 pl. VI Collon 1982).

that the seal cutter abandoned the making of this failed seal that did not fit into the criteria of this prestigious type. Indeed, the ordered seal had to be perfect to satisfy the "sponsor", otherwise the seal cutter could to abandon its making[12]. It can also be corroborated by a reflexion of Frankfort who precises that only the best seals of this type have an inscribed panel[13].

- Or it could be a re-used cylinder seal. The two lines could be understandable as the rest of the inner edge of the frame originally devoted to the inscription, a good parallel is possible with a seal without provenance (Fig. 3a). Frames situated in the upper part of the space are attested and if inscriptions between two "adversaries" are scarce (it uses to be situated between the two heroes), it is not unknown. We can mention an example of the Louvre, coming from Suse (Fig. 3b). Another example from Tello is also a good parallel since the inner edge of the frame is made with two parallel lines (Fig. 3c).

For Zettler, they are used only in an official context and never in a personal one, because it is the mark of affiliation of the owner to the power[14]. So we can imagine that if the owner of the seal wants to use it in a personal context or offers it as a gift to someone else, he needs to erase the inscription. Hence, it seems logical to find a secondary motif to fill the space originally devoted to the inscription.

Conclusion

Whatever the answer to the matter of its specific secondary motif, this seal is a new evidence of the direct relations between the Akkadian imperial system and the Qara Dagh area in both administrative and economic fields, since the "two pair contest scene" attests an imperial administration controlled by the court[15]. However, it also demonstrates the presence of local elite in the Qara Dagh region (or perhaps of an officer at Logardan), who wants and needs prestige brands and adornments, which were appreciated and popular at this time.

12. Collon 1982 p. 22.
13. Frankfort 1955 p. 31.
14. Zettler 1977 p. 36.
15. Rakic 2003 p. 368.

Chalcolithic Ceramics from Logardan Trench D and Girdi Qala Northern Mound: Technical Features

Johnny Samuele Baldi

As in the 2015 campaign, the analysis of the chalcolithic ceramics from Girdi Qala and Logardan implied a technical approach to all the passages of the *chaîne opératoire*. The classificatory investigation of the sherds encompasses all the stages of the manufacturing process and highlights different traditions corresponding to different groups of producers, in accordance with a methodology already employed (Roux and Courty 2005, 2007; Baldi 2013b) for Levantine and north-Mesopotamian chalcolithic assemblages (Baldi 2012a, 2012b, 2012c, 2012d, 2013a; Baldi and Roux 2016). The technological reading of the surface features aims at characterizing the fashioning and finishing operations, while petrographic examinations allow detecting raw materials and the treatments to which they have been subjected during manufacture. It implies to take into account both surface features and micro-fabrics and to call upon ethnographic and experimental data. Given the often-polysemic character of the technical attributes, it is crucial to combine different scales and methods of investigation, both an autoptic and naked-eye analysis and a microscopic one. The result is a synoptic view of the different *chaînes opératoires* present in the assemblage, as well as of the finished products the *chaînes opératoires* were implemented for. On this basis, it is possible to discuss the nature – whether functional or cultural – of the techno-stylistic variability of the assemblage. Shaping methods, surface treatments, petrographic compositions of the pastes, firing procedures and morphological variants within the assemblage have been sorted to identify traditional ways to produce ceramics, specific to certain social groups.

Each *chaîne opératoire* was typical of a particular group of craftspeople because it was transmitted through generations by a specific network of apprenticeship and, therefore, it expressed the technical identity of the social group underlying the technical tradition (Gelbert 2003, 2005; Gosselain 2002; Roux and Courty 2005, 2007; Roux 2010; Baldi 2013a, 2013b). Hence, the different traditional *chaînes opératoires* can be observed in their synchronic spatial distribution as well as in their diachronic evolution through conservatisms, borrowings (i. e. in their continuities), disappearance of some of them and emergence of some innovations (that is in their discontinuities).

The first moment of the study consists in distinguishing technical entities and their variants: recurrent combinations of macro traces of fashioning and finishing show a set of specific operations or techniques that correspond to different technical groups.

In a second phase, within the different technical groups, all sherds are classified on the basis of their petrographic features, both on the basis of the fine mass (its colour, aspect and granulometry) and of non-plastic inclusions (nature, size, distribution, morphology and quantity).

The third and concluding stage of the analysis is represented by the morphological and stylistic classification (that is a traditional typology) of the sherds within each techno-petrographic group.

The sorting of all these aspects allows to recognize both regional parallels and evolutional elements. Indeed, the results largely confirm the technical panorama documented during the 2015 campaign for the assemblage from Trench C at Girdi Qala. Nevertheless, some new elements seem to be particularly relevant for the evolution of the *chaînes opératoires* in the micro-region of Girdi Qala and Logardan.

The chalcolithic ceramics discovered during the last campaign are shaped by (Fig. 1):

- 1. a moulding technique;
- 2. overlapping rounded coils (namely rings) of 2-2.5 cm thick[1], with sub-elliptic section and external oblique orientation;
- 2.i. wheel-coiling technique (by overlapping rounded coils of about 2 cm thick and then finishing the containers by the rotational kinetic energy;
- 3. overlapping flattened coils of 3-3.5 cm thick, with sub-elliptic section and alternating oblique orientation;
- 3.i. wheel-coiling technique (by overlapping flattened coils of 3.5 cm thick and then finishing the containers by the rotational kinetic energy;
- 4. hollowing out a lump of clay and pinching and stretching it.

Techniques 2.i and 3.i are sporadically documented during the Early Uruk phase: it means that wheel-coiling – attested by some rare and fine small-sized bowls – constitutes a complex and uncommon variants of two distinct coiling traditions (2 and 3). These ones are characterized by an important dimensional difference of the coils and by an unlike disposition of the junctions (sub-elliptic section with external oblique orientation for Technique 2 vs. sub-elliptic section with alternating oblique orientation for Technique 3). Yet, both of these shaping methods seem to disappear in the Middle Uruk phase, when the wheel-coiling is not documented at all during the central centuries of the 4th millennium BC. Only the next campaigns will reveal whether this absence of data depends on the fact that, for the moment, the excavated areas for the Middle Uruk (especially in Trench D at Girdi Qala northern mound) are quite restricted, or if the wheel-coiling (and therefore the use of the potter's wheel) completely disappears at the beginning of the Middle Uruk (local LC3) period[2].

Anyway, the restricted number of techniques and petrographic variants indicates that, as already demonstrated for other sectors of the 4th millennium northern Mesopotamia (Baldi 2012c, 2012d), the ceramic production was a very hierarchized and centralized activity,

1. During the 2015 campaign, a first examination of the sherds belonging to this technical group led me to estimate the thickness of the coils was about 1.5 cm. Later, it has been possible to verify that this evaluation (made essentially on the basis of surface grooves and cracks corresponding to the junctions of the coils) was inaccurate. Indeed, according to the inclination of the joints between the coils used for this technique, their thickness (measured not only on the surfaces but also on the transversal sections) is a bit greater, around 2-2.5 cm.
2. A temporary abandonment of this technique would not be surprising, since similar data, with a discontinuity in the use of the potter's wheel during the LC3 and a reappearance in the LC4-LC5, have already been observed in northern Syria (Baldi and Roux 2016: fig. 9).

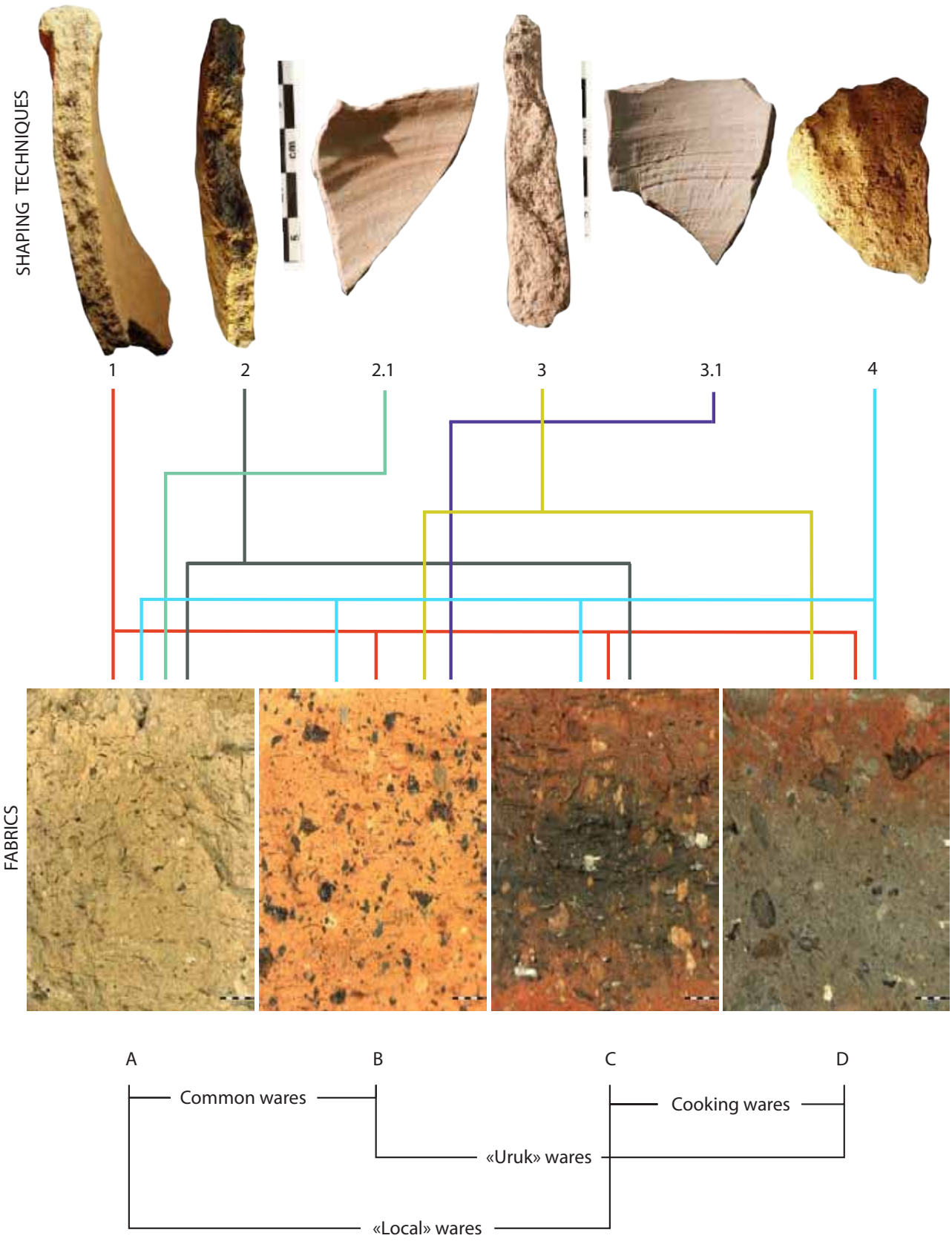

Fig. 1 - "Chaines opératoires" of the 4th mil. BC

carried on by a restricted number of specialists. These artisans were in charge of the manufacture for large groups, exceeding by far the horizon of their own village community, as also suggested by the kilns in the centralized firing area at Girdi Qala Trench C[3].

Four main petrographic macro-groups have been identified.

- A Group: beige or brownish porous fabrics, fired in an incomplete oxidizing atmosphere during short firing cycles (sometimes grey core), with abundant coarse vegetal and dispersed mineral inclusions (mainly basalt, quartz, sub-angular calcite, ferruginous particles and micas).
- B Group: beige and light orange dense mineral fabrics, fired in oxidizing atmosphere, with traces of serpentine and carbonates in the fine mass of the clay, and significant quantities of grinded shells and ferruginous inclusions.
- C Group: orange-reddish fabrics, fired in incomplete oxidizing atmosphere (short firings, black core) with large vegetal and small-sized mineral inclusions (basalt, limestone) and coal particles.
- D Group: orange-brownish fabrics, fired in reducing atmosphere (grey core and surfaces), with abundant basalt, quartz and metamorphic inclusions (silicates, chlorite, marble, etc.).

Petrographic Groups A and B gather different common wares and some (rare) fine wares (with depurated small-sized inclusions), while Groups C and D are cooking wares.

During the 2015 campaign, it became apparent that, despite some kind of distinction, there is no real dichotomy between local and Uruk wares. Indeed, fabrics belonging to A and C Groups perfectly fit the definition of the well-known north-Mesopotamian Late Chalcolithic Chaff-Faced wares. Most often, in 2015, these pastes have been found associated with local ceramic shapes in Trench C at Girdi Qala. Therefore, they seemed to represent a local version (with raw materials largely available in the Qara Dagh region) of the large north-Mesopotamian Chaff-Faced *koiné* (extended from central Mesopotamia to southern Caucasus – Marro 2010). On the other hand, B and D Groups, generally associated with foreign Uruk shapes in Trench C at Girdi Qala, seemed to reflect the south-Mesopotamian mineral tradition (Helwing 2002). This general framework includes some (rare) specimens belonging to A and B groups sharing a firing in a reducing atmosphere and, therefore, a grey aspect. These grey wares can be coarse chaff-faced vegetal (A) or mineral and relatively fine (B) tempered wares. Some kind of division is also visible on the basis of the shaping methods, since techniques 2-2i and 3-3i are always respectively associated with local-related (A-C) and southern-related (B-D) fabrics. But even in 2015 these technical traits did not seem to establish a sharp and unambiguous divide, with a clear dichotomy between the "Uruk" and the "local".

The last campaign confirmed that there is no schematic distinction between "local" and "foreign" wares: indeed, in Girdi Qala and Logardan, data about ceramic pastes are not elusive in themselves, but rather they tend to evolve. In this sense, on the basis of the technical aspects examined in 2015 and 2016, it is possible to sketch some evolutionary trends about traditional *chaînes opératoires*.

3. See Vallet (ed.) 2015.

First of all, the notion of "foreign" wares is highly inappropriate because, even if sometimes associated with south-Mesopotamian ceramic shapes, all the fabrics are made of locally available raw materials, which demonstrates that the entire ceramic production (even the Uruk pottery)[4] was essentially local. Moreover, during the Early Uruk phase (at Girdi Qala Trench C Levels 10-8 and, above all, at Logardan Trench D Level 4), all the fabrics are to produce ceramic shapes belonging to a south-Mesopotamian Uruk tradition. Actually, in the basal levels of Girdi Qala Trench C, straw-tempered fabrics (A and D Groups), frequently associated with local LC2 shapes (64% of the assemblage in Levels 10-8 at Girdi Qala C), were also used to manufacture Early Uruk ceramic types. In Level 4 at Logardan Trench D, in a context characterized by a complete absence of local LC2 materials, the same vegetal A and D Groups were routinely used for early Uruk types (53% of the assemblage). Likewise, in the same contexts, for the production of the same southern early Uruk shapes, mineral-tempered fabrics (B and D Groups) were used as frequently as the chaff-faced ones (about 47% of the sherds in Trench D Level 4 at Logardan). It clearly indicates that, at the beginning of the Uruk period (namely in the first moment of the cultural contact between local inhabitants and southern settlers), there was no distinction between the fabrics used for local LC2 shapes and foreign Early Uruk vessels.

This quite surprising technical framework is very coherent with the analysis of the 6th millennium pastes carried-out in 2015 for the Halaf and HUT pottery from Logardan Trench C. As a matter of fact, A, B, C and D Groups of fabrics were already documented amongst the pastes used in the western Qara Dagh since the 6th millennium BC. A and C Groups are very conservative and remain unchanged over the Middle and Late Chalcolithic, while B and D Fabrics preserve their mineralogical composition, even once subjected to a quite noticeable process of adaptation. In particular, since the beginning of the 4th millennium, nature and quantity of the components of B Group remain the same they were in the 6th millennium BC, but their granulometry becomes increasingly coarse. Concerning D Pastes, they conserve the same mineralogy and fine mass than before, but they lose the coarse vegetal inclusions they had in the 6th millennium and become exclusively mineral-tempered. Thus, the appearance of the first Uruk ceramics does not imply the use of new raw materials or fabrics, but just some adjustments of previous petrographic traditions.

To obtain a more complete picture, this framework has to be integrated with the evolution of the shaping techniques. Amongst them, three of those attested in the 4th millennium contexts (Techniques 2, 3 and 4) were already documented in the 6th millennium assemblage from Trench C at Logardan. Nevertheless, since the Early Uruk phase, innovations are important. The potter's wheel briefly appear in the technical panorama with two variants of the wheel coiling technique (shaping Methods 2.i and 3.i), based on the different modalities of overlapping coils which are documented since the 6th millennium. Moreover, the long-lasting tradition of shaping by hollowing out a lump of clay (Technique 4) becomes more and more rare, and eventually disappears since the beginning of the Middle Uruk phase. In the same time, the moulding technique (1) emerges as an innovation since the beginning of the 4th

4. As demonstrated by Berman 1986: 243; Ghazal *et al.* 2008: 93-99, fig. 90-91; Emberling and Minc 2016.

millennium and becomes widespread during the Middle Uruk[5]. Both these shaping methods – the rising moulding technique (1) and the vanishing hollowing technique (4) – were associated with all the groups of fabrics (A, B, C and D).

Overall, the supposed divide between local Late Chalcolithic and foreign Uruk ceramic traditions does not appear as an obvious reality, but rather as an ongoing evolutionary process. In this dynamics, the Early Uruk phase represents a crucial moment. Some traditional techniques tend to disappear, some others emerge, while new complex shaping methods appear. On the basis of the last campaign, it is clearly evident that there is no reason to attribute these changes exclusively to new south-Mesopotamian people. On the contrary, the south-Mesopotamian artisans immediately adopt local pastes and adapt just some components in the preparation of some fabrics. Despite evident morpho-functional differences between local and Uruk repertoires, the integration between the respective production systems has been very high since the beginning of the 4th millennium and all technical innovations equally impact both Uruk and local shapes[6]. Later, in the Middle Uruk period, a kind of distinction emerges between local LC3 shapes associated with chaff-faced A-C Fabrics, and Uruk shapes associated with mineral B-D Pastes. In 2015, this dynamics was recognized as a quite fuzzy scheme[7] within the assemblage of Trench C at Girdi Qala and, on the basis of similar data from the Euphrates and Khabur basins[8], it was interpreted as the corollary of increasing technical borrowings between local and Uruk traditions. Actually, it was the opposite. After the 2016 campaign, it is possible to identify a tendency towards a distinction between local and Uruk traditions during the Middle Uruk: if, during the Early Uruk, both the repertoires shared the same wares, in the Middle Uruk, south-Mesopotamian shapes were more and more frequently made of mineral fabrics, while local shapes remained mainly linked to chaff-faced pastes.

Actually, the technical analysis of the ceramic *chaînes opératoires* at Girdi Qala and Logardan show the cultural contact between local and Uruk craftsmen under a completely new light: not just as an encounter between distinct realities, but rather as an emerging differentiation on the basis of a widely shared substrate.

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5. In 2015, on the basis of the materials from Trench C at Girdi Qala, it was doubtful if the moulding technique (used for about 16% of the assemblage from Girdi Qala Trench C) was to consider as an emerging innovation or as a disappearing tradition. But after the last campaign, it has been possible to carry-out a finer diachronic analysis. During the Early Uruk (at Girdi Qala Trench C Levels 10-8 and at Logardan Trench D Level 4), the moulding technique represents about 4% of the assemblage, while in Middle Uruk contexts (at Girdi Qala Trench C Levels 7-1 and Girdi Qala northern mound Trench D) it was used to produce about 28% of the ceramics. This trend is confirmed by similar date from other sectors of the northern Mesopotamia (Baldi and Roux 2016) and clearly suggests that the moulding technique was a new and rapidly emerging shaping method.
6. In this sense, the hollowing-out technique disappears in the same time within both the repertoires, the moulding technique spreads amongst Uruk shapes as amongst the local ones and, at the end of the LC2, the potter's wheel is temporarily documented for some (both Uruk-related and local) rare and fine bowls.
7. The most dramatic exception to this pattern is represented by the most typical shape of the Uruk repertoire, the bevelled-rim bowls, which continue to be manufactured using both mineral and vegetal fabrics.
8. Substantial technical borrowings between local LC3-LC4 and Middle Uruk traditions are attested, for instance, at Hassek Höyük, Tell Feres and Zeytinli Bahçe (Helwing 2002; Baldi 2016; concerning Zeytinli, Frangipane personal communication)

Chalcolithic Ceramics from Logardan Trench D: typological features

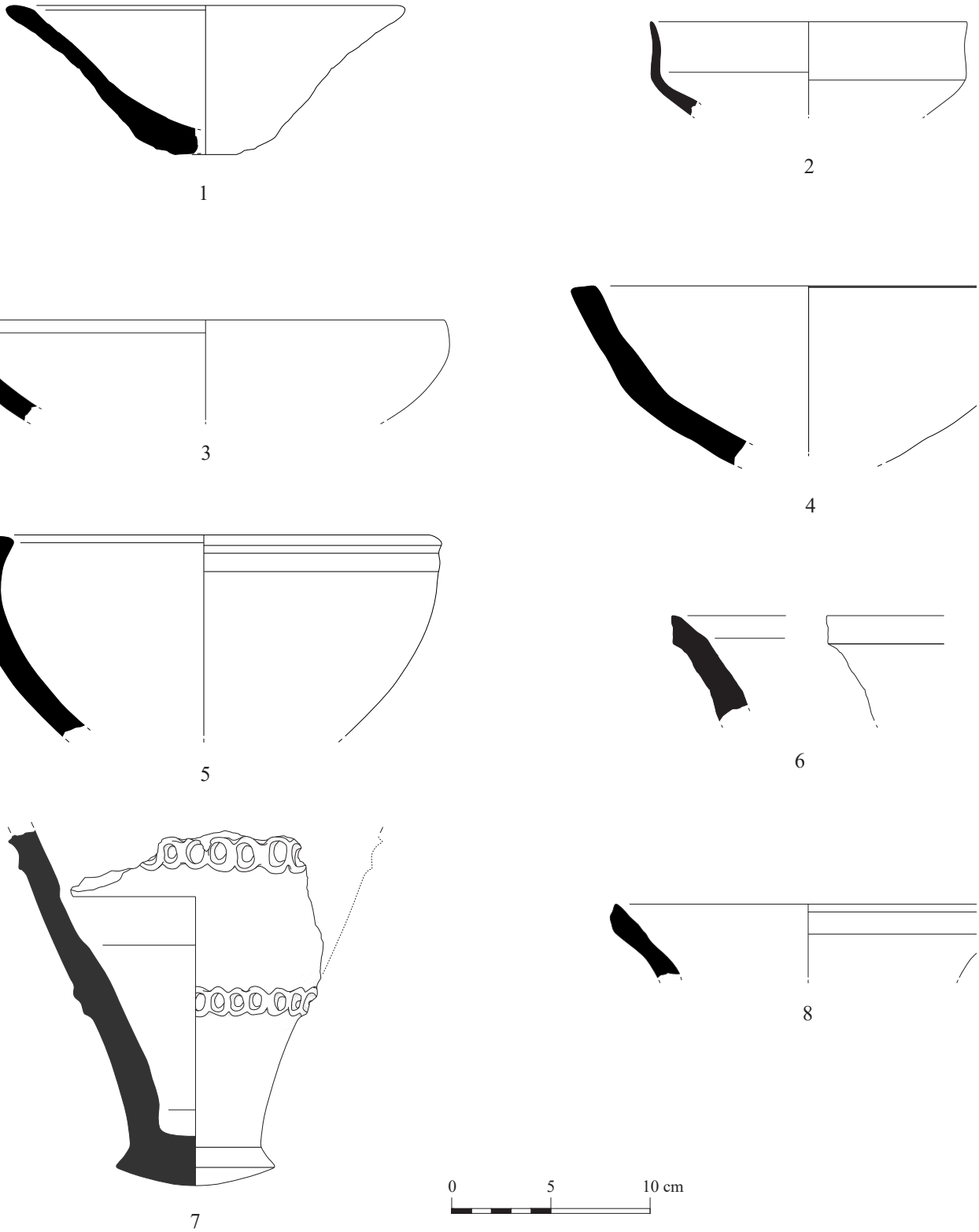
Johnny Samuele BALDI

The assemblage from Levels 1-3 of Trench D at Logardan dates back to the 3rd millennium BC: Levels 1-2 yielded Akkad and post-Akkad ceramics, while pottery from Level 3 belongs to a Proto-dynastic II-III horizon[1]. Although some out-of-context chalcolithic sherds have been collected in Levels 1-3[2], 4th millennium ceramics come essentially from Level 4 and its sub-levels. It is not a huge amount of pottery (just 2205 sherds, of which 198 typologically diagnostic samples), but it significantly improves the information available on the Early Uruk period. This south-Mesopotamian repertoire was not documented at all in central and northern Mesopotamia before the excavation, in 2015, of Levels 10-8 of Trench C at Girdi Qala and, even in southern Mesopotamia, it is very little known. Obviously, pottery from Trench D Level 4 at Logardan largely confirms what already observed about the assemblage from the basal levels of Trench C at Girdi Qala, but it also offers several additional clarifications. Moreover, unlike Trench C at Girdi Qala, where a local LC2 tradition was also documented, Level 4 of Logardan Trench D yielded exclusively south-Mesopotamian-related shapes[3].

Fig. 1 - Early Uruk V-shaped bowl with scraped bottom from Logardan Trench D.

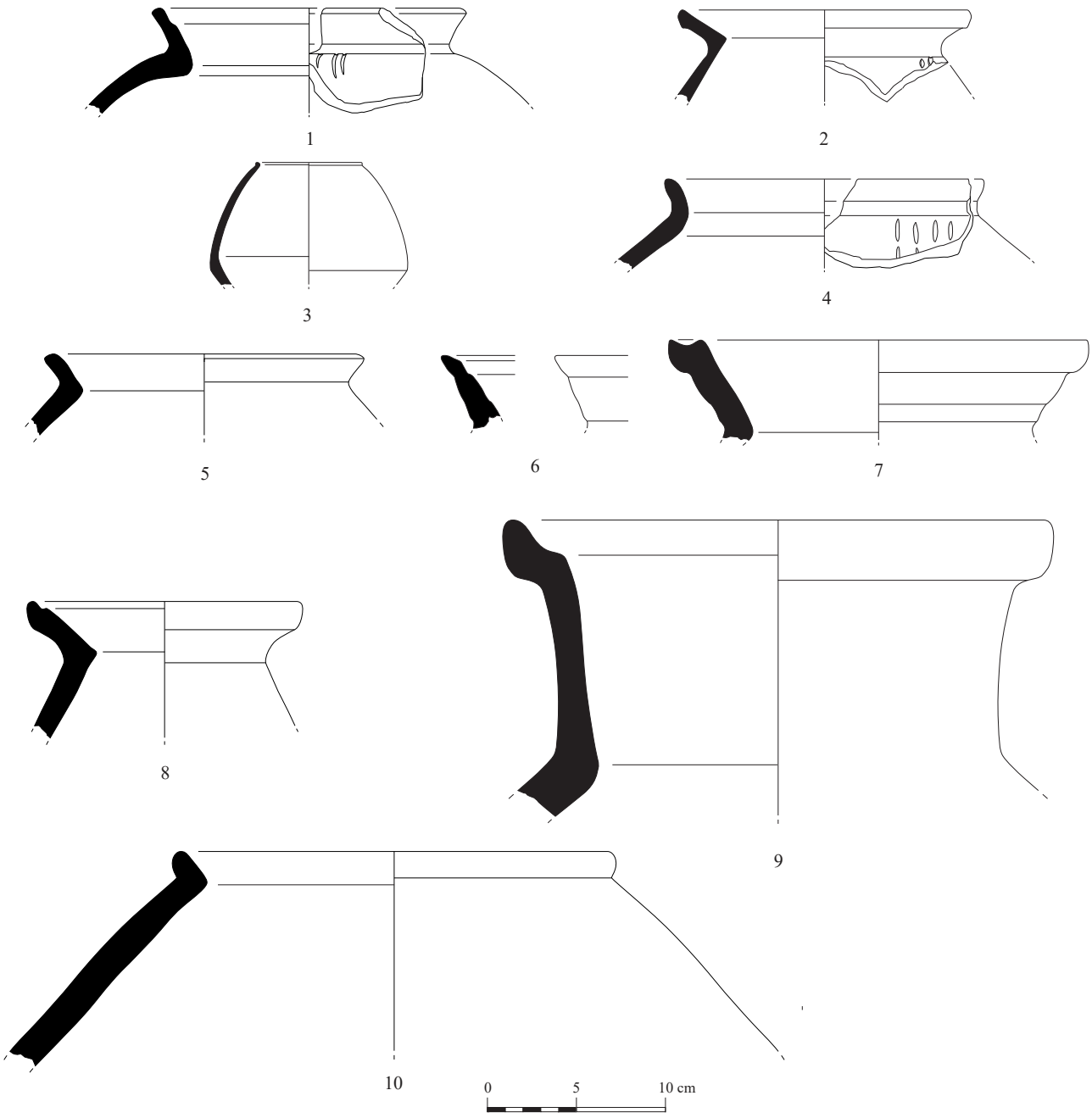
Concerning open shapes, conical flat-base bowls with rims slightly rounded or thickened on the exterior side are roughly finished and sometimes scraped on the lower part of the exterior body (Pl. I.1 – Fig. 1)[4]. The only sample of little carinated bowl is well-shaped and quite fine-walled (Pl. I.2)[5]. In-turned rim bowls are quite shallow and have roun-

1. See M. Zingarello, this volume.
2. Despite important building activities due to the construction of the kilns in Levels 1-3, only 89 chalcolithic sherds (7 Halaf, 39 Ubaid and 43 Early Uruk specimens) were found out of context in Trench D.
3. No diagnostic samples and just 5 body-sherds can be attributed to a north-Mesopotamian LC2 tradition.
4. Both morpho-stylistic and technical features of these conical bowls match with late (i. e. LC2) oriental samples of "V"-shaped Coba bowls attested in northern Mesopotamia during this phase (Baldi 2012b). For south-Mesopotamian Early Uruk parallels see Eridu (Safar *et al.* 1981: fig. 22; Wright 2014: fig. 7.2.a-b), Farukhabad (Wright 1981: fig. 46.d-f), Geser 15 (Alizadeh 2014: fig. 61.G).
5. See Geser 15 (Alizadeh 2014: fig. 61.I), Farukhabad (Wright 1981: fig. 47.p, q, r). This same type is also documented within contemporary north-Mesopotamian late LC2 assemblages, as at Nineveh (Gut 1995: Taf. 57.840) or Tepe Gawra (Rothman 2002: pl.8.743, pl. 22.2798).



1 : LOG 16 D 259-3
2 : LOG 16 D 273-6
3 : LOG 16 D 250-4
4 : LOG 16 D 273-5
5 : LOG 16 D 273-4
6 : LOG 16 D 259-1
7 : LOG 16 D 270
8 : LOG 16 D 273-2

Plate I - Different shapes of Chalcolithic ceramics from Logardan Trench D.



1 : LOG 16 D 269-4
2 : LOG 16 D 269-5
3 : LOG 16 D 279-2
4 : LOG 16 D 279-3
5 : LOG 16 D 250-6
6 : LOG 16 D 269-6
7 : LOG 16 D 269-7
8 : LOG 16 D 273-9
9 : LOG 16 D 269-8
10 : LOG 16 D 273-1

Plate II - Different shapes of Chalcolithic ceramics from Logardan Trench D.

ded or somewhat inwards belled rims (Pl. I.3)[6], while a deeper type displays pinched or top-flattened rims[7] and a slight carination towards the middle of the body (Pl. I.4-5)[8]. Coarse flattened-base basins, a widespread shape of the Middle Uruk period, appear since this early phase, even if they are quite rare[9]. Bevelled-rim bowls (hereafter BRBs), which are considered the main hallmark of the Uruk period, are quite rare and not yet serially produced: their rims can be oblique, but most of time are vertically bevelled on the exterior side (Pl. I.6)[10]. But the most characteristic open containers are the so-called proto BRBs[11], with rims sometimes thinned, rounded, or loosely cut and bevelled in various ways and with varying orientations(Pl. I.8 – Fig. 2)[12].

Closed shapes are basically represented by ovoid jars with flared necks and rounded or flattened rims, sometimes provided with straight or conical spouts (Pl. II.1-2)[13]. Carinated pots with beaded rim are not frequent but very diagnostic of Early Uruk assemblages (Pl. II.3)[14]. Some rare neckless samples have everted and rounded rims (Pl. II.4-5, 8)[15], while some sporadic specimens with developed necks (Fig. 3) have flaring pinched or hollowed rims and quite elliptical shapes

Fig. 2 - Early Uruk proto-BRB from Logardan Trench D.

6. For rounded in-turned rims see Eridu (Wright 2014: 7.2d), Geser 12 (Alizadeh 2014: fig. 58.F). For inwards bevelled-rim bowls see Farukhabad (Wright 1981: fig. 46.h), Geser 13-14 (Alizadeh 2014: fig. 59.J, 60.D).
7. See Susa "Acropole III" 7-11 (Wright 2014: fig. 7.5i), Farukhabad (Wright 1981: fig. 47.c, m), Geser 10-11 (Alizadeh 2014: fig. 57.C, O).
8. See Eridu (Wright 2014: 7.2e-f), Susa "Acropole III" 7-11 (Wright 2014: fig. 7.5g), Geser 12 (Alizadeh 2014: fig. 58.H).
9. See Uruk/Warka XII-IX (von Haller 1932: Taf. 18.B.v, Taf. 18.C.c'), Farukhabad (Wright 1981: fig. 42.a), Geser 14 (Alizadeh 2014: fig. 60.B).
10. BRBs appear as a generic open shape before being serially produced since the beginning of the Middle Uruk phase (at Uruk, they become a serial product since Level Eanna VIII-VII – Sürenhagen 1986). For Early Uruk BRBs, see Eridu (Safar *et al.* 1981: fig. 22 lower left; Wright 2014: fig. 7.2.c), Susa "Acropole III" 7-11 (Wright 2014: fig. 7.5c).
11. Dyson 1966: 320; Alizadeh 2014: 30; Wright 2014: 119.
12. See Susa "Acropole III" Levels 7-11 (Le Brun 1971: fig. 40.4; Wright 2014: fig. 7.5a-b), Farukhabad (Wright 1981: fig. 45.h-k), Geser 11, 13 (Alizadeh 2014: fig. 57.H, 59.H).
13. See Eridu (Safar *et al.* 1981: table 3:1, 3:2, 3:12, 3:17, 3:18, 3:21; Wright 2014: fig. 7.3b-e), in the Uruk region Site WS022 (Adams and Nissen 1972: fig. 33.8, 53.6; Wright 2014: fig. 7.4f, 7.4g), Susa "Acropole III" 7-11 (Le Brun 1971: fig. 40.8-9; Wright 2014: fig. 7.6g, i, j, k), Farukhabad (Wright 1981: fig. 51.g-o), Geser 14-15 (Alizadeh 2014: fig. 60.F, 61.S – for straight spouts see since Levels 9-10 fig. 56.A).
14. See Uruk/Warka XII-IX (von Haller 1932: Taf.18B.d', e', Taf. 18C.x), Geser 11-12 (Alizadeh fig. 57.f, fig.58.J), Sargarab (Wright *et al.* 1975: fig. 8.e), Kunji Cave (Wright *et al.* 1975: fig. 6.i).
15. See in the Uruk region Site WS022 (Adams and Nissen 1972: fig. 33.11; Wright 2014: fig. 7.4a), Susa "Acropole III" 7-9 (Wright 2014: fig. 7.6c-d), Farukhabad (Wright 1981: fig. 48.i, j), Geser 10, 14 (Alizadeh 2014: fig. 57.A, 60.I).

(Pl. II.6-7, 9)[16]. Another uncommon but diagnostic closed shape is represented by deep urns with a restricted mouth and club-headed rims thickened on the exterior side (Pl. II.10)[17]. Finally, some globular hole-mouth jars[18] and the very first samples of jars with triangular-section everted rims are also documented during the Early Uruk phase[19]. A remarkable Early Uruk trait which characterizes a disparate range of jars and closed shapes is represented by the hollowed inner profile of different kind of rims (Pl. II.6-9)[20].

Fig. 3 - Early Uruk jar with developed neck and ovoid shoulder from Logardan Trench D.

Concerning surface treatments, some rare (1,5% of the assemblage) but very distinctive red slipped sherds[21] probably constitute the first appearance of the southern tradition known as Uruk red ware[22]. Moreover, besides plain hand-finished surfaces, a consistent percentage of the sherds (24%) displays clear traces of scraping on the exterior body[23].

Decorations are extremely rare. The most noticeable amongst them, are some pierced lugs and the first appearance of some irregular nails (Pl. II.1-2, 4)[24] or cross-hatched incisions[25].

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16. This type is very close to the typically LC1-LC2 north-Mesopotamian flaring-rim jars (for north-Mesopotamian contemporary samples, see Tepe Gawra IX – Rothman 2002: pl. 20.2223, 2240). But compared to northern specimens, flaring-rim Early Uruk jars are quite rare and have narrow shoulders and ovoid bodies, while in the North these jars are globular and sometimes characterized by a slight carination under the shoulder. For southern parallels, see in the Uruk region Site WS218 (Adams and Nissen 1972: fig. 49.7; Wright 2014: fig. 7.4b), Farukhabad (Wright 1981: fig. 49.b-c, h-l), Geser 11, 12 (Alizadeh 2014: fig. 57.I, 58.D).
17. See Nineveh (Gut 2002: fig. 15.9-10), Farukhabad (Wright 1981: fig. 52.l), Geser Level 14 (Alizadeh 2014: fig. 60.H, K).
18. See Susa "Acropole III" (Wright 2014: fig. 7.6a-b), Geser Levels 12, 13, 15 (Alizadeh 2014: fig. 58.K, 59.D, 61.U-V).
19. This type is very distinctive of the Middle Uruk phase (see for instance at Girdi Qala northern mound Trench D). Compared to the neckless Middle-Uruk samples, the first specimens have a slightly more developed neck and a rim forming a band on the exterior side. See Susa "Acropole III" (Wright 2014: fig. 7.6e-f), Farukhabad (Wright 1981: fig. 52.h, i, j).
20. See Uruk/Warka XIII-XII (von Haller 1932: Taf. 17 D.h, I, n, Taf. 18A.p), Geser 12 (Alizadeh 2014: fig. 58.J), Susa "Acropole III" Level 9 (Wright 2014: fig. 7.6e), Kunji Cave (Wright *et al.* 1975: fig. 6.k), Sargarab (Wright *et al.* 1975: fig. 8.i), Farukhabad (Wright 1981: fig. 43.m-n, fig. 48.c).
21. See Eridu (Wright 2014: 111), Geser 15 (Alizadeh 2014: fig. 61.U).
22. The Uruk red ware is typical of the Middle Uruk phase in the South, as well as in central and northern Mesopotamia (see for instance at Nippur, Rubeidheh or Gurga Chiya – Hansen 1965: 204-205; McAdam and Mynors 1988: 39,48; Wengrow *et al.* 2016: fig. 8.13-15) and some very rare specimens are still documented in the Late Uruk (Eanna VI-V – Nissen 1970: 147), but its first appearance dates back to the end of the Ubaid period and to the Early Uruk phase (Eanna Levels XIV-XII – von Haller 1932: 38-40; Susa "Acropole I" 22 – Le Brun 1978: 181).
23. Even if quite typical of the LC1-LC2 north-Mesopotamian repertoires (Baldi 2012a, 2012b), scraped surfaces are also documented within Early Uruk southern assemblages, as at Eridu (Wright 2014: 111, fig. 7.2a-b, e-f, 7.3a), in the Uruk region (Site WS022 – Adams and Nissen 1972: fig. 33.11), at Susa "Acropole III" (Wright 1985: fig. 4; Wright 2014: fig. 7.5i, 7.6a-b), Geser 9-10 (Alizadeh 2014: fig. 56.E).
24. Finger-nail impressed and incised decorations appear in Eanna XII-IX Levels (von Haller 1932: Taf. 18A.h', Taf. 18C.g) and become popular in the Middle Uruk phase: see at Rubeidheh (McAdam and Mynors 1988: types 90a-I, 91a-e).
25. See Eridu (Safar *et al.* 1981: table 4:1), Farukhabad (Wright 1981: fig. 55.a).

Finally, a very restricted number of sherds (just 5 fragments) indicated the emergence of appliqué fingered cordons. This kind of decoration is better attested during the Middle Uruk phase (see for instance à Girdi Qala northern mound Trench D), but it is noteworthy that the first samples known from south-Mesopotamia, Khuzestan and Logardan Trench D Level 4 are associated to similar types of deep goblets (Pl. I.7)[26].

Even is quite basic, the repertoire from Level 4 at Logardan Trench D represents a unique document. It is the only genuine Early Uruk (namely south-Mesopotamian) assemblage from central and northern Mesopotamia. Moreover, it offers a significant comparative base for the ceramic productions of a period which, even in southern Mesopotamia and Khuzestan, is known from a very restricted number of sites and contexts.

Actually, on the basis of the ceramic chrono-typology established by Sürenhagen (1986), it is clear that the Early Uruk phase attested at Logardan Trench D corresponds to Levels XII-IX of the "*Tiefschnitt*" sounding at Uruk/Warka, but the excavated contexts are quite restricted and not very informative. The only other south-Mesopotamian site which yielded stratified materials is Eridu (Lloyd 1948): vessels from a well-preserved tripartite building are documented by some photos and drawings (Safar *et al.* 1981: fig. 22-23) illustrating flared-rim jars with straight or conical spouts, "V"-shaped bowls with roughly scraped surfaces, rare BRBs and different types of proto-BRBs. It largely coincides with the typology from Level 4 of Logardan Trench D. But the range of shapes from Eridu is very restricted: the total absence of storage jars or cooking pots clearly depends on the function of the excavated context, namely a tripartite building whose main spaces were devoted to serve and consume food towards the end of their period of occupation. Some other Early Uruk ceramics are also documented in the Uruk region at Sites WS022, 178, 218 (Adams and Nissen 1972: 220, 226, 228), but they come from a survey and their un-stratified nature does not allow to use them to improve our chrono-typological knowledge of this phase.

In South-western Iran, Early Uruk materials are known from Levels 7-11 of the so-called "Acropole III" sounding (Wright 1985: 726-732 and fig. 4) and from Level 23-22 of the "Acropole I" at Susa (Johnson 1973; Le Brun 1978: 181). Despite the restricted nature of the excavations, the beginning of the 4th millennium in both these trenches implies a rupture of the Ubaid-related traditions of Susa I period and the appearance of typically Uruk ceramic productions. The morpho-functional repertoire from Susa is wider than that from Eridu because both "Acropole I" and "Acropole III" soundings cut deeply through layers deposited by different activities. Nevertheless, some pottery comes from the initial cleanings of the sections (Le Brun 1971: 209-210). Well-stratified Early Uruk ceramics are also documented in Levels 11-15 of the Step Trench at Tall-e-Geser (Caldwell 1968). But from an architectural point of view, the whole 4th millennium sequence is represented by a series of fragmentary floors, walls and mud-brick layers, without any possibility of detecting some coherent building plans (Alizadeh 2014: 12).

26. See Uruk/Warka (Sürenhagen 1986: 42 T/198-223; von Haller 1932: Taf. 18C.n), Geser 13 (Alizadeh 2014: fig. 59.C).

For different reasons, also the materials from Farukhabad offer a questionable overview on the Early Uruk phase. Indeed, excavations at Farukhabad have reached Early Uruk strata in Trench B Levels 36-35, which yielded a quite large ceramic assemblage. But the sharp typological separation established by the excavator between Uruk materials and so-called Sargarab ware (Wright 1981: 91) seems problematic if one compares this production (supposed to be local) to the assemblage from Level 4 at Logardan Trench D. Despite several features testifying of a clear continuity from the previous Susa I assemblage, Sargarab ware[27] shows an unmistakably Early Uruk-related repertoire (Wright 1981: fig. 40-44). But this typological continuity between the 5th millennium Farukh repertoire and the so-called Sargarab ware is not surprising if compared to the presence of many late-Ubaid-related types within the Early Uruk assemblages. Besides, even if Wright (1981: 168 and Table 2) places this tradition between the so-called Farukh phase and the beginning of the Uruk period, Sargarab ware is not typical of the late 5th millennium layers: on the contrary, it is very abundant and even dominant in the Early Uruk phase (Wright 1981: 91). Moreover, it shares some morpho-stylistic features with other sites in Luristan and Khuzestan[28], while some of its shapes are common to north- and south-Mesopotamian assemblages of this period[29]. But it also shows several south-Mesopotamian Uruk traits from a morphological point of view[30]. In the same

27. Named this way because of the large amount of this pottery collected on the surface at the eponym village of Sargarab, in the Deh Luiran Plain (DL 169) (Neely and Wright 1994: 131-138).

28. See for instance the presence, both at Sargarab and Kunji Cave, of large club-headed bowls (Wright *et al.* 1975: fig. 6.n, 7.f), or the frequency of Sargarab appliqué finger-impressed cordons, as at Kozegarān, Khāvardi or Baba Jan V (Wright *et al.* 1975: fig. 7.e, h, j; Goff 1971: fig. 6.25-27, fig. 6.46, fig. 7.17, 21). Nevertheless, even if the early 4th millennium assemblages from northern Khuzestan and Luristan belong to a local tradition, it is evident that they are closely related both to the north-Mesopotamian LC2 chaff-faced traditions (see the in-turned rim bowls or Coba bowl-like scraped container from Chiā Sabz – Goff 1971: fig. 6.7-9, 13; see also the in-turned rim bowls and the inwards bevelled-rim bowl from Baba Jan V – Goff 1971: fig. 7.2-6, 13). In the same time, these assemblages show some south-Mesopotamian Early Uruk traits (as the slightly drooping spout of Baba Jan V or the flared rim deep bowl of Afrineh – Goff 1971: fig. 7.30; fig. 6.37).

29. For instance the flaring-rim jars with thinned rims, which are generally considered as a LC1-LC2 north-Mesopotamian type (but see for instance at Sargarab – Wright *et al.* 1975: fig. 8.f). In the same way, some deep pots with restricted mouth and rims thickened on the exterior side are documented at Nineveh ("Lower" and "Middle" Nineveh 3 phase in a typically Gawra B horizon – Gut 2002: fig. 15.9-10), at Eridu (in a genuine Early southern Uruk context – Wright 2014: fig. 7.3a), as well as at Sargarab (Wright *et al.* 1975: fig. 7.i)

30. Some samples of finger-impressed cordons are attested in Early Uruk contexts at Logardan Trench D Level 4, or at Geser 13 (Alizadeh 2014: fig. 59.C); Sargarab shallow flat-base basins are a typically Uruk shape (Wright *et al.* 1975: fig. 8.l for a Sargarab ware specimen, while see Farukhabad and Geser 14 for Early Uruk samples –Wright 1981: fig. 42.a; Alizadeh 2014: fig. 60.B); some scraped and slightly carinated bowls are also attested in southern Mesopotamia (see Wright *et al.* 1975: fig. 7.b for a sample in Sargarab ware; see Wright 2014: fig. 7.2f for an Early Uruk sample from Eridu); some early types of BRBs are attested in Sargarab ware (Wright 1981: fig. 42.n); the typically early Uruk proto-BRBs seem to be documented also in Sargarab ware (Wright *et al.* 1975: fig. 7.a); conical bowls with pouring lips, which are attested at Farukhabad in Sargarab ware (Wright 1981: fig. 40.e.), are also typically Uruk (see for instance at Girdi Qala northern mound Trench D – Pl. GQN_D I.8-9); upwards conical spouts represent another feature the Sargarab ware shares with south-Mesopotamian Early Uruk assemblages (see Farukhabad, Wright 1981: fig. 40.b; see Eridu, Wright 2014: fig. 7.3e), as well as square-section flared-rim jars (see in Sargarab ware from Farukhabad, Wright 1981: fig. 44.g-j; see Early Uruk samples from Eridu, Wright 2014: fig. 7.3b-d); finally, some very early specimens of jars with triangular-section rims – a very widespread and peculiar type of the Middle Uruk assemblages – appear at Farukhabad in Sargarab ware (Wright 1981: fig. 42.i, fig. 44.a) as at Logardan Trench D Level 4 and other Early Uruk contexts (see for instance at Susa "Acropole III" Level 7 – Wright 2014: fig. 7.6f). It is also remarkable that some jars in Sargarab ware have a rim hollowed on the inner side (see at Sargarab – Wright *et al.i* 1975: fig. 8.i; or at Farukhabad in Sargarab ware – Wright 1981: fig. 43.l, m, n), as it is sometimes the case of jars and closed shapes from genuine Early Uruk assemblages (Pl. LOG_D II.6-9) (see at Farukhabad in "Uruk ware" – Wright 1981: fig. 48.c; or Susa "Acropole III" Level 9 – Wright 2014: fig. 7.6e).

way, it is possible to recognize the first emergence of some Early Uruk decorations at Logardan Trench D Level 4 and within the Sargarab assemblage from Farukhabad[31]. Therefore, it seems likely that the so-called Sargarab ware represents a production very close to (and strongly influenced by) the south-Mesopotamian Early Uruk tradition of the Khuzestan region, attested at Susa "Acropole I" 23-22 and "Acropole III" 7-11, as well as at Farukhabad Trench B 36-35.

In this sense, the assemblage from Level 4 at Logardan Trench D reveals its entire informative potential: not only it offers a unique archaeological record in central and northern Mesopotamia, but it also allows a better definition of the Early Uruk phase in its own characteristics and in its parallels. Actually, next campaigns at Logardan will offer the possibility to better establish the technical attributes of the Early Uruk pottery on the basis of larger assemblages. For the moment, beyond morpho-stylistic features that Logardan Trench D Level 4 and all the other Early Uruk assemblages share with Godin VII-"early" VI and Uruk Eanna XII-IX, it is remarkable that the first Uruk productions do not are exclusively mineral-tempered. On the contrary, at Eridu, Susa, Uruk, Farukhabad, Tall-e-Geser or Logardan, despite some mineral fabrics, the majority of the Early Uruk sherds has quite rough vegetal pastes. As already stressed above, this intriguing element tends to remove a long-lasting prejudice on the existence of a dichotomy between north- and south-Mesopotamian late chalcolithic ceramics.

31. The most noteworthy example is represented by the vertical pierced lugs and the criss-cross incisions, which are typical of the south-Mesopotamian Uruk assemblages (as at See Eridu – Safar *et al.* 1981: table 4:1; but also at Farukhabad, in a ware that the excavator considers genuinely Early Uruk – Wright 1981: fig. 55.a; while for a sample in Sargarab ware from Farukhabad see Wright 1981: fig. 44.l).

Logardan, the Upper Terrace Survey (UTS)

Martin Sauvage, Ménania Zingarello and Bahra Salah

In order to choose the best location of a trench on the upper terrace of Logardan, it was decided to carry out a preliminary survey to see if a differentiated distribution of the archaeological material could be identified.

The upper terrace of Logardan (fig. 1) is bounded on the north-west by the 'citadel', which is the summit of the tell, separated from the upper terrace by a 3 m-slope (672 m and 669 m respectively), on the NE by the steep slope towards the Tavuq Çay river, on the SW by the slope towards the Tchachma Spi river and on the SE by the median terrace of which it is separated by a steep 3 m-slope (respectively 663 m and 660 m of average altitude).

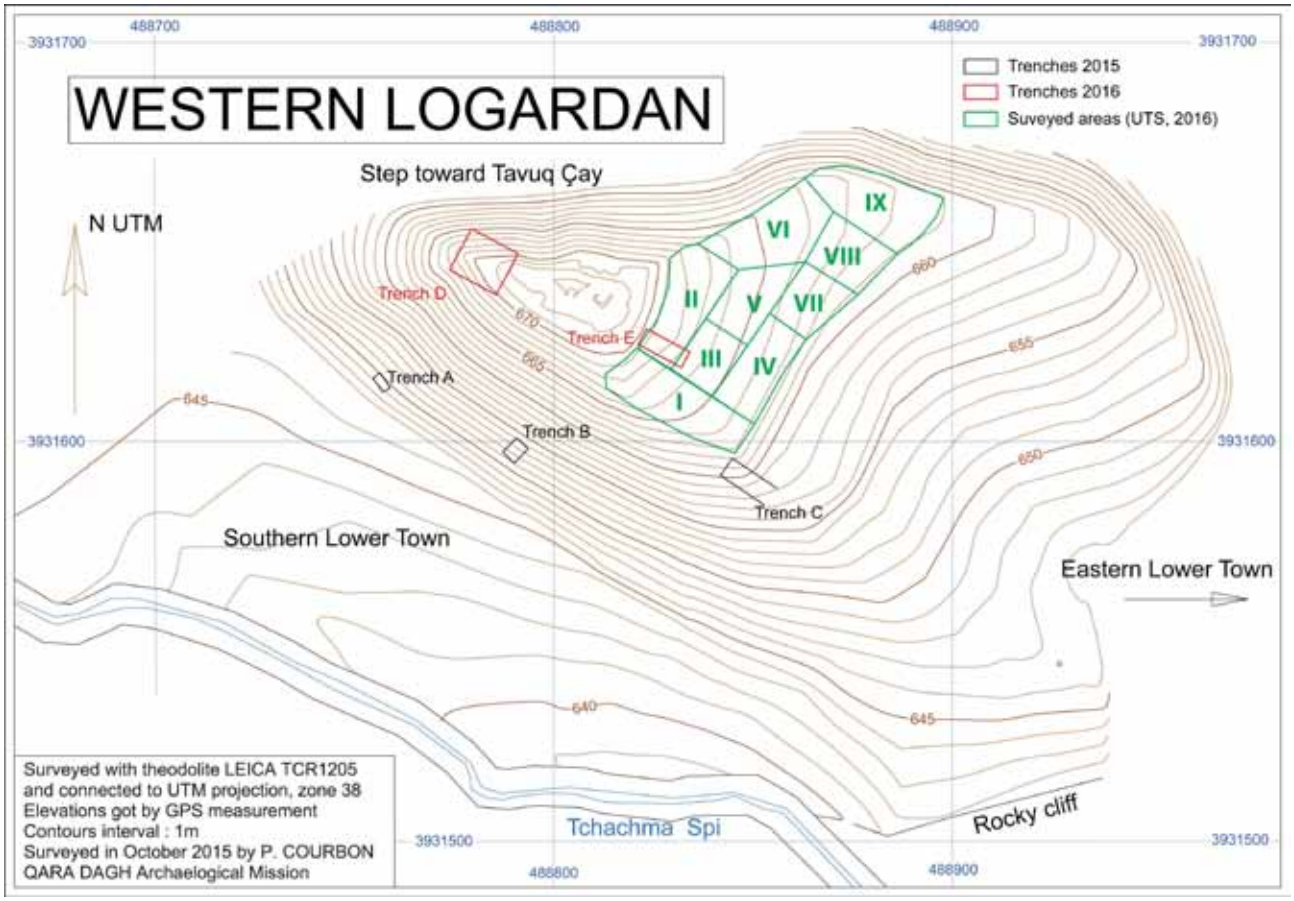


Fig. 1 - Topographical map of the western part of Logardan showing the Upper Terrace Survey areas I to IX an the locations of trenches A, B and C (2015) and of trenches D and E (2016) (topographical survey by P. Courbon, 2015; CAD by M. Sauvage, 2016).

The upper terrace thus represents a plateau gently sloping over 6 m from the NW to the SE (669 m to 663 m) with a total length of about 80 m from SE to NW and an average width of 40 m from SW to NE , covering a total area of nearly 3,000 m^2 (0.3 ha). Nine areas, numbered in roman numerals from I to IX, were delimited according to the topography but also taking into account the anomalies identified the previous year by the geophysical survey (Vallet 2015).

The surface survey was carried out over three days from 27 to 29 September by Martin Sauvage, Melania Zingarello and Bahra Salah. Because of the great number of potsherds on the surface, particularly in zones I, IV and IX, which were located were the slopes break, it was decided to collect only diagnostic sherds (lips, bases, handles, decorative elements, etc.) as well as a sampling of the characteristic pastes with a special attention to the finer wares, generally more fragmented and whose potsherds, smaller, are often less represented because difficult to locate.

The determination has been made by Johnny Baldi for the Chalcolithic and by Melania Zingarello for the Bronze Age (see infra, their reports on the pottery). All periods are attested from the late Halaf (around 5500 BC) to the Late Bronze Age (around 1200 BC) except for the Late Chalcolithic 1. A total of 1655 diagnostics potsherds were recognized including 81 of undetermined date (possibly among them sherds of Islamic era). To facilitate mapping, the dated shards have been grouped into seven main chronological phases: 1) Halaf and Halaf-Ubaid Transitional (HUT); 2) Ubaid; 3) Late Chalcolithic 2-3; 4) Late Chalcolitic 3/Early Uruk and Uruk; 5) Early Bronze Age; 6) Middle Bronze Age; 7) Late Bronze Age (see Table 1).

	HLF+HUT	UB	LC2-3	LC3/Early UK and UK	EBA	MBA	LBA	Indet.	Total
UTS I	50	32	9	6	27	43	16	26	353
UTS II	7	6	16	0	13	17	5	7	165
UTS III	6	0	15	0	10	19	7	1	131
UTS IV	14	22	8	25	8	18	11	8	249
UTS V	11	10	11	14	10	12	8	11	188
UTS VI	26	0	1	10	11	22	12	8	151
UTS VII	0	8	0	16	4	12	3	5	119
UTS VIII	9	9	0	7	7	20	2	5	106
UTS IX	56	28	4	8	3	9	4	10	193
	179	115	64	86	93	172	68	81	1655

Table 1 - UTS : Number of diagnostic potsherds by main chronological periods and by surveyed areas.

The relative proportions of each period per zone have been plotted (fig. 2) and distribution maps have been compiled per period (fig. 3).

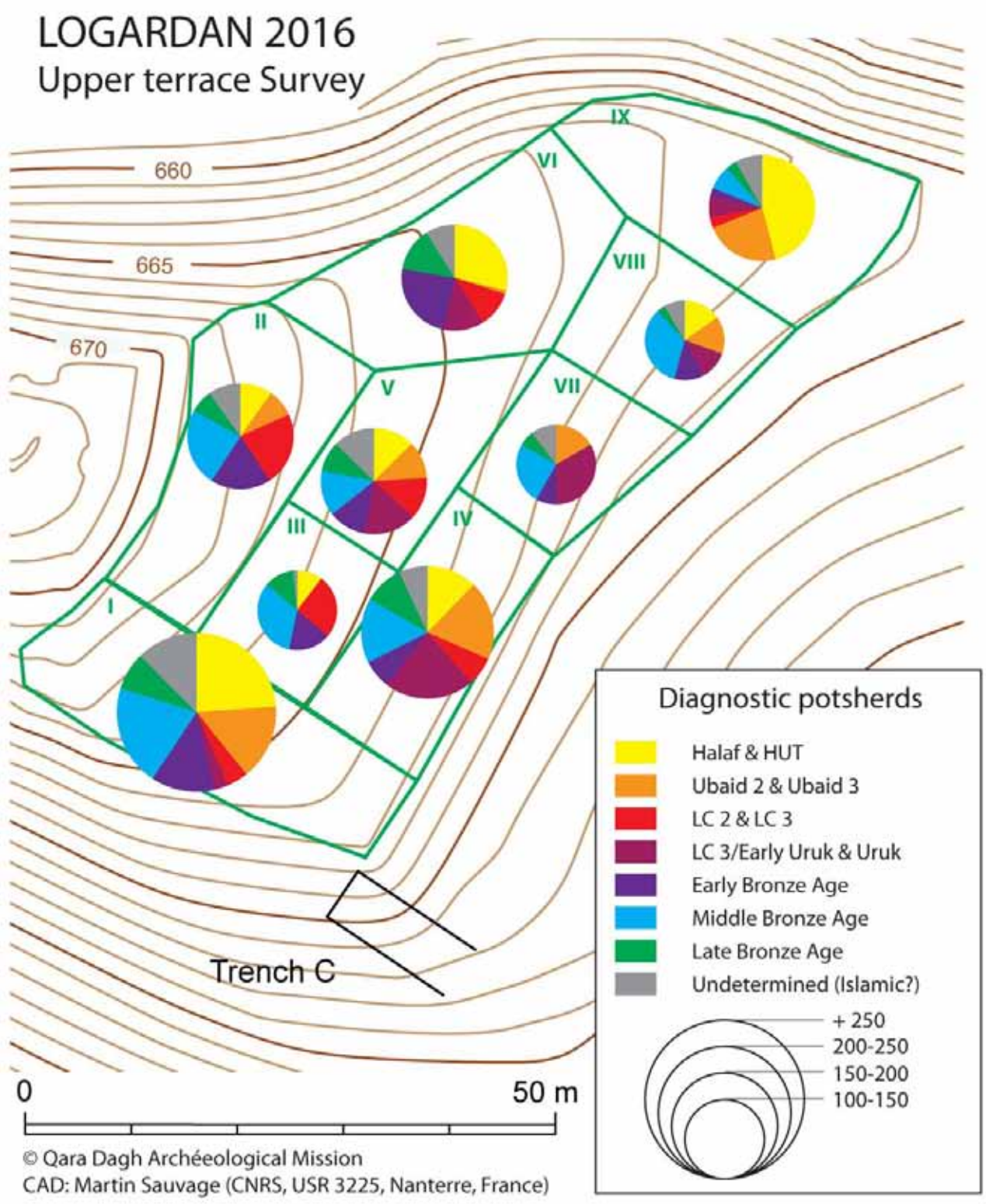


Fig. 2 - UTS : relative proportions of the diagnostic potsherds by period for each surveyed area.

Fig. 3 - UTS : number of diagnostic potsherds by period (topographical survey by P. Courbon, 2015; CAD by M. Sauvage, 2016).

Six objects were found on the surface: four terracotta artefacts (fig. 4): a perforated weaving (LOG.E.Tc1999.1), a spherical token (LOG.E.Tc1999.2), a spindle whorl (LOG.E.T1999.3), and an architectural decoration cone (LOG.E.Tc1999.4), to which must be added a stone polisher (LOG.E.P1999.1) and an iron arrowhead (LOG.E.Met1999.1).

The terracotta cone is most interesting as it most certainly comes from the architectural decoration of an Uruk public building. It was found in zone IV, close to the slope and comes either from the citadel due to runoff or from an underlying structure associated with the slope which delimits the upper terrace to the southeast.

UTS: perforated weaving weight (LOG.E.Tc1999.1)

UTS: spherical token (LOG.E.Tc1999.2)

UTS: spindle whorl (LOG.E.T1999.3)

UTS: architectural decoration cone (LOG.E.Tc1999.4)

UTS: stone polisher (LOG.E.P1999.1)

UTS: iron arrowhead (LOG.E.Met1999.1).

Fig. 4 - UTS : Miscelania.

Logardan Trench E

Martin Sauvage, Mélania Zingarello and Bahra Salah

During the 2015 campaign in Logardan levels of the Bronze Age were excavated at the top of Trench C, between the median and the upper terraces. In addition, a magnetic survey was carried out on the upper part of the site, showing a number of magnetic anomalies indicating underlying structures (Vallet 2015). It was decided in 2016 to go on investigating the Bronze Age levels at Logardan with a new trench (Trench E) set on the upper terrace (fig. 1). To help determine the best location for this trench, a preliminary surface survey (Upper Terrace Survey: UTS) was carried out (see *supra*). The survey has indicated a probable occupation of the Halaf and Obeid periods in the northern part of the terrace and

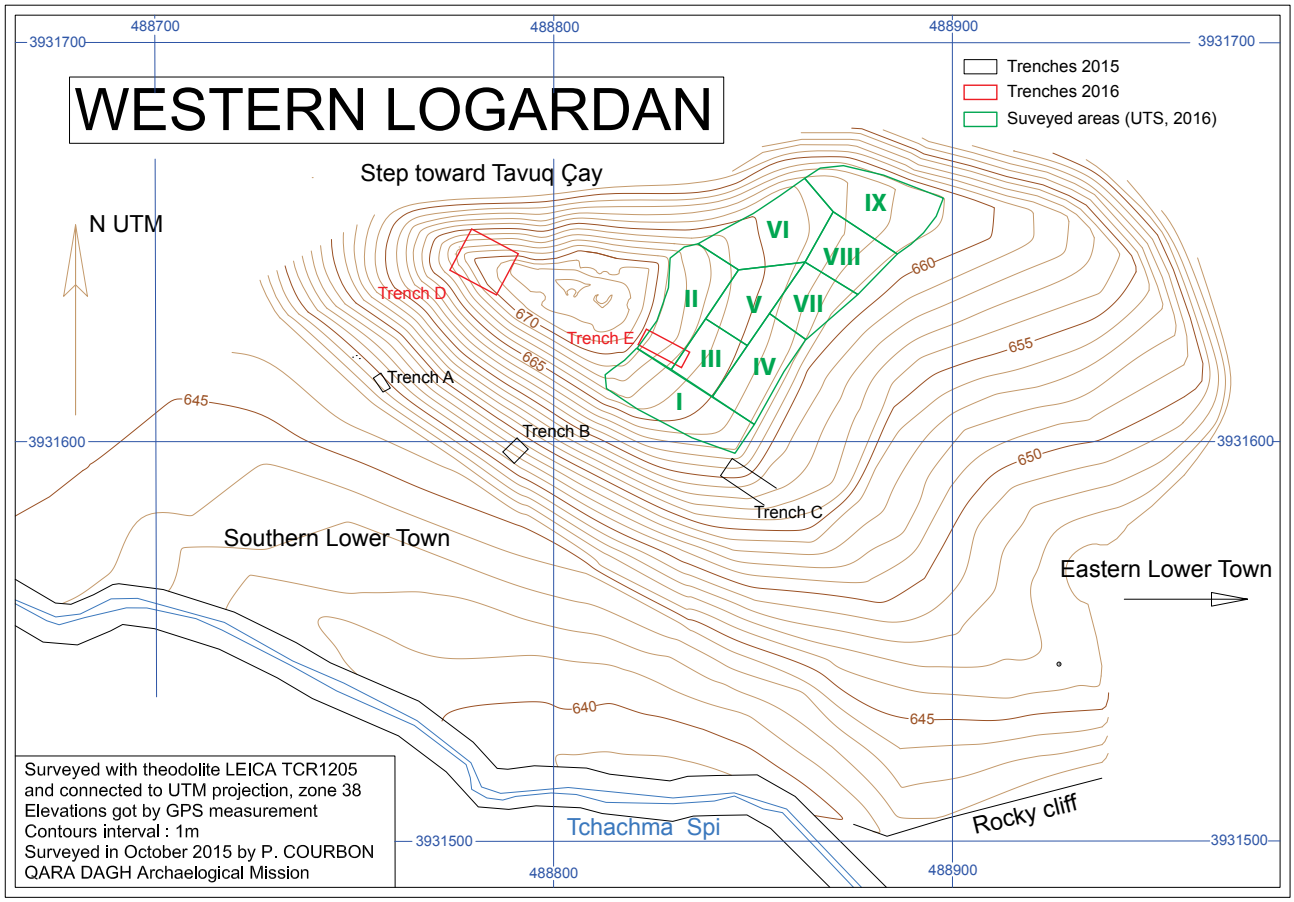


Fig. 1 - Topographical map of the western part of Logardan showing the Upper Terrace Survey areas I to IX and the location of the 2015 trenches A, B and C and of the 2016 Trenches D and E (topographical survey by P. Courbon, 2015; CAD by M. Sauvage, 2016).

a possible Uruk occupation at the junction of the upper and the median terraces. Finally, and this was confirmed by the excavation, the entire central part of the terrace appeared to have been lastly occupied by Bronze Age structures.

In this central zone, two important geomagnetic anomalies were identified by the 2015 geomagnetic survey (fig. 2). First of all, the supposed traces of the enclosure or retaining wall of the 'citadel' seemed to be interrupted to leave room to what could be the access way from the upper terrace. Secondly, a very contrasting rectangle clearly indicates a building in the axis of this access, a dozen meters below. It was therefore decided to lay trench E so that its north-west extremity reached the retaining wall of the 'citadel' and its south-east extremity an angle of the building identified by the geomagnetic survey.

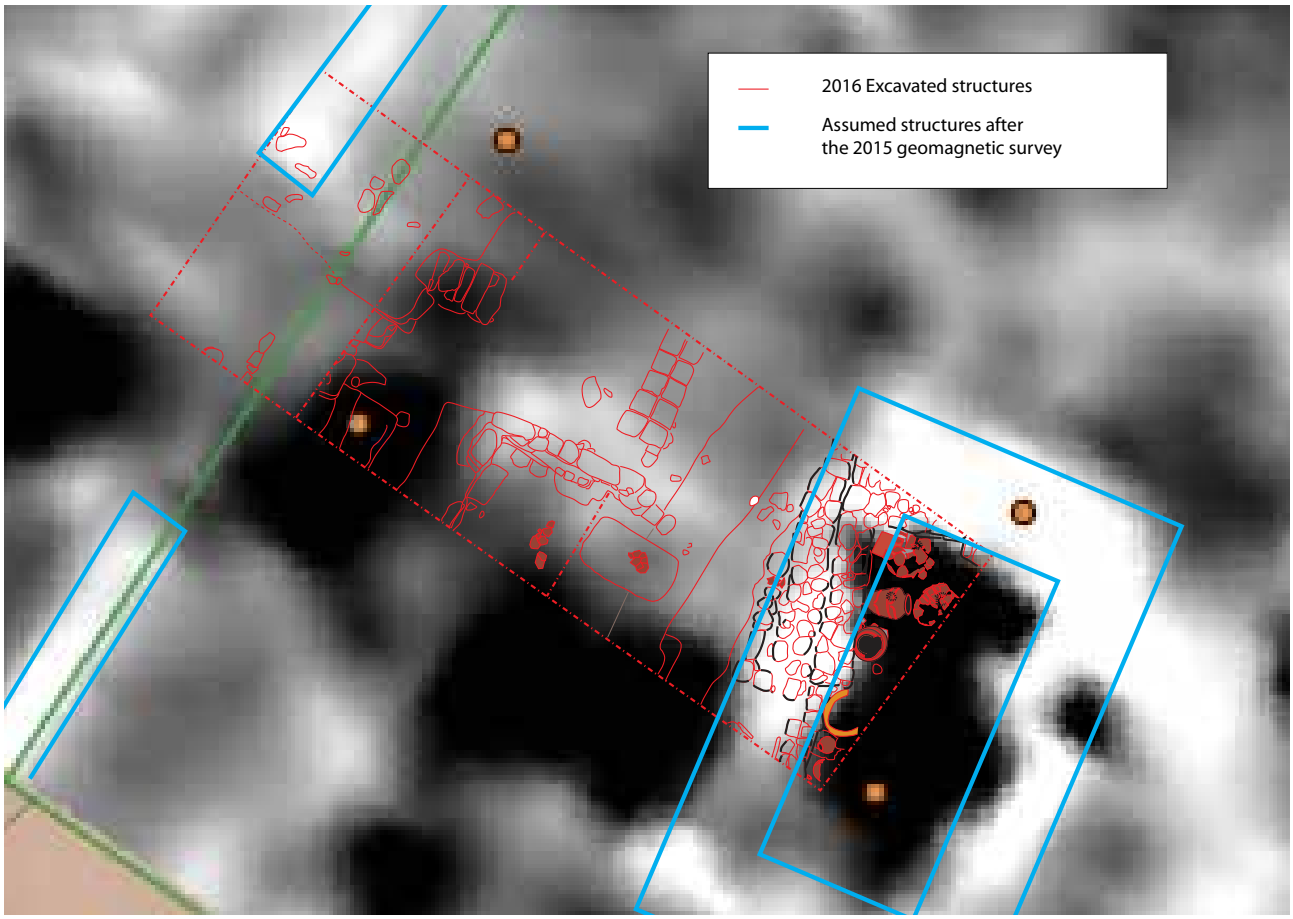


Fig. 2 - Logardan, 2015 geomagnetic survey (detail of Trench E area) with marks of what could be the retaining wall and the access way to the citadel and a rectangular building or room (geomagnetic survey by L. Darras, DAO M. Sauvage).

The excavation took place from 2 to 25 October under the direction of Martin Sauvage, with the help of Melania Zingarello and Bahra Salah, Micheline Kurdi was in charge of the calibration of the surveys and provided her help in excavating a tomb. The trench was first opened on 50 m^2: 10 m in the SE-NW axis and 5 m in the SW-NE axis; on October the 15th, an extension of 3 x 5m was added to the NW to bring the total open area up to 60 m^2 (fig. 3 and 4). The slope of the surface in Trench E is about 3 m (alt. 669.47 m at the NW, 666.51 m at the SE). Five successive levels of occupation were distinguished throughout the excavation (fig. 5), but some excavated structures could not be dated (no associated material or structures not yet emptied). Stratigraphy will certainly have to be refined during the next campaign, especially in the upper part of the trench where only the most recent levels were cleared.

Fig. 3 - Logardan, Trench E: mosaic view of the excavation at the end of the campaign (M. Kurdy)

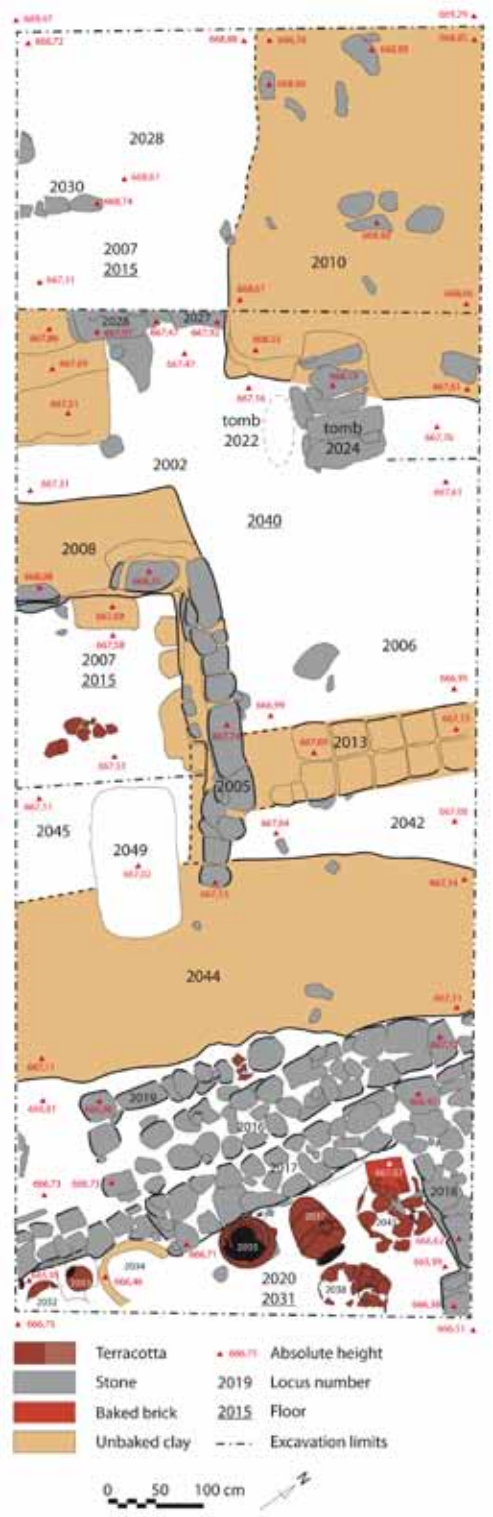


Fig. 4 - Logardan, Trench E: plan of the excavation at the end of the campaign (survey and CAD M. Sauvage).

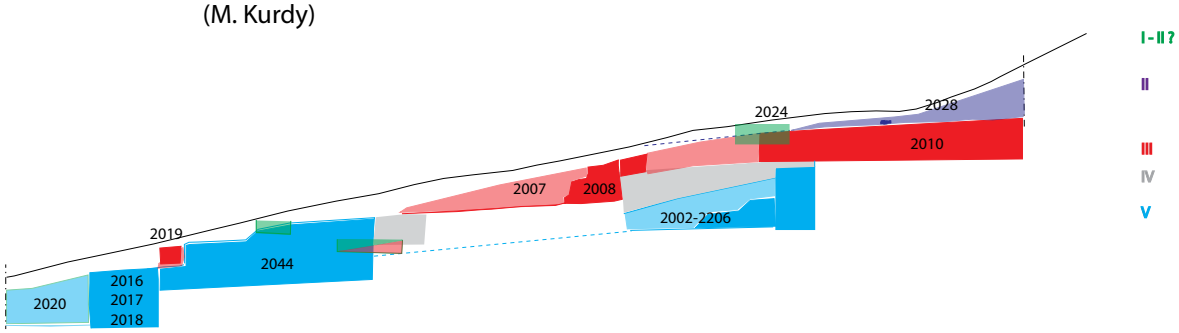


Fig. 5 - Logardan, Trench E: stratigraphic simplified scheme (CAD M. Sauvage).

▸ **Level I:** the intrusive structures, dug into the older levels, are gathered in this 'level'. These are, first, graves 2024 and 2022, as well as structure 2049. These structures have been dug into levels III or IV and could therefore belong to level II, but for the moment, no associated datable material has been found which could help for dating. We have to wait until the next campaign and the excavation of structure 2049 to clarify whether we are dealing here with a necropolis and of which date.

The structure 2024 is a cist-grave with a cover made of five stone slabs (60-80 × 20-30 cm) laid flat on one layer. Its walls are made of slabs laid edgewise. It is obviously a secondary burial: the bones are incomplete, broken and fragmentary without connection or anatomical placement (figs. 6 and 7). There is no associated material, and the relative dating of the grave is thus impossible. It is to be noted that the grave cuts the structure 2010 and is therefore later than level III.

Fig. 6 - Logardan, Trench E: grave 2024, the covering stone slabs have been removed.

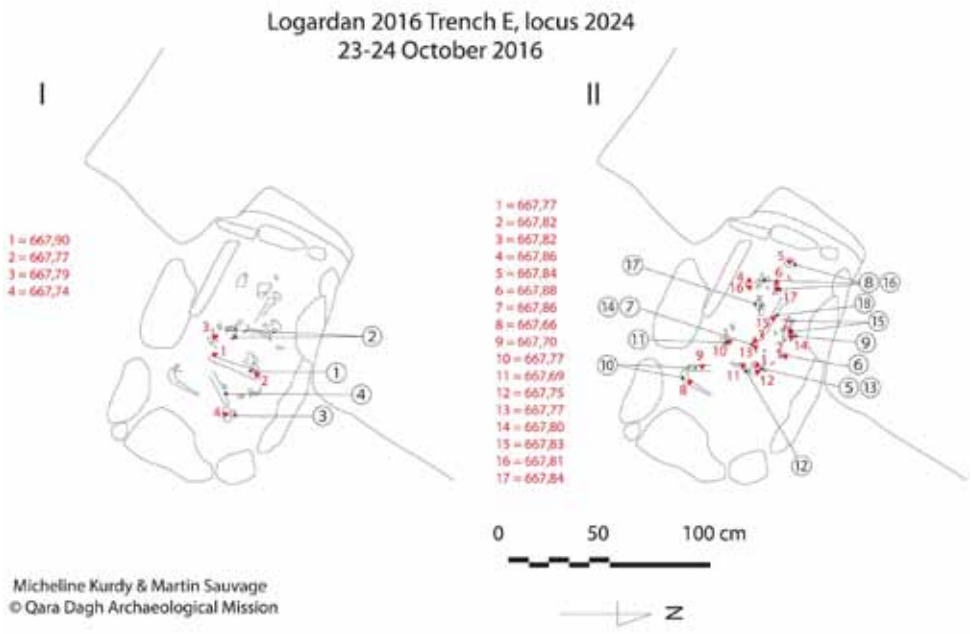


Fig. 7 - Logardan, Trench E: grave 2024 (survey and CAD M. Sauvage).

Beside this cist-grave, a pit burial was excavated, whose precise limits could not be exactly located because the substrate, a very fine grey earth, is very loose (figs. 8 and 9). It should

Fig. 8 - Logardan, Trench E: grave 2022.

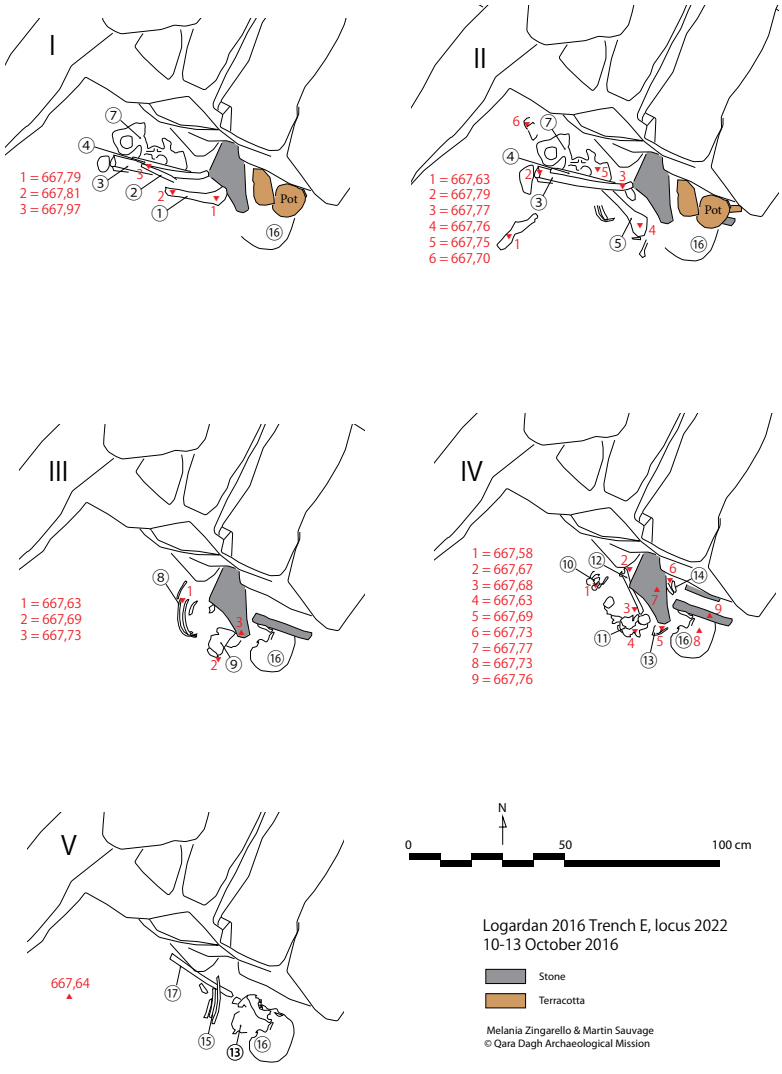


Fig. 9 - Logardan, Trench E: grave 2022 (survey and CAD M. Sauvage).

probably be considered contemporary with the grave 2024. It is a burial with a juvenile body in a flexed position on the back; the pelvis is broken in two at right angles vertically to the axis of the spine. A great number of bones, in particular those of the hands and feet, are missing. A small pot rested over the skull, but it does not have diagnostic characteristic that could help to date the burial.

Further southwest of room 2007 in space 2045, a rectangular pit (2049) oriented NW-SE and measuring approximately 1.2 × 0.6 m was located at the end of excavations but time was short to empty it. It could also be a grave, that should be excavated during the next season.

- **Level II:** that level is preserved only in the NW extension of the trench, with floor 2015 (667.31 m), which is lost in the slope to the south. A wall with a single row of stones, oriented SW-NE, divides spaces 2028 and 2007. These are obviously outdoor spaces, that abut towards the NE the structure 2020 of level III.

- **Level III:** In the northern corner of the trench a solid mass of brick has been recognized on a 3 × 4 m area and on a preserved height of 0.80 to 1.30 m. It is most likely the retaining wall of the 'citadel' standing at the top of the site and will be the subject of a more extensive excavation during the next season. It is stratigraphically contemporary of a more southerly building composed of the room 2007 and walls 2008, 2005 and 2013 (fig. 10). This building is obviously a domestic settlement, very poorly preserved in places (the walls of 2008 and

Fig. 10 - Logardan, Trench E: room 2007 and floor 2015, wall 2008 in the background and wall 2005 on the right.

2013, made of unbaked mudbricks, are only preserved on the first layer). The external floors to the north are lost and the erosion cuts the level to the south. Room 2007 was, however, fairly well preserved with two walls of unbaked mudbricks at an angle to the north (2008 and 2005), provided with a stone basement. Wall 2005 is composed of a basement of stone on two rows, the inside facing having fallen into the room. On the floor 2017, ceramic material was found (see the report of M. Zingarello, *infra*), which allows dating the whole level to the transition from the Early Dynastic III period to Akkad (ca. 2400-2300 BC).

‣ **Level IV:** Below level III, in areas 2002, 2006, 2042 and 2045, we found a layer of greyish fine earth up to 1 m thick. This filling of a vast outdoor area obviously indicates a period of abandonment. The layer abuts to the SE the 2044 mudbrick structure of level V, still present at this time.

‣ **Level V:** This is the oldest level reached in the trench during the campaign. To the north, it corresponds to a massive mudbrick structure with a stone basement (2027 and 2028) and a set of steps made of rammed earth. It is probably an early phase of the retaining wall of the 3rd millennium 'citadel'. The next campaign will seek to reach this level to the NO in order to confirm the location of the access to the citadel for this period. To the south of this massive structure, an outdoor floor (2040) with a lot of material (potsherds and animal bones) has been unearthed on nearly 5 m long (figs. 11 and 12), that could abuts the massive brick structure 2044 to the south (this point will be checked during the next campaign). This later

Fig. 11 - Logardan, Trench E: space 2002 and floor 2040, on the right the grave 2024 with its covering.

Fig. 12 - Logardan, Trench E: space 2002 and floor 2040.

structure has an average width of 3 m, and crossed the whole trench. It is supposed to act as a retaining wall, the structures to the south coming to lean against it, but its base could not be recognized yet.

In the south-eastern part of the trench, where a large magnetic anomaly was detected in 2015, stone walls (30 to 60 cm wide, preserved to a height of 1 m) delimit a room corner (room 2020 and floor 2031). In this area (fig. 13), seven jars (fig. 14) and three small pots were found *in situ*, under the remains of the collapsed earthen roof that sealed the room (fig. 15). These roof remains are in the form of blocks of raw clay bearing on one side the footprints of the plant material (probably reeds) that rested on the roof joists (fig. 16). A large basin of clay (60 cm in diameter) and a tripod holder of the same material were also found in the room (fig. 17).

The room 2020 and the surrounding walls are cut from the northern part of the trench by the massive structure 2044, whose base has not yet been reached. The belonging of the room 2020 to the level V is therefore based solely on the preliminary dating of the material. Several

Fig. 13 - Logardan, Trench E: room 2020 during.

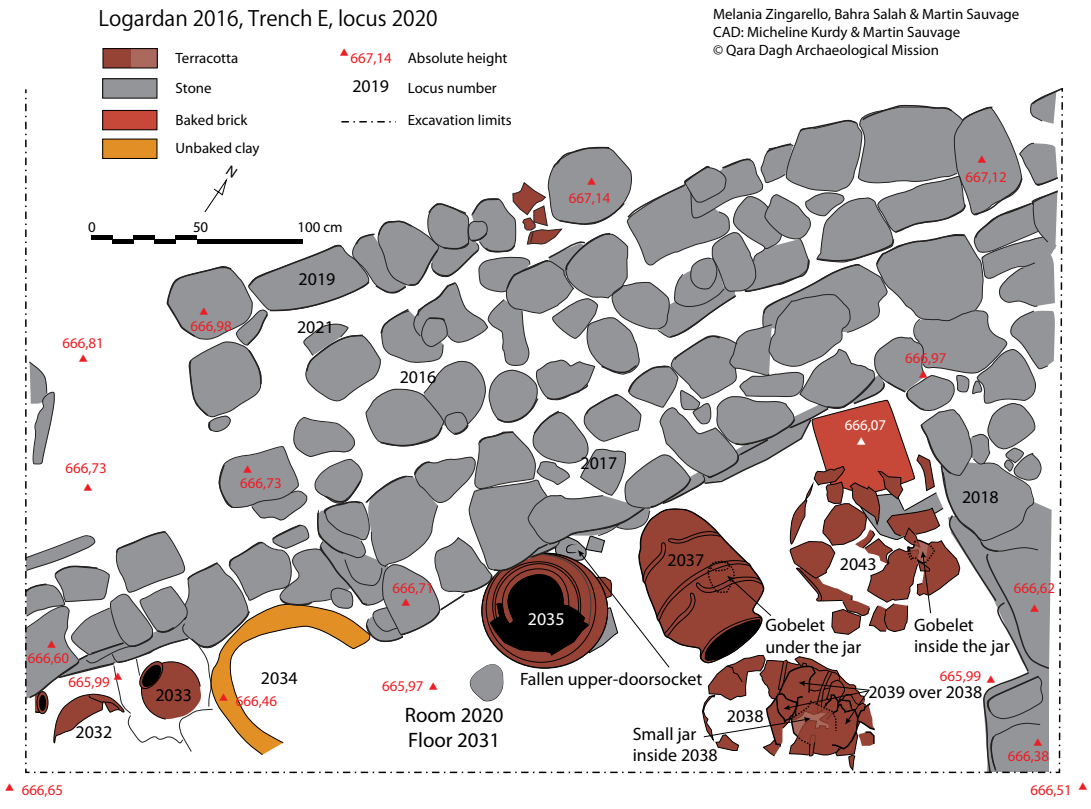


Fig. 14 - Logardan, Trench E: room 2020 and walls 2019, 2026, 2017 and 2018 (survey and CAD M. Sauvage).

Fig. 15 - Logardan, Trench E: room 2020, a jar during excavation partly covered by the collapsed earthen roof.

Fig. 16 - Logardan, Trench E: room 2020, detail of the raw earth fragments with marks of vegetal material from the collapsed earthen roof.

Fig. 17 - Logardan, Trench E: room 2020 and floor 2031, storage jars and raw earth tripode.

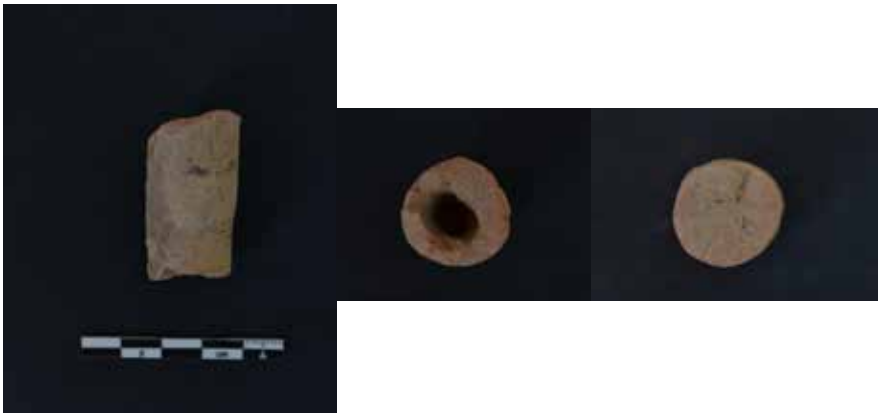
jars have a characteristic appliqué motive of 'snakes', which closest parallels come from the Diyala, in ED (II)-III but also late third millennium levels (see M. Zingarello's report on the ceramic, *infra*). However, some jars could also be dated, given the comparisons found, of the Late Bronze Age. But it is possible that this room has also been disturbed by late pits (from level I or II). The next campaign will have to clarify this point. In any case, it should be noted that the vases bearing this type of snake decoration are often to be found in a ritual context (Quenet 2014). We could thus deal here with the storage room of a temple.

Five objects have been found apart from ceramics and fauna (fig. 18): a bell-shaped weaving weight (LOG E.Tc1037.1), a red terracotta bead (LOG E.Tc1054.1), a fragment of a terra-

UTS: bell-shaped perforated weaving weight (LOG E.Tc1037.1)

UTS: red terracotta bead (LOG E.Tc1054.1)

UTS: fragment of an unbaked clay sealing with marks of a rope (LOG.E.T1993.1)



UTS: fragment of an architectural decoration cone (LOG E.Tc1113.1)

Fig. 18 - Logardan, Trench E: miscellanies.

cotta architectural cone (LOG E.Tc1113.1), and three fragments of clay sealing (probably on jar), one of which bears the imprint of a rope (LOG E.T1109.1).

The next campaign in trench E, scheduled for autumn 2017, will focus to continue the investigation on the slope of the 'citadel', towards the NW, in search of its enclosure or retaining wall and of the main access. We will have also to go on the excavation of the 2016 trench in order to reach, at least in the central part, the outdoor floor of level V and the base of structure 2044. Finally, the extension of the trench towards the SE will focus on the excavation of the whole room 2020 in order to complete the plan of the building and to specify its function and dating.

Bronze Age Pottery from Logardan

Melania Zingarello

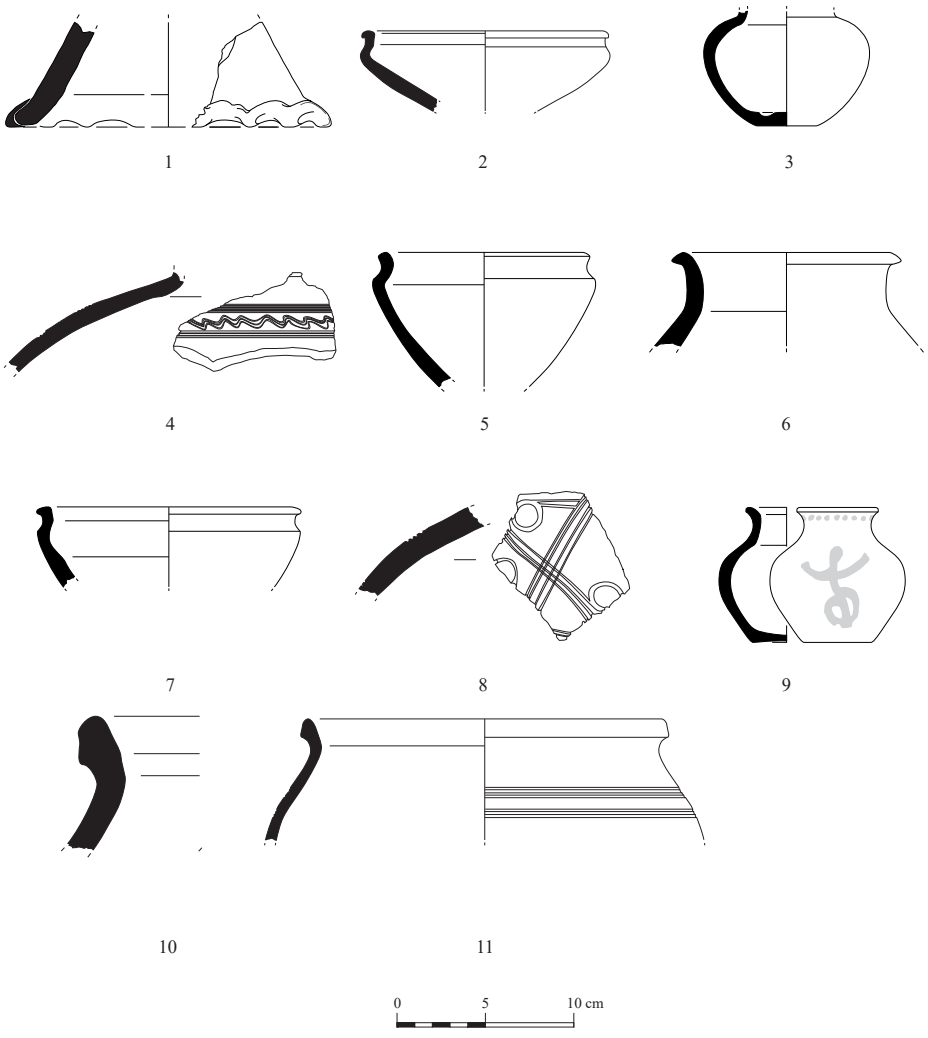
The work carried out in the second season of excavations (2016) at Logardan has included a survey on the upper terrace of the tell and the beginning of two operations – Trench D and Trench E –at the top of the site and on the north-western side of the upper terrace respectively[1]. The Bronze Age ceramic material from these operations[2] has been counted and recorded according to a "traditional" typology based on the morpho-stylistic analysis of the shards, which have been preliminary subdivided based on shape (open/closed forms) and their evolution through time based on the analysis of stratified assemblages from the site and their correlations with those from other sites in the region.

Logardan Trench D Ceramic Material

In Trench D, three Bronze Age levels, labeled 1-3 from top to bottom, the last of which is divided into three phases (a-c), all dating from the second part of third millennium BC, have been recognized. The pottery assemblage from the latest levels (1-2), represented by the construction, use and reconstruction of a ceramic workshop, is composed by few but important chronological indicators that point to a late 3rd millennium BC date. The carinated bowl with rounded, out-turned rim, a pointed carination just below the rim and a conical lower body (Fig. 1:1, LOG.D.223-1) is, for example, a chronological marker for this period, reaching his peak in the Third Dinasty of Ur period (hereafter Ur III)[3]. Earlier evidence of this pottery type, spreading across a very large area encompassing the Western Iran, through Southern and Central Mesopotamia and reaching as far as the Northern Levant[4], date from the end of Akkadian period[5]. Its presence in these levels could represent the latest occupation of the area, at least on the base of the material collected so far. Another type of carinated-sided bowl, an example of which is shown in Fig. 2:7 (LOG.D.215-1)[6], with out-turned or thickened rim flattened on top, high carination and hemispherical body, was also retrieved. This form, with several close variants recurring especially in the earlier level, is largely documented in the Tigridian region as well as in the Eastern Jezirah sites in the Akkadian and post-akkadian phases.

1. For a description of the stratigraphy in the two trenches, see the contributions by J. S. Baldi, H. Naccaro and K. Rahoof and M. Sauvage, M. Zingarello and B. Salah, respectively for Trench D and Trench E.
2. See M. Sauvage, M. Zingarello and B. Salah on Logardan Upper Terrace Survey, this volume, about the methodology applied on the survey's material.
3. For the type's description and comparison see McMahon 2006: pl. 90; Schmidt 2014; Casadei 2016: 34-36.
4. Schmidt 2014: 411 and fig. 1.
5. Late Akkadian specimens, e. g., come from Level F of the Archaic Ishtar Temples at Assur (Beuger 2013: taf. 1:8), Level XI of the WF Sounding at Nippur (McMahon 2006: 80, type O-17) as well as from Tell Asmar (Delougaz 1952: pl. 150, B.151.210) in the Diyala, but also from Susa and some sites of Southern Mesopotamia.
6. Among the others, close parallels for this kind of carinated bowl come from Tepe Gawra' Stratum VI (Speiser 1935: pl. LXVII:93), Area B's Levels 7-8 at Tell Yelkhi (Bergamini 2003-2004: pl. 4:26, 28) and Area KG's Level VIB at Nineveh (McMahon 1998: fig. 7:15-16, 18).

Fig. 1 - Selection of ceramic material from Levels 1-2, Trench D.



1 : LOG 16 D 228-12 **2** : LOG 16 D 236-5 **3** : LOG 16 D 239-1
4 : LOG 16 D 236-9 **5** : LOG 16 D 228-1 **6** : LOG 16 D 213-2
7 : LOG 16 D 215-1 **8** : LOG 16 D 236-10 **9** : LOG 16 D 243-1
10 : LOG 16 D 236-8 **11** : LOG 16 D 236-7

Fig. 2 - Pottery from Levels 2 (nos. 6-7) and 3a (nos. 1-5, 8-11), Trench D.

Other types of open forms in the two upper levels of Trench D include small bowls with upright indented rim (Fig. 1:2, LOG.D.223-2), some small bowl fragments with a simple rim, flattened lip and straight, uneven wall and bowls with band, thickened or inturning plain rim, all typical of the Late Akkadian and Ur III periods.

The range of closed forms consists of small jars with plain or flattened rim on a flared, short neck, medium jars with triangular rim on medium-high neck (Fig. 2:6, LOG.D.213-2), wide-mouth bag-shaped jars with or without combed incisions on the shoulder (Fig. 1:3), attested in higher percentage in the earlier level. A thin-walled small version of this jar with a rounded, grooved inside rim on a very short neck was also retrieved. Levels 1-2 yielded also some examples of simple horizontal combed decoration and a combination of wavy and horizontal combed bands (Fig. 1:4). Furthermore, a very large triangular rim, probably belonging to a vat, testifies to the presence of large coarse vessels.

The earlier ceramic workshop area, represented by Level 3, saw the construction and use of several pottery kilns, built both on the inside and outside of Level 4 building, whose ruins were reused and partly adapted by means of the construction of a massive partition wall (Wall 637) and by other minor changes[7]. Sub-level 3a ceramic material did not differ significantly from that of the following Levels 1-2, but it shows types more common in Late Akkadian times. In fact, the amount of different types of carinated-sided bowls increases considerably, including both the typical "Ur III" carinated bowl (Fig. 3:2, LOG.D.245-1) now with a blunted, upright rim and a pointed carination[8], found in the upper strata of Sub-level 3a, and other variants such as deep bowls with flaring rim and high carination (Fig. 2:5, LOG.D.228-1)[9], shallow bowls with thickened rim in common (Fig. 3:1, LOG.D.249-3) as well as in fine ware (Figs. 2:2, 3:4 LOG.D.236-5)[10], and large bowls with thickened flaring rim, a rounded, emphasised carination and convex walls (Fig. 3:3, LOG.D.252-1).

Closed shaped are mainly represented by wide-mouthed bag-shaped vessels, small to medium in size (Fig. 4:2, LOG.D.251-1), and by a variety of medium and large-sized storage jars with rounded, rolled or thickened out-turned rims on medium-high neck or neckless (Fig. 4:3, LOG.D.247-3). Both these types are very often characterized by a decoration consisting of groups of band-combed lines on the shoulder (Fig. 2:11, LOG.D.236-7), that seem to appear more frequently in the Akkadian and earlier periods[11], or by horizontal and wavy lines made with a multiple-pointed comb (Fig. 2:4, LOG.D.236-9). Body shards with notched

7. For a detailed description of architecture see J. S. Baldi, H. Naccaro and K. Rahoof, this volume.

8. A very close comparison can be found at Nineveh, in "band rim bowls" of the Area KG's Level VIB, dating to the Late Akkadian/Ur III period (McMahon 1998: fig. 7:26-28).

9. The best parallels for this type of carinated bowl come from Level G of Archaic Ishtar Temples at Assur (Beuger 2013: taf. 5: 8), Tepe Gawra' Stratum VI (Speiser 1935: pl. LXVII:92), Tell Brak's Phase N (Oates 2001: figs. 418:604, 606, 431:933), and can all be dated to the Akkadian and post-Akkadian phases.

10. Different kinds of shallow bowls with thickened rim, considered as typical Akkadian shapes, are attested in the Tigridian region, the Eastern Jezirah and at the sites of the Upper Khabur. See, for example: Tell Brak, Phase N (actually post-Akkadian, Oates 2001: fig. 418:600-601, 608); Tell Fisna, Level Va (although of a slightly earlier date, i.e. Early Dynastic IIIb/Akkadian period) (Numoto 1988: figs. 22:144, 23:168); Tell Jessary, Area D's Level 2 (Numoto 1990: fig. 8:129-132); Tepe Gawra' Stratum VI (Speiser 1935: pl. LXVII:89-90); Nineveh, Area KG's Levels VII-VI (McMahon 1998: figs. 5:10-13, 7:15, 17, 20-21); Assur, Archaic Ishtar Temples' Level G (Beuger 2013: taf. 4:2).

11. Oates 2001: 165.

Fig. 3 - Carinated bowls from Sub-level 3a, Trench D.

Fig. 4 - Selection of closed shape vessels from Sub-level 3a, Trench D.

horizontal applied rope(s) (Fig. 4:4) are also common in this and in the earlier sub-levels as well as decorations with applied snakes.

An everted ledge rim on corrugated neck (Fig. 4:1, LOG.D.244-4) belongs to a very well-known kind of small to medium-sized jar, occurring in the Euphrates Banded Ware, that generally represents a hallmark of phases Early Middle Euphrates 3 and 4 in the whole Middle Euphrates Valley.[12]

Moreover, Sub-level 3a yielded a substantial amount of out-turned thickened with a quite pronounced depression on both the inside and outside rim surface or band rims grooved or channelled on the upper part, very likely aimed at holding a lid. This kind of jar seems to be common in Late Akkadian/Ur III contexts, e.g. in Level VI of the Area KG at Nineveh.[13] Some of the multiple-grooved thickened rims on medium-to-large wide-mouthed jars without neck,[14] of which one at least shows a decoration of five wavy-combed lines, date to the same period, or slightly later.

Three fragments of "pie-crust" pot stands (Fig. 2:1, LOG.D.228-12), characterised by an undulating, finger-impressed lower edge and generally considered typical of the Late Bronze Age, may date from the Late Akkadian/Ur III period as revealed by their presence in the stratigraphic sequence of Area KG at Nineveh since Level VIA or in Levels G, F and E of the Ishtar Temple at Assur.[15]

In Sub-level 3a one of the rare fragments of spout, probably belonging to a jar was recovered.[16]

One of the most interesting pots from this phase is a miniature jar with a tapered off, flaring rim on short neck, globular body and flat base, showing a black painted decoration – now discoloured in blue – of a stylised human figure with open arms and a line of painted dots just below the rim (Figs. 2:9, 5, LOG.D.243-1). If the latter seem to be more characteristic, for example, of the "shoulder-vases" decoration coming from the Ishtar Temple's Levels G and F at Assur[17] – dating from the end of Early Dynastic to the Late Akkadian periods –, the human representation is quite identical to that one painted in dark brown on the wall of a likely wide-mouth jar from Tepe Gawra' Stratum VII[18]. A small, but not miniature jar from a grave at Tell

12. Sconzo 2015: 123, type 62. Cf. also Porter 1995: figs. 15-16. An EME 3 date for this Sub-level seems excessively early when compared with the overall ceramic assemblage of Level 3, better fitting to the end of EME 4. See also the radiocarbon dates obtained for this level (Appendix B, this volume). It should be noted that some specimens of Euphrates Banded Ware jars were found also in Southern Mesopotamia, i.e. at Nippur (McMahon 2006: pl. 101:4-7), Abu Salabikh (Moon 1987: 76, no. 363) and Fara (Martin 1988: 182-183, no. 85) in Early Dynastic III contexts.

13. Cf. McMahon 1998: fig. 9:7, 10, 12, 15.

14. See, for comparison, Beuger 2013: taf. 43:5, 44:3 belonging to Level G and Level F(2) of the Archaic Ishtar Temples at Assur, respectively.

15. See the considerations expressed by McMahon 1998: 19, note 44.

16. In Central and Southern Mesopotamia as well as in the Diyala, spouted jars are typical of Early Dynastic III period, becoming rare and disappearing completely at the end of Akkadian period, when a wide-mouth teapots appear.

17. A comb-stroked surface together with simple painted dots are frequent, for example, in the so-called "shoulder vases" (Beuger 2008: 355, fig. 7).

18. Speiser 1935: pl. LXXVI:9.

Fig. 5 - Painted human figure with open arms on a miniature jar (D.243-1).

Fig. 6 - Selection of open and closed shape vessels from Sub-levels 3b-c, Trench D.

Mozan[19], dating from EJ 5 (ca. 2100-2000 BC), shares with our miniature version both the morphological aspect and part of dots decoration, painted with bitumen.[20]

The following Sub-levels 3b-c yielded typical shapes occurring in Akkadian time or dating back to the end of Early Dynastic IIIb and to the beginning of the Akkadian period. The frequency of slightly carinated bowls with inside and outside thickened rim decreases compared to phase 3a, whereas shallow carinated bowls with beaded or tapered off, slightly flaring rim (Fig. 6:2) made of fine ware, whose comparisons come mostly from Akkadian contexts[21], increase in percentage. Typical Akkadian pottery types seem to be the small cups or cylindrical beakers with beaded or slightly thickened and everted or folded outside rims with a convex or flat base (Fig. 6:1, 6:4, in the middle and at the bottom left). One of them (Fig. 6:3, LOG.D.262-8), with thickened flaring rim, walls incurving in the upper part and carination on the lower part of the body, has a band-combed decoration with five comb-incised lines at mid-body. Such cups/beakers, typical of phases b-c in Level 3, were collected from layers in Room 673 ("green" nos. 262 and 279), from the filling of kilns 664 and 665, but also from the filling of kiln 640, which belongs to Level 3a. Like other vessel types discussed above, these cups find the most consistent parallels in similar vessels from levels VII-VI in Area KG at Nineveh[22], from levels G-F of Ishtar Temple at Assur[23], and, above all, from the levels dating from the end of the Early Dynastic III/Akkadian period at sites in the Eski-Mosul region[24].

Close-shaped vessels are represented by a large variety of vessel shapes: small- and medium-sized, wide-mouthed jars, with thickened rims with a groove on the inside or on the top to hold a lid, or medium-sized neckless jars, with bevelled rim, decorated with deep incised patterns, including a wide array of wavy lines and chevron design[25]. Like for Level 3a, also in this phase wide-mouth bag-shaped vessels are largely attested, along with medium-to-large sized storage jars with thickened out-turned rims and a deep groove inside or on the top of the rim on medium-high neck or double-ridged rim jars without neck. Other closed forms include a triple-ridged rim jar without neck and comb-decorated shoulder (Fig. 7:2, LOG.D.262-14) and a jar with a plain, flaring rim and a slight depression inside with a pottery mark, consisting of three vertical parallel lines, incised at the neck base (Fig. 7:1, LOG.D.269-4).

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19. This small-medium size jar, labelled JZ005_I001 according to the ARCANE database's entry code, comes from Grave A10a2 in Area A at Tell Mozan. Cf. Rova 2011: pl. 23:3, type 122.

20. According to E. Rova (2011: 79, type 122), bitumen decoration is typical of the late 3rd and early 2nd millennium Mesopotamian pottery, although at Tell Taya (Reade 1968: 251, pl. LXXXIV:13; 1982: pl. 5) and Tell Brak (Oates 2001: 165-166) appears already in the Akkadian (Level VIII) and Late Akkadian phases respectively. In the Jezirah region, this kind of decoration seems to be particularly common in Early Jezirah 5 phase (c. 2100-2000 BC) (Rova 2011: 79).

21. Besides the specimens from Area KG's Level VII at Nineveh (McMahon 1998: fig. 5: 9-10, 13), the best parallels could be found in Ishtar Temple's level G at Assur (Beuger 2013: taf. 2:13) and at sites in the Middle Tigris Valley such as Tell Fisna (Numoto 1988: fig. 21:136-137).

22. McMahon 2008: fig. 7:1-7.

23. Beuger 2008: 356, fig. 6.

24. See Levels Vb-a at Tell Fisna (Numoto 1988: fig. 21:125-132, 22:150-155) and Tell Jigan (Fuji 1987: fig. 6:68-69). This vessel type is attested also at sites in the Upper Khabur and the Eastern Jezirah, for which see Orsi 2011: tavv. 59:10-12 (Tell Leilan), 66:20-22 (Tell Hamoukar), 74:531 (Tell Rimah).

25. See Tell Brak, Oates 2001: fig. 403:294-295.

Fig. 7 - Selection of jar rims from Sub-levels 3b-c, Trench D.

Fig. 8 - Incised and applied decoration on a large vessel' shoulder.

Large vessels are attested both in some fragments of rounded and thickened rim with a slight groove in the lower part of the rim, often showing comb-incised decoration in a sharply angled zigzag band made with a six-pronged tool (Fig. 7:3, LOG.D.262-25)[26], and in a large fragment decorated with a pattern of crossed parallel lines and impressed dots with a small notched ridge and an applied crawling snake (Fig. 8:1, LOG.D.262-11)[27]. The latter could probably belong to a deep basin or large-sized jar, which characterise the final phases of the Early Dynastic period up to the Ur III period in a broad area encompassing the Upper Khabur, Eastern Jezirah, and the Tigridian region.[28] The discovery of an undecorated "fruit stand" base (Fig. 8:2, LOG.D.262-12+241-1) is noteworthy, as such vessel shape is typical of the Early Dynastic period in Southern and Central Mesopotamia, but rarely found in the northern area.

In sum, the ceramic assemblage from the Bronze Age levels excavated in Trench D at Logardan thus far seemingly argues in favour of a strong continuity of pottery production at this site, as already pointed out for other sites.[29] The pottery from Logardan finds the most consistent parallels in the Akkadian and post-Akkadian phases of the Tigridian Region, particularly in Levels VII-VI in Area KG at Nineveh and levels G-F of the Archaic Ishtar Temples and the corresponding levels in Trench 7 at Assur. Although, as already pointed out elsewhere,[30] it should be taken into account that the materials from Nineveh span a rather long chronological range and, therefore, cannot be used for a refinement of ceramic chronology, it is nonetheless typical of the terminal phase of the 3rd millennium BC.

Logardan, located in the easternmost sector of the Tigridian region according to the regional borders assessed by the ARCANE Project, is seemingly fully included within the ceramic tradition of this area. However, it is possible to identify connections with the neighbouring areas, such as the Hamrin and the Upper Diyala, as well as the Khabur Valley, such as the parallels visible in the pottery repertoire of the Akkadian and post-Akkadian phases at Tell Brak. Differently, parallels with Southern Mesopotamia are limited but important.

Logardan Trench E Ceramic Material

Differently from the pottery from Trench D that was rather homogeneous both from the topsoil and the uppermost three layers, pottery from Trench E appeared mixed, although the reasons of such situations have to be investigated yet. Reliable diagnostic shards are limited in number in each of the five levels identified. Along with materials dating from the fourth millennium BC, two main phases can be singled out with a certain degree of confidence based on pottery. The later phase dates from the Late Bronze Age, characterised by the presence of large wide-mouthed storage jars, square-sectioned rim with horizontal ribs at the neck base and on the shoulder and above all of storage jars with a distinct inwardly bevelled rim

26. According to J. Oates (2001: 165), groups of horizontal combed bands appear more frequently in the Akkadian and earlier periods in contrast with the more regular, wavy combing typical of the post-Akkadian levels.
27. Cf. the complex pattern no. IV of the decoration typology elaborated by Sconzo, Bianchi (2014: fig. 2: IV, pl. 6:1-3).
28. See e.g. Tell Brak (Oates 2001: fig. 407:359-361) and Assur (Beuger 2013: taf. 11-18).
29. See the remarks in Orsi 2011: 206.
30. McMahon 1998; Orsi 2011: 193.

or incurved ledge rim. The earlier phase dates from terminal third millennium BC and it is recognisable from a few vessel types comparable to those retrieved from Trench D – such as a limited variety of carinated bowls with out-turned or thickened rim flattened on top, high carination and hemispherical body or wide-mouthed bag-shaped jars with a comb-incised decoration. A small carinated bowl with a high vertical grooved rim (Fig. 9), corresponding to Type 116 of the typology elaborated by P. Sconzo[31] for the Middle Euphrates region within the ARCANE project, is among the most widespread shapes of the Middle Euphrates and it

Fig. 9 - Carinated bowls with upturned, grooved rim from Trench E.

is mainly attested in Period EME 5.[32] This band-grooved rim, attested in the Upper Khabur at Tell Mozan and at Tell Barri[33], but also in Southern Mesopotamia as a characteristic shape of the Ur III period[34], was found in at least three out of five levels identified in Trench E[35].

Medium- and large-sized vessels found in one of the rooms (Locus 2020) of the building uncovered in 2016 and already identified by means of a geomagnetic survey carried out in the previous year[36], have not been restored and analysed so far. Some of these vessels, among which a complete jar and another one almost completely restorable, feature a particular decoration seldom attested thus far. The first jar (Fig. 10, LOG.E.1068-1, Jar 2033) – which still has a lump of clay attached just below the rim aimed at sealing the vessel's content – features an applied notched crescent-shapes rope, along with a ceramic raised circle, quite symmetrically placed on the shoulder. A similar decoration has been retrieved on jar rim shards from Tell Fisna's Level Va, in the Eski-Mosul region[37], and from Tepe Gawra' Stratum VI[38], dating

31. Sconzo 2015: 132-133, pl. 22:4-6.
32. According to radiocarbon dates, phase EME 5 lasted little bit more than one century, from 2196-2076 BC) (see Finkbeiner *et al*. 2015: 436).
33. Orsi 2011: tavv. 146:28 (Phase 4, Tell Mozan), 181:273 (Phase P, Tell Barri).
34. McMahon 2006: 82, Type O-22, pl. 94 with relevant bibliography.
35. These are "green numbers" 1055 (Level I or II), 1049 (Level IV), 1088 (Level V), 1089 and 1093 (Level V, Locus 2020).
36. Darras – Benech 2016: 22.
37. Numoto 1988, fig. 24: 206-207.
38. Speiser 1935: pl. LXXVI:5.

Fig. 10 - Jar 2033 (LOG.E.1068-1), with the details of decoration, from Trench E.

from the Early Dynastic IIIb/Akkadian period and the Akkadian period respectively. The second jar (Fig. 11, LOG.E.1076-1, Jar 2032) shows a deeply and spaced notched rope applied on shoulder with the edges facing downwards, representing most likely a snake. A third, large jar (LOG.E.1103-1, Jar 2037) shows the same pattern of decoration, but doubled and divi-

Fig. 11 - Jar 2032 (LOG.E.1076-1) from Trench E.

ded by a continuous applied notched rope. This kind of applied ridges seems comparable to that from Early Dynastic levels at Tell Sabra[39], in the Hamrin. These three jars seem to be particularly similar from both a morphological and a technological points of view, but further analysis is needed to refine their chronology and deeply investigate technological aspects.

Finally, as for the terminal phase of the third millennium BC, the differences observable between the vessel types attested in Trench D and Trench E may be connected with the different functions of the two areas (a pottery workshop in Trench D, and a building with storerooms in Trench E), but only further investigations during the next seasons of excavations at Logardan will allow us to clarify these aspects.

39. Tunca 1987: pls. 96:4 (Early Dynastic I), 98:3 (Early Dynastic I?).

Archaeological Survey of Girdi Qala North Mound

Clélia Paladre, Rateb al Debs and Adel Hama Amin

From October 3rd to October 5th, a surface survey was carried out on the North Mound of Girdi Qala (Fig. 1). The team was composed of four members: Régis Vallet, Rateb al Debs, Clélia Paladre and Adel Hama Amin. This surface survey allows us to realize the great damages caused by the field labour. Indeed, the site was heavily torn apart by deep passes made by the tractors. Thus, archaeological material and large stones were taking out of the ground causing great loss for the scientific knowledge (Fig. 2a and 2b). Nevertheless, these ravages had at least the merit of giving us an idea on the nature of the sediment (colours and textures) and the richness of this field.

Fig. 1 - Girdi Qala North Mound, seen from the Main Mound.

Fig. 2a - Deep ploughed land and stones removed from the ground by ploughing, at the centre of the mound, view from the East.

Fig. 2b - Other view of the site, from the West.

Methodology

The site was carefully subdivided into eight zones, numerated from I to VIII. We based this subdivision according to the results of the geomagnetic survey carries out by Lionel Darras, to the micro-topography of the mound and to preliminaries observations on the concentration of archaeological material and stones visible on the surface.

The extremities of the mound were isolated. It composed the zones I, II and VIII (the west extremity was subdivided into two parts because of the substantial extend of the area). The centre composed the zone IV. Topographically, it is the highest point of elevation of the site. The north face composed the zone III. The anomalies detected by the geomagnetic survey and the concentrations of material visible on the surface were also taken into account to establish this zone. The south face composed the zones V and VI (as with the zones I and II, we had to subdivided it face to its substantial extend). It was characterized as the exact opposite of zone III; very few archaeological materials were visible on the surface and only a small amount of anomalies was detected during the geomagnetic survey. Finally, a micro elevation just after the centre of the mound was isolated based on the high concentration of archaeological material and of the high number of anomalies detected during the geomagnetic survey. It composed the zone VII.

Results (Fig. 3)

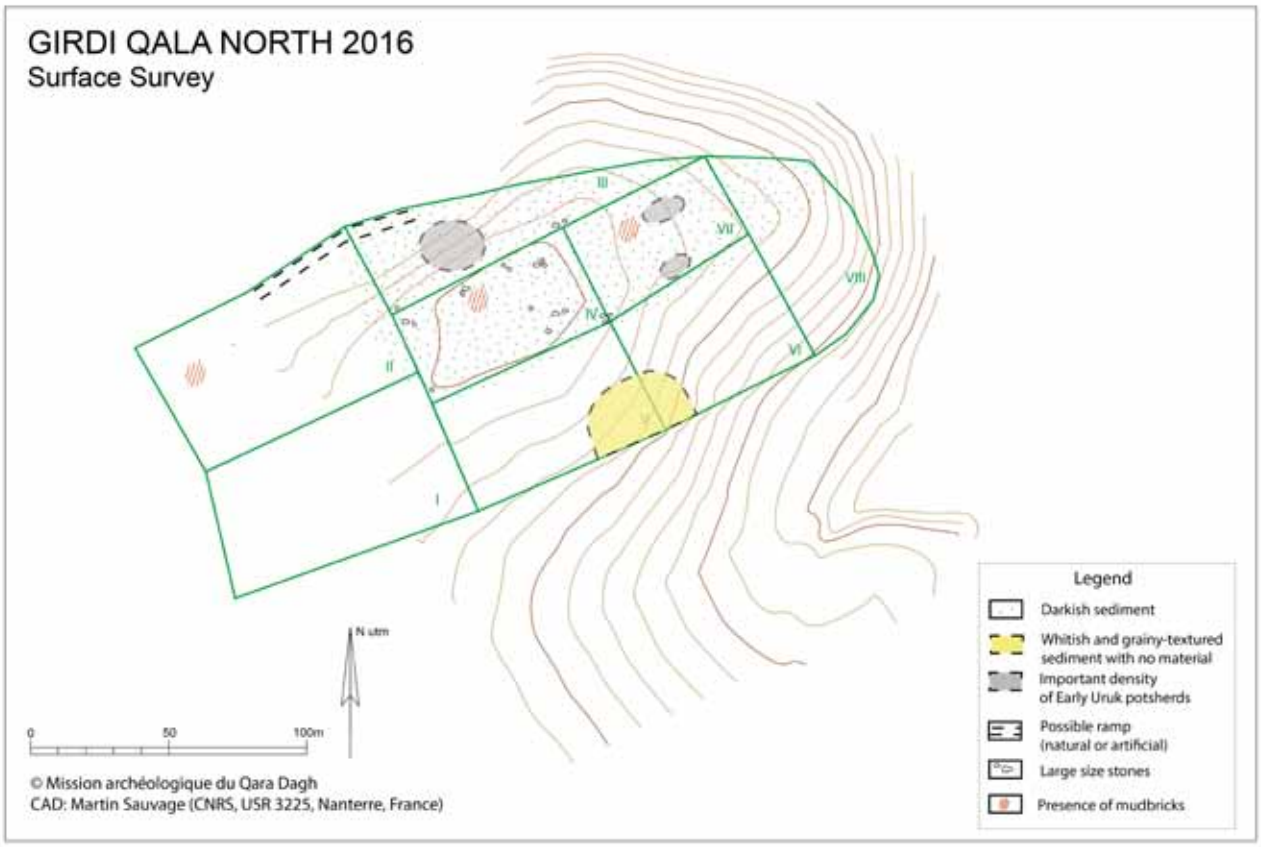


Fig. 3 - Plan of the archaeological survey, compilation of the observations made on the field.

Zone I and II

These zones provided an especially low proportion of materials (only 372 diagnostic sherds for zone I and 306 for zone II). The majority of the sherds are coming from the area near the zones III, IV and V. Just at the border with zone III and IV, a dark clay sediment characterized the ground. However, it has to be noted that some mudbricks fragments and some clayey sediment were observed in the western part of the zone II.

Zone III

It yielded an especially high proportion of materials (1036 sherds). In the centre, a high concentration of sherds and almost complete southern Uruk ceramics (BRB, Flower Pots and plates) and animals bones were observed. This concentration corresponds to an important anomaly detected during the geomagnetic survey. The entire ground was characterised by a darkish clayey sediment. Moreover, at the north-west extremity of the zone, a path along the slop, leading down to the river below, was visible. It could be an ancient ramp, artificial or natural (Fig. 4).

Fig. 4 - Picture of the possible ramp in zone III, view from the North.

Fig. 5 - Basalt weight from zone IV (GQD P 1205.1).

Fig. 6 - Painted ceramic pastille from zone IV (GQD TC 1205.1)

Fig. 7 - : *In situ* stone in zone IV, view from the West.

Zone IV

This zone delivered an average proportion of archaeological materials: 601 sherds, a door socket, a basalt weight (Fig. 5) and a painted ceramic pastille (Fig. 6). Here again, we can observe that the ground was composed of darkish clayey sediment and some mudbricks fragments could also be observed. Moreover, many stones (middle and large size) were scattered in the entire zone (Fig. 7).

Fig. 8 - Ceramic cone from zone V (GQD Tc 1206.1).

Fig. 9 - Stone mortar from zone VI (GQD P 1207.1).

Zone V

It was especially poor in archaeological material: only 142 sherds and a ceramic cone discovered next to the border with the zone IV (Fig. 8). The ground was composed of an easily distinguishable sediment; it was clearer and grainy-textured. Moreover, a large "patch" of much clearer sediment with no archaeological material was noted that in the southeast corner of this zone.

Zone VI

It provided an average proportion of archaeological material: 738 sherds and a stone mortar (Fig. 9). However, this proportion gives a distorted image of its occupation since the majority of the material is coming from the northern edge of the zone, along zone VII. A clear subdivision of this zone was also visible from a sediment point of view. In the north part (along zone VII), it was a darkish clayey sediment, whereas the rest of the surface displayed a light grainy-textured sediment. It has to be noted that the "patch" visible in the zone V also appears in this zone with the same characteristics.

Zone VII

This zone yielded an especially high proportion of materials (1003 sherds). Moreover, it showed two important concentrations of southern Uruk ceramics (BRB, Flower Pots and plates) and animals bones, that correspond to anomalies detected by the geomagnetic survey. The sediment was clayey and darkish.

Zone VIII

This last zone was especially poor in archaeological material (only 209 sherds). As in zone VI, the majority of the material comes from the north sector. Moreover, here again, a clear sedimental subdivision of the zone was visible, dark clay and in the north part, lighter and grainy-textured in the south part.

Conclusion (Fig. 10):

It seems clear that a distinction needs to be done between the north east part and the rest of the mound. The difference of sediment (darker and clayey), the crushing majority of southern Uruk ceramics and the geomagnetic results allow us to suggest the location of an Uruk site

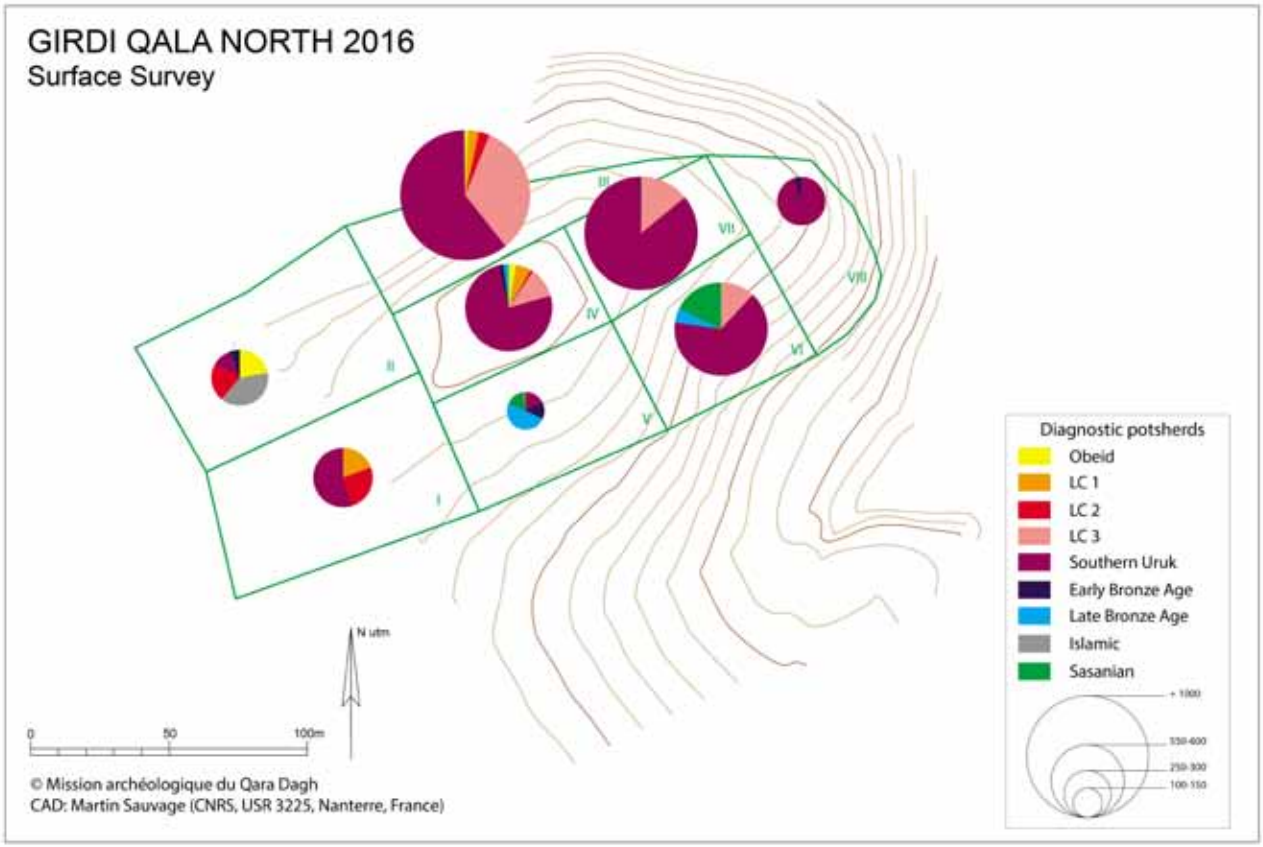


Fig. 10 - : Plan of the archaeological survey, results of the ceramic study.

in this part of the tell. It corresponds to the zone III, IV and VII. If zones I, VI and VIII delivered also a high proportion of southern Uruk ceramics, the majority of the Uruk material comes from the areas along the precedent zones. By there, these zones give us the southern limits of the Uruk site (Fig. 11), as confirmed by the geophysics (*supra*). If we add the fact that storage vessels and cooking wares were predominant and the discoveries of a stone mortar and a basalt weight, we can suggest a residential function to the Uruk occupation. This point is corroborated by the discovery in zones IV and V of a ceramic cone and a painted ceramic pastille, and by the excavations (Trench D, *infra*).

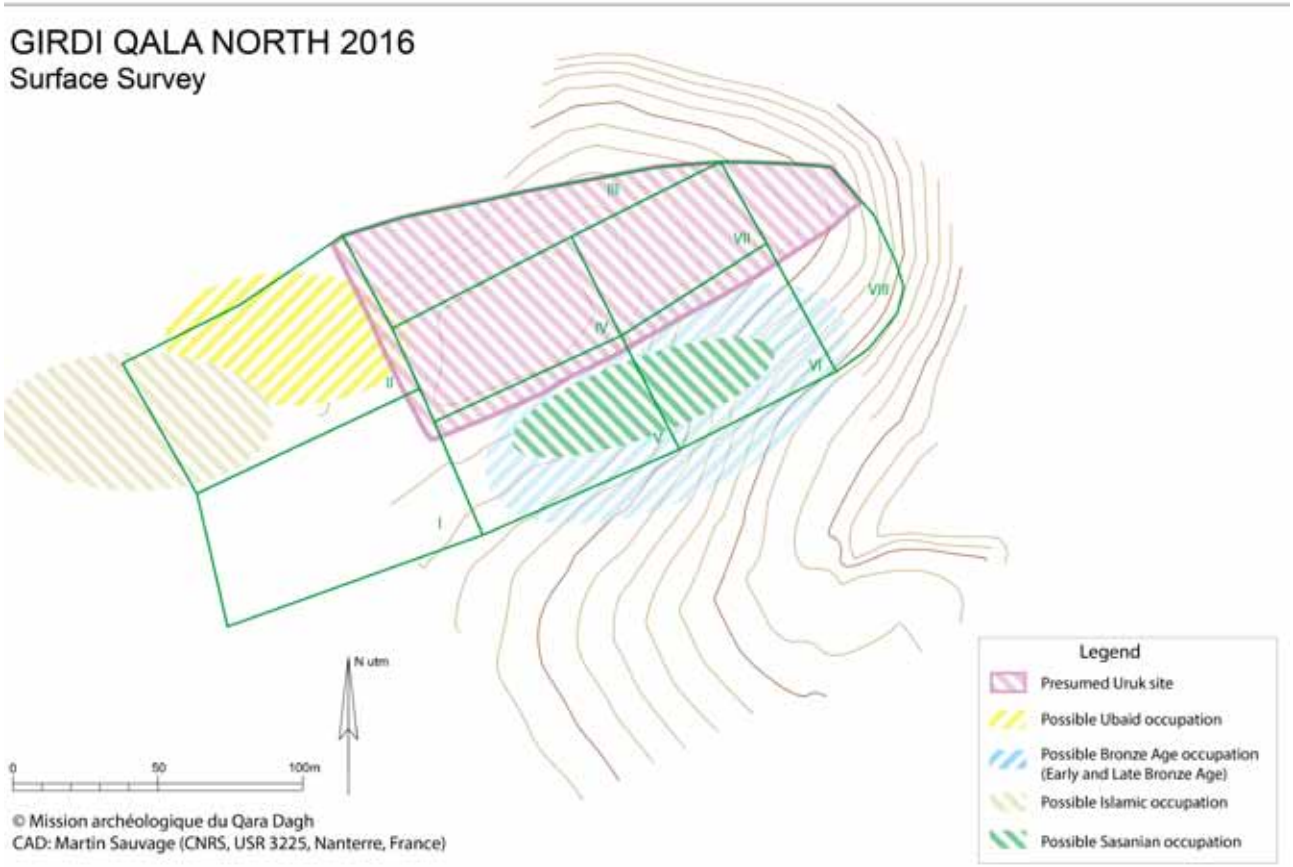


Fig. 11 - : Location of the possible ancient occupations at Girdi Qala North Mound.

However, some sectors have yielded a relatively significant amount of pottery dating back to others periods. Zone I delivered Islamic sherds while zones V and VI Sasanian fragments. An occupation of the north mound of Girdi Qala dating back to these periods would not be a surprise. Moreover, zones V and VI delivered an important amount of Bronze Age potsherds (Late and Early Bronze Age). Thus, we can suggest a scattered occupation of the south part of the mound at this period, especially if we refer to the quite different nature of the sediment (clearer and grainy-textured) compare to the north-east part. Last but not least, a high proportion of Ubaid and LC1 sherds was identifying in zone II and some were also attested in zones III and IV. This suggests an earlier occupation of the north-west sector of the mound[1].

1. For the chalcolithic material from Girdi Qala North Mound, see Baldi, *infra*.

Girda Qala North Trench D: Stratigraphy and Architecture

Clélia Paladre, Rateb al Debs, Adel Hama Amin and Régis Vallet

The excavations of Trench D have been carried out during seventeen days, from the 8th to the 25th of October 2016. The team was composed of four members, Clélia Paladre, Rateb al Debs, Adel Hama Amin and Régis Vallet plus a team of four workers. The aim of these excavations was to obtain southern Uruk stratified contexts in order to achieve a better understanding of the Uruk presence in the Qara Dagh area. We decided to open a trench of 10 x 5 m in the northern slope of the mound, oriented more or less north-west south-east. The emplacement of the trench was based on the results of the geomagnetic and archaeological surveys. Indeed, during the surface survey, we were able to observe a high concentration of southern Uruk material (ceramics -and animal bones) in the centre of the zone III (the richer zone of the prospection, cf. *supra*). This high concentration was associated on the geomagnetic plan with an imposing anomaly (Fig. 1). These excavations allowed us to recognize five successive levels of occupation, all of them dating back from the Middle Uruk period[1] (Fig. 2 and 3).

Fig. 1 - Plan of Girdi Qala North Mound with the location of the presumed Uruk site, Trench D and the results of the geomagnetic survey.

1. See the pottery study, Baldi, *infra.* .

Fig. 2 - General plan of the Trench D.

Fig. 3 - Trench D, view from the North.

LEVEL 1

Two imposing pits (202 and 203) represent this earliest level. It was very close from the surface, thus heavily damaged by ploughing. It explains the amount of material observed there during the survey. Pit 202 is around 0.80 m width, its length is still unknown (it continues through the southern section of the trench). It is around 0.15 m deep, thus it is the bottom of a pit. 203 is a larger pit, sub-circular in shape, excavated on 2.20 m width and 2.80 m length. It was especially full of material (bones of animals and ceramics) and particularly of BRB's (153 fragments and 54 forms) (Fig. 4). At this day, the bottom of the pit is still unreached since the high quantity of material obliged us to postpone its excavation. It has to be noted that a thin white layer

Fig. 4 - Pit 203 with its complete ceramics.

was visible in the southern section of the trench (Fig. 5), maybe the original floor of the pits. However, it was impossible to catch it in plan. Both of these pits have disturbed the deeper levels (level 2 and 3).

Fig. 5 - South section of Trench D, detail.

LEVEL 2

Level 2 is represented by two buildings, probably tripartite (at least for the southern one) in plan, and likely with residential functions. The first building is located at the top of the trench whereas the other one is located to the north, lower in the slope.

Building 1 is oriented north-south (according to the orientation of the main room). Only a part of a lateral vestibule (214) and a small part of a (probable) central hall (216) are present in the trench. The main mudbrick walls of this building (208, 209, 211 and 212) are 0.45m wide, with one brick and a half side by side (only the width of the bricks could be identified, 0.28 m, and the half bricks about 0.14 m wide). Wall 212 is oriented east west and shows a coat of around 0.14 m on its north face, a façade of the building. It is built on wall 248 from level 3 which is much wider (Fig. 6). Wall 211 is oriented north-south and is cut by pit 203 from level 1. Two stones of medi-

Fig. 6 - Superposition of walls 212 (level 2) and 248 (level 3).

Fig. 7 -General view of the southern building of level 2).

um calibre, possibly reused from level 3, were forming a probable threshold (0.80 m wide, Fig. 7) which slipped into the vestibule 214. Wall 209 is oriented east-west and is partly built on wall 217 of level 3, which explains why it has stairs-like foundations. Thus, we can see three "stairs" of one brick each. Wall 208 is oriented north-south and shows a mudbricks threshold of 0.75 m width, with two side projections slightly rounded (Fig. 8). As wall 209, wall 208 displays stairs-like foundations of three "stairs" of one brick each, because it is built partly on wall 250 of level 3 and partly on the slope. Thus, the foundations are deeper to the north but also on its west face. A foundation trench was visible along the east face of the wall. This trench partly cut wall 250 of level 3. Two internal (228/229 and 235) and one external floors (262, in the external space 220, east of the building) were associated with this building. Floor 229/228 was located in the lateral vestibule 214 and yielded a terra cotta spindle whorl (Fig. 9), whereas floor 235 was located in the central hall 216. Both were easily identifiable by their grey colour and white inclusions. It rested on a layer of sterile brown sediment that probably corresponds to a backfill.

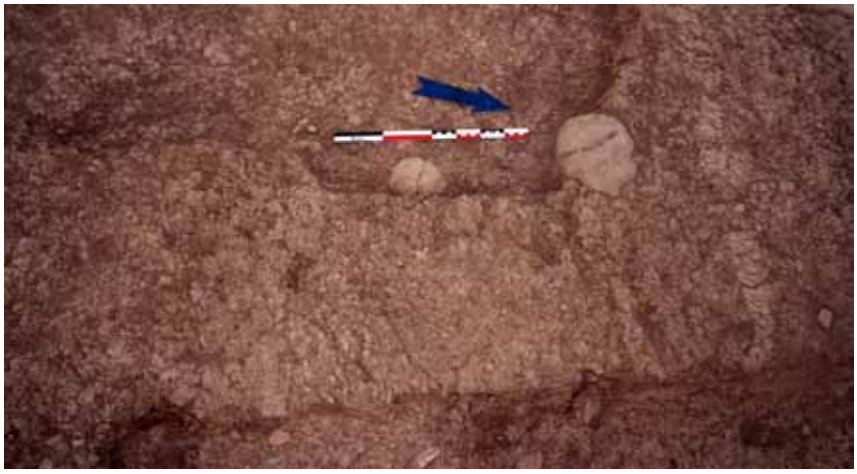


Fig. 8 - Threshold of the wall 208.

The second building, located lower in the slope, to the north, is probably oriented east west according to the remains of its main room, poorly preserved. The mudbrick walls (213, 221, 222, 247 and 263) are wide of one brick and a half, around 0.45 m (the bricks were about 0.35 x 0.28 m, and the half ones about 0.14 m wide). It composed three rooms. The eastern one is a

Fig. 9 - Spindle whorl from the floor 228 (GDQ Tc 1215.1)

vestibule (224) of about 2.5 x 1.8 m, provided with an access in its east wall 222 (without threshold), of 0.9 m width. The western room (223) is very fragmentary and only partly excavated. Finally, the northern room is larger and slightly projecting to the east, but almost nothing remains of it because of the erosion. Wall 213 is oriented east-west and shows a coat of 0.05 m. As walls 208 and 209, it is built with stairs-like foundations of three "stairs" of one brick each. In its west part, it recovered the terra cotta pipes of level 3 (225, Fig. 10), which were interlocked into the wall and cut in the alley between the two buildings of level 2. The building rested on a mortar layer (grey with white inclusions).Walls 221 and 222 are oriented north-south. Wall 221 is heavily damaged in its north part. Wall 247 is oriented east-west and presents a threshold of 0.65 m width, allowing access to the main room from the vestibule 224. In its west part, its traces were visible until the west section of the Trench D. In its east part, we were able to follow it until wall 263, a row of mudbrick slightly recessing beyond wall 222, and corresponding to the east facade of the building (Fig. 11). We identified a possible additional thin east-west wall, whose trace was visible in the west section of the trench, which could have partitioned room

Fig. 10 - Pipes 225 (level 3) at the base of wall 213 (level 2) .

Fig. 11 - Vestibule 224, view from the east

223 (a staircase?). Two floors were associated with this building, one (245/246) in room 224 (Fig. 12) and one external (236) in the space 226 to the east, which displayed a considerable amount of material *in situ* (Fig. 13).

Fig. 12 - Floor 245-246 in the vestibule 224.

Fig. 13 - Floor 236 in the external space 226

In the alley between these two buildings, several floors were identified, 234/237 to the west (219) and 232/233 to the east (215), that yielded a spindle whorl (Fig. 14). The alley 215/219 along with the spaces 220 and 226 composed the outdoor activities areas of the two residential buildings. This observation is corroborated by the presence of *in situ* material and by the reutilisation of a level 3 stone slab (of wall 217) as a millstone during the level 2 phase. Many circular depressions were visible on the flat surface of this stone and several cylindrical knobs were lying on the connected floor 232-233 (Fig. 15). This reuse proves continuity in the occupation mode of the area, despite the levelling of level 3 and the changes in the nature of the constructions.

Fig. 14 - Spindle whorl from floor 232 (GQD Tc 1210.1).

Fig. 15 - Floor 232-233 (in the external space 215) with circular knob associated with the millstone of 217

LEVEL 3

A large building showing two distinct architectural phases, level 3A (late) and 3B (early), attested only in the south part of the trench, represents level 3. It is an imposing and high quality building. Its first phase is represented, at this day, by only one mudbrick wall (248), two ovens, two terra cotta pipes (the oldest known of this type) and its associated floors. The later phase is represented by additional walls in the south part of the Trench.

Phase 3B :

Wall 248 is oriented east-west. Its size is unknown since the level 2 installations (left in place) are partly sealing it, but it seems imposing with a width of at least 0.90 m. Its face presents to the east an opening (filed by the level 2 masonry) in order to pass the pipes 225 (Fig. 16). The stone foundations of wall 217 were laid upon its east part since it was present during phases

Fig. 16 - Pipes 225, aligned with the opening into wall 248.

3A and 3B. It was associated with kiln 258 (a mortar blockage between these two architectural elements was put in place during the 3B phase), a circular domestic kiln with a diameter of 2 m and walls of 0.20 m width. A small mudbricks platform was abutting the north face of the kiln. The filling of the chamber was full of shells that certainly served for the combustion. Three complete vessels were still on the kiln floor: a BRB and a jar with a small bowl upside down upon the jar opening (Fig. 17). The collapse of this kiln had created a steep slope recovered by level 3A (and then level 2) floors. Wall 248 and kiln 258 were associated, to the north, with the floor 253 in the external spaces 215 and 219.

Fig. 17 - Kiln 258

Farthest north, it is possible to identify another external domestic activities area. A small mudbrick kiln (259) which is more or less ovoid with a size of 1.30 m length and 0.80 m width represents it. Its walls are about 0.20 m width and only one bricklayer was preserved. Its opening is around 0.40 m wide. An long bone of animal was lying on the kiln floor (Fig. 18). It was associated with a series of burnt and ashy external floors (240, 242/ 243/ 244 and 249) which yielded a terra cotta bead (Fig. 19). All these installations prove the use of this zone as an external domestic activities area, as it still will be the case later. This series of external floors were also associated with the pipes 225 and thus with the original building. The pipes are made of terra cotta and oriented north-west south-east, following the slope. Each pipe is composed of two tubes. It was about 1.25 m length (2m from the wall 248). The south tubes have a size of about 0.20 m of diameter and 0.50 m length and were snap into the north one which have a size of about 0.30 m of diameter and 0.80 m length (Fig. 20). The north extremities of the tubes were broken

Fig. 18 - Kiln 259

Fig. 19 - Terra cotta bead from floor 242/243/244 (GQD Tc 1242.1).

Fig. 20 - Pipes 225

Fig. 21 - Mudbricks platform at the north extremities of the pipes 225.

and lying on a small platform that reduced the slope. It was made of two mudbricks preserved on two layers (Fig. 21). This platform itself rested on the floor 249 associated with kiln 259. These pipes were used to discharge sewage water from the imposing building of level 3, as corroborated also by the presence at the pipes northern extremities of a thin layer of potsherds upon the floors, which helped the drainage system (Fig. 22). The south extremities of the pipes were disassembled (and not destroyed) near the south face of wall 213 from level 2. Thus, it was not present in the level 2 alley but the original opening devoted to pass the pipes

Fig. 22 - West section of Trench D showing the potsherds layer at the north extremities of the pipes .

was still visible into the masonry of wall 248 of level 3. We removed the pipes and noticed that they were lying on a thick mortar layer applied on the floor 240. A BRB fragment was found at its end (Fig. 23) and an animal bone was stuck into the north-west tube (Fig. 24).

Fig. 23 - Disassembly of the pipes 225.

Fig. 24 - Disassembly: animal bone in the north-east tube of the pipes 225.

Phase 3A

Four walls (217, 248, 250 and 251, Fig. 25-26) represent it. Wall 217, oriented north-west/south-east, is 1m wide in its north part and 0.80 m in its south part. It is made of imposing slabs (0.80 to 0.40 m in average) that constitutes the substructure of the wall. It was

Fig. 25 - Wall 217 (at the centre), beneath level 2, view from the west.

Fig. 26 - Walls 250 and 251 (at the forefront), view from the east.

partly lying on the wall 248 to the north. This last one was made of mudbricks and covered with a compact pinkish mortar layer full of gravels in order to install the slabs at its junction with wall 217. Further east, wall 250 is made of mudbricks lying on stone foundations. It is oriented east-west and has a size of about 0.50 m width. It is not bonded with the perpen-

dicular wall 251 to the south. Wall 251 oriented north-west south-east, is made of stones, mudbricks and mortar. It has a width of about 0.35 m. It is clearly not a supporting wall but maybe a (late?) low partitioning wall (Fig. 27). As wall 250, it was partly cut by the foundation trench of wall 208 from level 2.

Fig. 27 - Walls 250 and 251, detail

In this entire sector, no internal floor associated with this building phase was discovered. It can be explain by the fact that the building was levelled by level 2 builders and thus we are here in a foundation level. However, 3A phase external floors were identified in the slope to the north, above the 3B phase floors previously described. First, in the external space 220 (north of 250), floors 230 and 231/238 were associated with walls 250 and with the corner of 217 and 248 (Fig. 28). It is clearly dating from level 3A since it sealed kiln 258 (floor 230 have been reused during the level 2 phase, as the stone slab of 217, cf *supra*). Second, further west, floors 227/239 were associated with wall 248 in the external spaces 215 and 219. Here again, these late floors have been reused during level 2.

Fig. 28 - Floors 230 and 231/238 in the external space 220.

LEVEL 4

Level 4 yielded no architecture and was excavated only in the north part of the trench since the level 2 remains were left in place (except part of the north building). It is represented by a series of external floors preserved on 0.17 m of thickness (255) which were partly burned and ashy (that could imply the presence of nearby kilns) and that passed beneath level 3. In the centre of these floors, we can observe a high concentration of material including a grinding tools kit (Fig. 29) and a little sheep in terra cotta (Fig. 30). Three pits were identified (256, 260 and 261) with little material and filled by the same thin brown sediment. Pit 256 is located in the south-east part of the trench partly in the east section. It has a size of 1.20 m length, 0.80 m width and 0.25 m deep. It cuts floor 257 of level 5 (Fig. 31). Pit 260 was located in the south-west part of the trench partly in the west section. It was around 0.80 m length, 0.40 m wide and 0.30 m deep. As pit 256, it

Fig. 29 - Grinding tools kit from floors 255 (GQD P 1266.2)

Fig. 30 - Terra cotta sheep from floors 255 (GQD Tc 158.1) the east.

Fig. 31 - Pit 256 (level 4) which cut the street 257.

cuts 257. Finally, pit 261 was located in the middle south part of the trench and has a length of 1 m, 0.50 m width and 0.11 m deep. Thus, this level illustrates external domestic activities, a function that locally continues until level 2 at least

LEVEL 5

Level 5 was excavated in a limited area in the northernmost part of the trench. It yielded no architecture but was represented by a magnificent floor (257) covered of potsherds, stones (medium and small calibres) and bones (Fig. 32). This unexpected discovery can be interpreted as the surfacing of a street, conceived as such and showing the importance of the area. This

Fig. 32 - Street 257 (level 5).

floor was in an opposite dip compared to the natural slope of the mound, in the exact opposite way than all the other layers. Thus, the street was deeper near the south berm. Moreover, it has to be noted that just above 257, and thus under the soft floors from level 4, the sediment was compact, clayey and full of mudbricks, especially along the south berm (0.35 m of thickness). Therefore, we deal here with a destruction layer, which yielded three terra cotta cones (Fig. 33). All these facts suggest the presence of an imposing building hereafter the south berm, probably just beneath the building of level 3.

Fig. 33a - Terra cotta cones from level 5
GQD Tc 1203.1.

Fig. 33b - Terra cotta cones from level 5
GQD Tc 1203.2.

Fig. 33c - Terra cotta cones from level 5
GQD Tc 1241.1

Chalcolithic ceramics from Girdi Qala northern mound (survey and Trench D): typological features

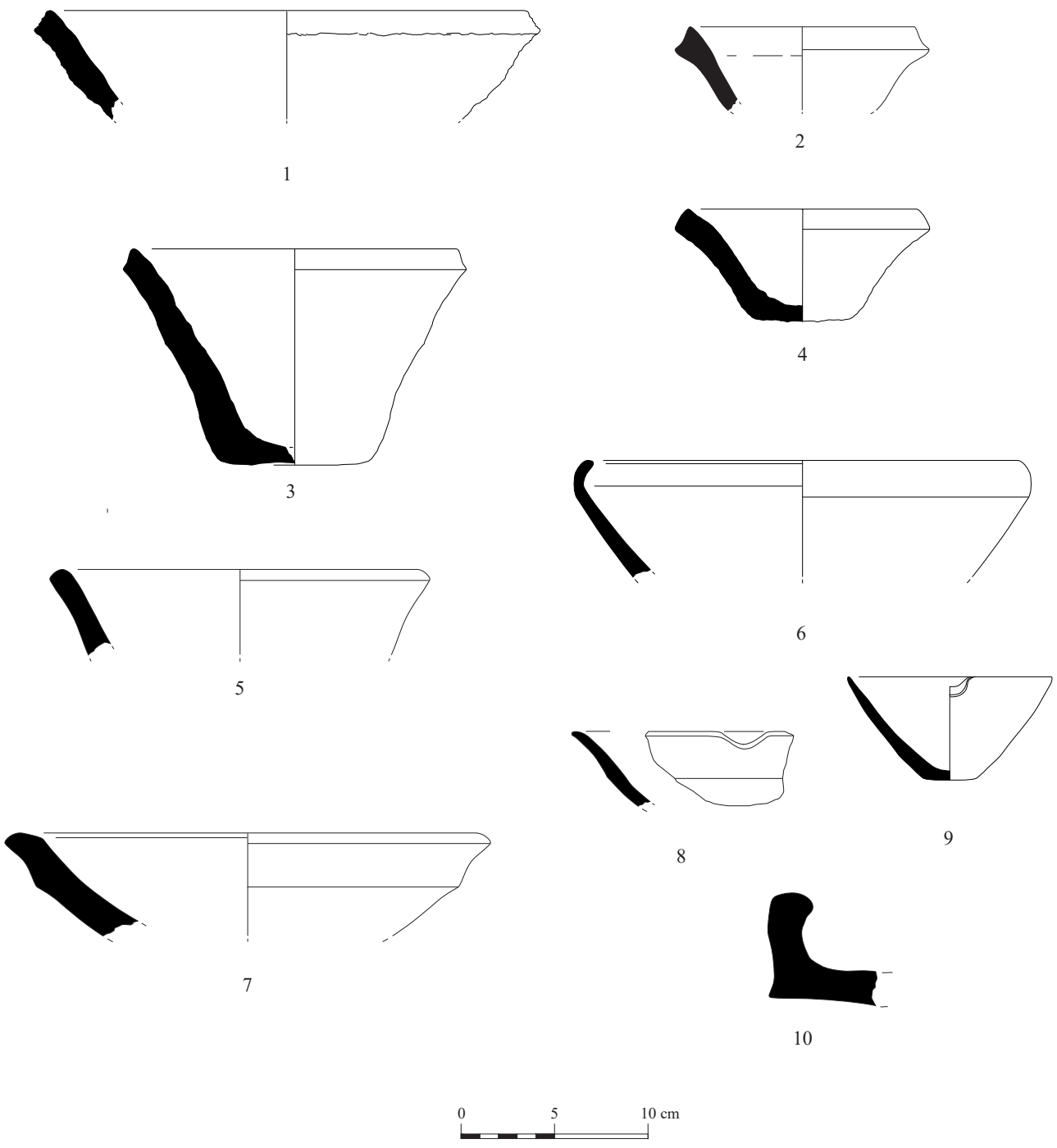
Johnny Samuele Baldi

The excavations, carried-out from October 4th until the end of the campaign, were preceded by a survey. This preliminary investigation, based on a careful subdivision of the site in different zones according to the micro-topography of the northern mound, was aimed at recognizing the areas showing important concentrations of southern Uruk ceramics. These ones represent the majority of the surface materials in almost all the surveyed areas,[1] but some sectors have yielded non-negligible quantities of pottery dating back to other periods (see the survey in this volume).

In particular, several Islamic sherds have been noticed in Area I, while Sasanian fragments are present both in Areas V and VI. According with the results of the Trench B at Girdi Qala main mound, the existence of quite important occupations during these phases is not surprising at all. Moreover, the surface assemblage of the Areas V and VI is quite mixed, with a lot of Early and Late Bronze Age specimens[2]. Consequently, Areas III, IV, VII and VIII, whit their interesting features recorded by the geophysical survey, have appeared as the most promising zones as far as the Uruk phase. However, as already observed in the Trench C at Girdi Qala main mound, along with southern Mesopotamian materials, some local LC2 and LC3 chaff-faced ceramics are also attested. On the other hand, the presence of late Ubaid and LC1 sherds in the north-western sectors of the surveyed zone (Areas I, II, III and IV) represents a quite unexpected result. In addition to some generic black-on-buff samples with horizontal bands or wavy lines, some distinctive specimens with impressed crescent motifs and chevron incised decorations (Pl. II.8) show clear parallels with the Hamrin basin, the Erbil plain and the Mosul area.[3] Despite the little quantity of these sherds, their presence both in the surface collection and in several stratified contexts of the Trench D is quite constant. Therefore, it seems clear that some kind of late Ubaid-LC1 installation has existed at least in the north-western sectors of Girdi Qala northern mound.

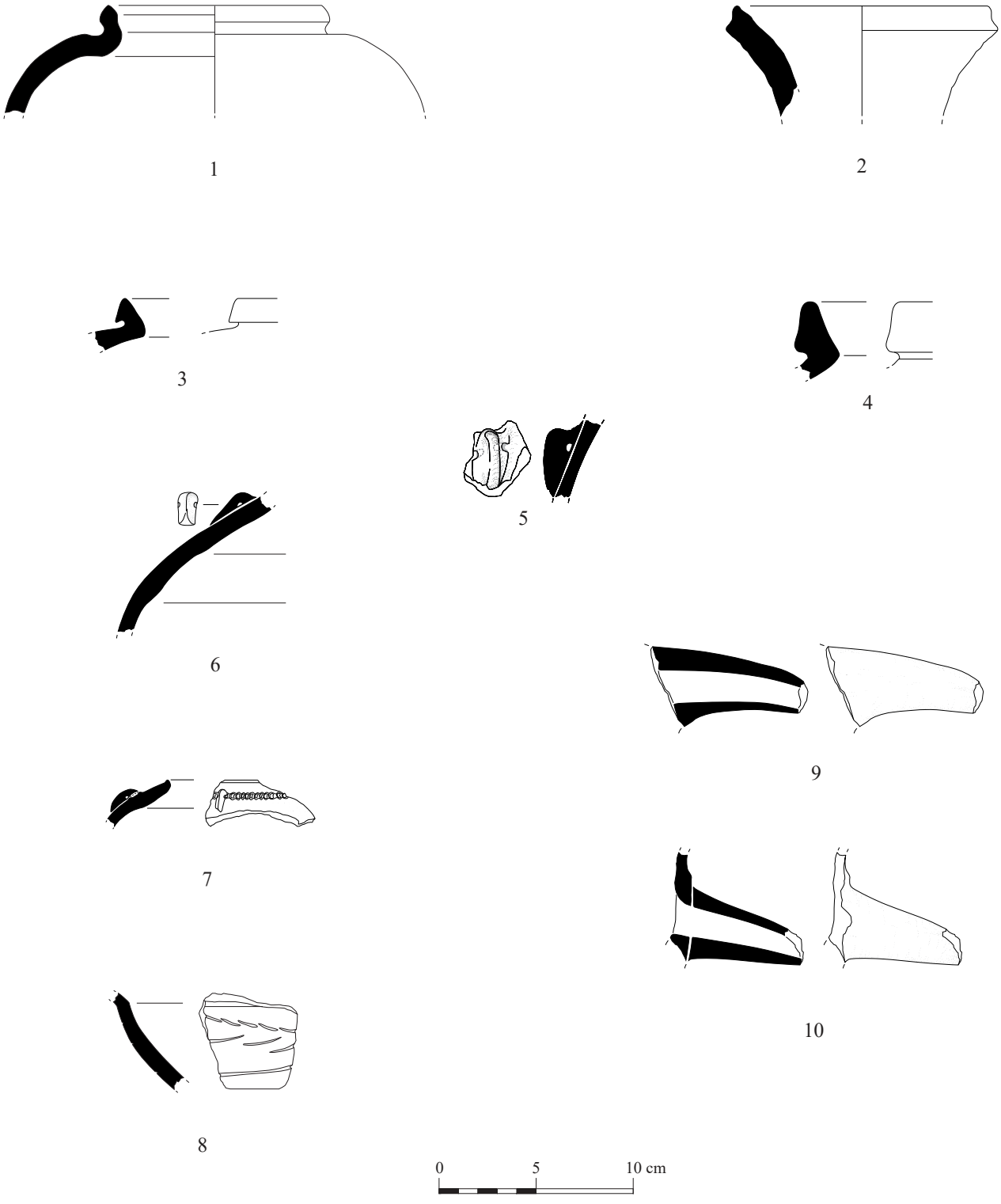
On the basis of these results, the choice of the location of the Trench D depends on the decision to look for southern Uruk stratified contexts, in order to achieve a better understanding of the Uruk presence in the Qara Dagh area. The 2015 campaign provided clear evidences for a very early Uruk presence at Girdi Qala main mound (with the large firing areas for pottery in the Trench C) and at Logardan (with the massive ramp to access the site).

1. An amount of 4395 sherds has been collected during the survey.
2. The quite important Late Bronze Age assemblage suggests a scattered occupation on both Areas V and VI. The most distinctive shapes are large- and medium-sized storage jars with rectangular rims and finger-impressed or incised appliqué cordons, but also knob bases and carinated bowls with flattened rims. This repertoire perfectly matches with the Late Bronze typologies of neighbouring regions, as documented at Yorgan Tepe (Starr 1937–39, pls. 63–68, 77, 95–96) or Gurga Chiya (Wengrow *et al.* 2016: fig .5).
3. See for instance at Tell Abada (Jasim 1985: fig. 214), Tell Abu Husaini (Chiocchetti 2007: fig. 2.d), Surezha (Stein and Alizadeh 2014: fig. 12) or Khirbet Hatara (Fiorina 2001).



1 : GQ 16 N III-1
2 : GQ 16 N III-6
3 : GQ 16 N 1201-3
4 : GQ 16 N 1200-2
5 : GQ 16 N III-3 GQ 16 N V-2
6 : GQ 16 N II-2
7 : GQ 16 N III-4
8 : GQ 16 N VII-2
9 : GQ 16 N 1201-1 GQ 16 N 1201-4
10 : GQ 16 N 1251-1

Plate I - Different shapes of Chalcolithic ceramics from Girdi Qala Trench D.



1 : GQ 16 N 1258-1
2 : GQ 16 N 1201-4
3 : GQ 16 N III-7
4 : GQ 16 N 1222-1
5 : GQ 16 N V-2
6 : GQ 16 N 1201-6
7 : GQ 16 N VII-2
8 : GQ 16 N II-2
9 : GQ 16 N 1262-1
10 : GQ 16 N 1201-9

Plate II - Different shapes of Chalcolithic ceramics from Girdi Qala Trench D.

Thus, the search for a residential area of the South-Mesopotamian settlers was amongst the main goals of the campaign 2016. Indeed, Uruk surface ceramics coming from Areas III, IV, VII, VIII – essentially medium-sized bowls, jars and cooking pots – belong to morpho-functional categories consistent with everyday activities carried-out on a domestic scale and have suggested the presence of living spaces.

No noticeable differences have been observed between the surface materials and the stratified ones. In the same way, the pottery collected in the Trench D at Girdi Qala northern mound is remarkably homogeneous and no typological, quantitative or qualitative differences have been observed between the levels identified during the excavations. Even in the pits of the more recent level – where the concentration of bevelled-rim bowls (BRBs) is slightly higher than in the other excavated contexts – the percentages of the diagnostic shapes does not diverge significantly from the average ratios. Therefore, the materials of the 2016 campaign must be considered as a unitary assemblage.

Amongst open shapes, the large majority of the specimens is represented by serially produced BRBs (Pl. I.1-5 – Fig. 1) whose diameter fluctuates between 12 and 24 cm. As main and ubiquitous hallmark of the Uruk assemblages, BRBs do not offer specific typological insights[4]. Their most compelling feature is rather linked to their dimensional variability, with three classes recognizable on the basis of the sizes: BRBs with diameters of 12-14 cm, 16-18 cm and 22-24 cm. On the one hand, no specimen seems to be aberrant with respect to this classification and, on the other, each of these dimensional groups is also homogeneous as regards the sizes of the bases (when they are conserved) and the thickness of the bodysherds. In other terms, three classes of BRBs show a remarkable standardization due to the modalities of the production (Roux 2003): a serial, repetitive (and probably recurrent) manufacture of batches of bowls having the same size and possibly intended to be used for the same function. Even if less abundant than BRBs, other open shapes are also well documented.

Fig. 1 - Middle Uruk BRB from Trench D at Girdi Qala .

4. The only noteworthy characteristic is that the rims of the BRBs from the northern mound of Girdi Qala (not only from Trench D, but also from the entire surface collection) are always sharply bevelled towards the exterior. In this sense, they match with the mature shape of these containers and are quite different than the Early Uruk proto-BRBs from Trench D at Logardan or from Levels 10-8 of Trench C at Girdi Qala (see Preliminary Report on the 2015 campaign).

Medium- and little-sized hemispherical bowls with plain rounded rims[5], carinated bowls (Pl. I.7)[6], in-turned rim bowls (Pl. I.6)[7] and V-shaped bowls with thinned rims[8] represent a consistent percentage (about 9%) of the assemblage from Trench D.

Fig. 2 - Middle Uruk pouring-lip bowl from Trench D at Girdi Qala.

Amongst the V-shaped ones, several samples with pouring lips (Pl. I. 8-9 – Fig. 2)[9] belong to a very distinctive Middle Uruk type. The same observation can be made about ovoid or rectangular shallow basins with thick walls and bases (Pl. I.10)[10]: these containers, used for cooking and presenting food, are a widespread hallmark of the Middle Uruk phase.

The whole range of the closed shapes constitute 36% of the assemblage from Trench D. The large majority of these materials is represented by medium-sized jars used as storage vessels in the domestic contexts exposed during the excavations.

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5. See Ahmad al-Hattu (Sürenhagen 1979: Abb. 10), Godin "late" VI (Badler 2002: fig. 7: N3 34 #26, B20 #251), Abu Salabikh 'Uruk *Mound*' (Pollock 1987: fig. 5: c, d), Nippur 'Inanna' XXXV (Hansen 1965: fig. 5), Sheikh Hassan 10 (Boese 1995: 41, Abb. 9: b, d; 42: Abb. 10: d; 85: Abb. 22: b), or Sheikh Hassan 7/6 (Bachmann 1998a: Abb. 7: n; Boese 1995: 50, Abb. 18: d).
6. See Rubeidheh (McAdam and Mynors 1988: fig. 28: 18), Sheikh Hassan 10 (Boese 1995: 85, Abb. 22: f, g), Abu Salabikh (Pollock 1987: fig. 5: f; 6: b), or Uruk/Warka "Eanna-*Tiefschnitt*' VI" (von Haller 1932: Taf. 19A: u').
7. See Rubeidheh (McAdam and Mynors 1988: 45; fig. 28: 10), Ahmed al-Hattu (McAdam and Mynors 1988: 45), Farukhabad (Wright 1981: fig. 41: e, f; fig. 46: i, j), Nineveh (Gut 1995: Taf. LVII.840), or Godin "early" V (Badler 2002: fig. 10: B17#132). In southern Mesopotamia, this same type is characterized by a more angular profile, as at Abu Salabikh "*West Mound*'" and "Uruk *Mound*'" (Postgate 1983: fig. 37-38; Pollock 1987: fig. 5: g, h).
8. See Sheikh Hassan (Boese 1995: 40, Abb. 8: f-k, 80, Abb. 17: d; 85, Abb. 22: a; Bachmann 1998a: Abb. 7: d-k), Uruk/Warka "Eanna-*Tiefschnitt*" VI (Sürenhagen 1986: T/20, Nr. S/32; von Haller 1932: Taf. 18C: y; 19B: g, h, i, q, o Taf. 19C: y'), Rubeidheh (McAdam and Mynors 1988: 44-45, fig. 28: 6, 11), Abu Salabikh "Uruk Mound" (Pollock 1987: fig. 5: a, b; Pollock 1990: fig. 4: c), Nippur 'Inanna' XX-XVI (Hansen 1965: fig. 5), Susa "Acropole" I 18-17 (Le Brun 1978a: fig.: 19: 6; 1978b: 32: 7), Farukhabad (Wright 1981: fig: 40: e; 45: a, b, i, m), Hacınebi B2 (Stein and Mısır 1994: fig. 15, J-L; Pearce 2000: fig. 13: g).
9. See Sheikh Hassan (Boese 1995: 84 fig. 21; Bachmann 1998a: pl. 7.d-g), Hacinebi B2 (Stein 2001: fig. 8.6, J-L), el Kowm 2 (Cauvin and Stordeur 1985: fig. 6.2), Tell Brak TW 13 (Oates and Oates 1993: fig. 51.33-35), Susa "Acopole I" 18 (Le Brun 1978: fig. 32.7), Choga Mish Protoliterate (Alizadeh 2008: fig. 26.E).
10. See Abu Salabikh "Uruk Mound" (Pollock 1990: fig. 5: I), Nippur "Inanna" XX-XVII (Hansen 1965: fig. 8), Uruk/Warka 'Eanna-*Tiefschnitt*' XI-VI (von Haller 1932: Taf. 18B: y; 19A: d' ; Sürenhagen 1986: Nr. T/99), Sheikh Hassan 10 (Boese 1995: 84, Abb. 21: f), Hacınebi B2 (Stein 2002: fig. 11: k), Godin "middle" and "late" VI (Badler 2002: fig. 7: B20 #252, P4 20 #4), Ahmad al-Hattu (Sürenhagen 1979: Abb. 10), Rubeidheh (McAdam and Mynors 1988: fig. 37: 140).

Some small samples with a diameter varying between 4 and 8 cm are characterized by the absence of the neck and rounded, thinned-pinched, or quite square flaring rims (Pl. II.1-2)[11]. But the most widespread jars belong to a medium-sized type with interior-angled rims. Actually, these neckless containers are typologically similar to the small jars, but their average dimensions are much bigger, with diameters varying between 18 and 26 cm. Their bevelled or rectangular section flaring rims display a sharp interior angle at the junction with the shoulder (Pl. II.3). These typically Uruk jars, often characterized by little pierced handles on the shoulder (Pl. II.5-7), are well documented over the whole Meso potamian alluvium, but also in south-western Iran and southern Anatolia[12]. Some other typically Uruk samples of interior-angled jars have rims with a triangular section and a sinuous or vertical exterior profile (Pl. II.4)[13]. Short necked jars are less frequent, but as much as distinctive of the Middle Uruk phase as the other categories of closed shapes. They are easily recognizable both for their thinner walls and for the flattened or pinched rims[14].

Spouts were often associated with all these categories of jars. Most of the spouts from Trench D (46 specimens) were fragmentary and separated from the vessels, but the absence of any kind of regularity in the association between spouts and specific types of jars is demonstrated by 16 elements recovered still connected to their vessels. Not only any kind of jar can have a spout, but these ones were also of different shapes: both upwards conical and drooping (Pl. II.9-10 – Fig. 3). These two forms probably matched with distinct functions, but from a typological point of view it is noteworthy that the drooping samples, typical of the Late Uruk phase, are extremely rare at Girdi Qala northern mound[15].

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11. Concerning the samples with rounded rim, see Rubeidheh (McAdam and Mynors 1988: fig. 32: 67) Abu Salabikh "Uruk Mound" (Pollock 1987: fig. 7: e, i; 1990: fig. 3: d), Nippur "Inanna" XIX (Hansen 1965: fig. 13), Uruk/Warka 'Eanna-*Tiefschnitt*' VI (Von Haller 1932: Taf. 19B: s'), Sheikh Hassan 8 (Boese 1995: 77, Abb. 14: b, j, k) and Hacınebi B2 (Pearce 2000: fig. 15: b). About the variant with rectangular-section or square rims, see Godin "middle" and "late" VI (Badler 2002: fig. 8: B23 #366, B20 #239), Abu Salabikh "Uruk Mound" (Pollock 1990: fig. 4: b) or Sheikh Hassan (Boese 1995: 78, Abb. 15: b).

12. See Hacınebi B2 (Stein 2002: fig. 10: e, fig. 11: g), Rubeidheh (McAdam and Mynors 1988: fig. 31: 66, fig. 34: 98-99), Abu Salabikh "Uruk Mound" (Pollock 1987: fig. 7: m; Pollock 1990: fig. 3: e), Nippur 'Inanna' XVIII (Hansen 1965: fig. 14), Uruk/Warka 'Eanna-*Tiefschnitt*' VI (Sürenhagen 1986: Nr. T/48, 77, 93), Sheikh Hassan 7/6 (Bachmann 1998a: Abb. 12: a; Boese 1995: 172, Abb. 10: d, e), Susa "Acopole I" 18 (Le Brun 1978: fig. 32.13).

13. See Ahmad al-Hattu (Sürenhagen 1979: Abb. 10), Rubeidheh (McAdam and Mynors 1988: fig. 31: 57, 59; 32: 73; fig. 32: 78), Abu Salabikh "Uruk Mound" (Pollock 1987: fig. 7: t, u, v), Uruk/Warka 'Eanna-*Tiefschnitt*' and '*Sagegraben*' VI (von Haller 1932: Taf. 19B: q', t'; Surenhagen 1986: Nr. S/9), Sheikh Hassan 8/9-12/13 (Boese 1995: 77, Abb. 14: i; 82, Abb. 19; 201: Abb. 13: l), Hacınebi B2 (Pearce 2000: fig. 15: e), Susa "Acropole I" (Le Brun 1978: fig. 32.2, 3), Choga Mish Protoliterate (Alizadeh 2008: fig. 28.C-D, F).

14. See Sheikh Hassan 13/12, 10 and 8 (Boese 1995: 45, Abb. 13: a; 75, Abb. 12: e; 79, Abb. 16: a, b; 201: Abb. 13: h), Abu Salabikh "Uruk Mound" (Pollock 1987: fig. 7: o; 1990: fig. 5: f), Rubeidheh (McAdam and Mynors 1988: fig. 32: 76-77), Uruk/Warka 'Eanna-*Tiefschnitt*' VI (von Haller 1932: Taf. 19C: u'), Hacınebi B2 (Pearce 2000: fig. 15: c; Stein 2002: fig. 11: c, f).

15. Just 3 samples come from Trench D, while 1 specimen has been collected during the survey of the Area VI, where it is difficult to establish whether this late drooping spout, identified along with some sherds of Early Bronze goblets, dates back to the very end of the Late Uruk phase or rather to the Early Bronze Age. Moreover, all the samples from Trench D have a slightly curved shape, quite different from the strongly arched profile of the Late Uruk drooping spouts (see for instance at Susa "Acropole I" 17 – Le Brun 1978: fig. 34.8; Choga Mish Protoliterate – Alizadeh 2008: fig. 31.E, I-K).

Decorations are exclusively documented on closed shapes and they are also typical of the Middle Uruk period. In particular, besides finger-impressed or incised cordons (Pl. II.7)[16], decorative knobs[17], as well as herringbone and triangular incised motifs on the shoulder of the jars are quite regular, according to a general Uruk tendency towards the middle of the 4th millennium BC[18]. Moreover, two groups of respectively 17 and 35 bodysherds display a thick reddish-brownish or grey slip on the exterior surface. It seems very likely that these fragments have to be identified with the so-called Red and Grey Uruk Wares, typical hallmarks of the Uruk period in southern Mesopotamia as well as in the Hamrin Basin[19].

Fig. 3 - Middle Uruk slightly drooping spout from Trench D at Girdi Qala .

Although the ceramic typology of the different Uruk phases is controversial[20], the assemblage from the survey of Girdi Qala northern mound and from Trench D clearly belong to a "normative" Middle-Uruk repertoire. On the one hand all the forms and decorations are well documented during the central centuries of the 4thmillennium, while, on the other hand, it is remarkable the complete absence of some typical Late Uruk indicators, as banded-rims bottles and bowls, twisted handles, long and bandy-shaped drooping spouts, or reserved-slipped vessels. Morpho-stylistic parallels emphasize the matching with Middle Uruk stages of both south- (Uruk/Warka 'Eanna-*Tiefschnitt*' VIII-VI and Nippur 'Inanna' XX-XVII) and north-Mesopotamian sites (Rubeidheh[21], Abu Salabikh "Uruk Mound", Nineveh 'Uruk B', Sheikh Hassan 6-13[22], Hacınebi B2 and). Likewise, given the proximity of the Zagros range, it is not

16. See Susa "Acropole I" 18 (Le Brun 1978: fig. 32.2-3), or Rubeidheh (McAdam and Mynors 1988: fig. 30.46; 34.100; 36.122).

17. See Abu Salabikh (Pollock 1987: 133), Rubeidheh (McAdam and Mynors 1988: 44-48, 51), Sheikh Hassan (Boese 1995: 249-271), Tell Leilan (Schwartz 2001: 241, fig. 7.5; Wright 2001: 125-126; Brustolon and Rova 2007: 23).

18. See Sheikh Hassan 7-5 (Bachmann 1998: figs. 8, 10, 12-13), Nineveh "Norduruk B" -37-31 (Gut 1995: pls. 60-62, pl. 68: 952; Gut 2002), Hacınebi B2 (Pearce 2000: fig. 15: d-e), Choga Mish Protoliterate B (Delougaz and Kantor 1996), Habuba Kabira Süd (Sürenhagen 1974-1975: pl. 27.95, pl. 28.130).

19. Despite the impossibility to distinguish red or grey (sometimes slipped and sometimes plain) Uruk traditions on the basis of very sketchy descriptions (von Haller 1932: 39), it seems sure that during the Early and Middle Uruk periods (Eanna XIV-VI at Uruk – von Haller 1932: pl.17.D. c'-d', pl.18.B.r-s and d'-h', pl.18.C.p, q, s, t, u; Inanna XX-XVII at Nippur – Hansen 1965: 202-204) this kind of productions have been a quite rare but constant presence within the Uruk repertoires (see at Ahmad al-Hattu and Rubeidheh, where red and grey wares represent about 4% of the assemblage – Sürenhagen 1979 :47-50; McAdam and Mynors 1988: 49).

20. See the differences in the chrono-typologies of Hansen (1965: 202-204), Johnson (1973: 56-58) and Wright (1981: 165-172).

21. Despite the evident parallels with Girdi Qala northern mound, the occupation at Tell Rubeidheh dates back to a late stage of the Middle Uruk and to an early phase of the Late Uruk period, as indicated by the presence of reserved slip bottles, strongly arched drooping spouts and other later types.

22. These same levels are indicated by Bachmann (1998b) as 15/13-6/5.

surprising to observe the very close similarities between the assemblages from Girdi Qala northern mound and Godin VI. The most significant feature is that the whole assemblage from Girdi Qala northern mound belongs to the south-Mesopotamian Uruk tradition, while any kind of local shapes or wares are virtually absent. Even if a consistent south-Mesopotamian presence is well recorded in the western Qara Dagh since the Early Uruk (as demonstrated by Trench D at Logardan and by the lowest levels of Trench C at Girdi Qala), the domestic areas exposed in Trench D of Girdi Qala northern mound constitute the first evidence of a south-Mesopotamian Middle-Uruk settlement east to the Tigris River and north to the Hamrin basin.

The dating of the materials and structures from Trench D seems particularly relevant when considering the evolution of the south-Mesopotamian presence both in the Hamrin and at Godin Tepe at that time. The increase in number of the small Middle-Uruk agricultural settlements in the Hamrin region (Invernizzi 1986) matches with the growing contacts between Godin and the Uruk cultural sphere[23]. It is very likely that the valleys of the Zagros Piedmont in the Qara Dagh area were part of crucial exchange zone centred on a main road network: the so-called Great Road of Khorasan. In its southern sector, this system of connections between Mesopotamia and Iranian plateau followed the Diyala River and then cross the central part of the Zagros Mountains through a series of high fertile districts as the Mahidashat and the Kangavar Valleys (Henrickson 1994: 86). Similarly, in the northern sector, the main paths seem to have been the Shahizor Valley with its scattered Middle-Uruk installations (Wengrow *et al.* 2016) and the Sangao-Qara Dagh road, with south-Mesopotamian settlements as Girdi Qala northern mound.

23. Before the construction of the Late Uruk oval enclosure (phases Godin "middle" and "late" V), the so-called Godin "middle" and "late" VI (Badler 2002: 87; the same phases are named Godin VI:2 and VI:1b/a after the reassessment of the stratigraphy by Rothman and Badler 2011: 82-84) show a more and more important Uruk presence.

Girdi Qala, Stratigraphical Trench B

Laurent Colonna d'Istria, Alisée Devillers and Mustafa Ahmad

In 2016, we enlarged the trench B to the east by completing the excavation of square 1. The trench covered 50 sqm in all and 10 stratigraphic levels were identified on approximately 2m of deposit, belonging to three cultural periods, Hellenistic, Sassanian and Islamic.

Level 1 (Middle Islamic Period)

The first level noticed is characterized by fire installations : loc. 46, 47 and 48 on the northern corner of the square 1 (alt. min. 652, 94 m – alt. max. 652, 89 m), and loc. 49 with vertical stones laying on edge (alt. 653,00 m) on the eastern part of this square (fig. 1). The fire installation loc. 49 (fig. 2) covered up partially a fifth fire installation, loc. 50 surrounded by ashy earth. This square was an open space, due to the proximity with the slope of the tell. Some stones without obvious connexion were found near the southern-east berm. The archaeological artefacts discovered (potsherds and fragment of iron ring) allow us to date this level to the Middle Islamic Period, but contained also Late Sasanian material (fig. 3).

Fig. 1 - Square 1 - fire installations loc. 46, 47, 48 and loc. 49 – view to the south-east.

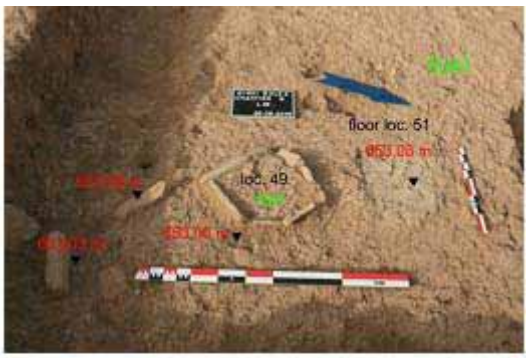


Fig. 2 - Fire installation loc. 49 view to the south-west.

Fig. 3 - GQ B -1043- intrusive Late Sassanian potsherds from the Level 1.

Level 2 (early Middle Islamic Period, c10-11th/12th centuries AD)

Level 2 is the digging level of five pits. Two of those are located on the northern-east berm: loc. 57 (alt. 652, 62 m) and loc. 58 (NV 1049 and 1060, alt. max. 652, 66 m – alt. min 652, 34 m). The pit 63 (NV 1053 and 1057, alt. max 652, 64 – alt. min. 652, 44 m) is alongside the northern-west berm. The pit 61 was dug south of loc. 60 (NV 1059, alt. max. 652, 6 m – alt. min 651, 94 m). The last pit, loc. 28 (NV 1072, alt. max. 652, 74 m – alt. min. 651, 98 m) is located at the centre of the square 1 and was partly excavated during the 2015 season. Once again, it seems that this digging level can be attributed to the early Middle Islamic period: glazed pottery from loc. 63, unglazed comb ware pottery from loc. 29 (fig. 4), metal plaque with two holes and the glass bangle from loc. 58, a needle and a metal scoria from loc. 61.

Fig. 4a - Potsherd from pit loc. 28 – GQ B 1072-3 (*unglazed* pottery)

Fig. 4b - Potsherds from pit loc. 63 = GQ B 1053 (*glazed* pottery)

Fig. 4 - Potsherds from loc. 28 et 63 (« early Middle Islamic period »).

Level 3a (early MIP)

Although Level 3 has been partially disrupted by the pits from the Level 2 (loc. 61 and loc. 57), two small stone-built walls have been identified in the south-east of the square 1: loc. 54 (alt. max. 652, 85 m – alt. min 652, 73 m) and loc. 55 (alt. max. 652, 98 m – alt. min. 652, 66 m). A red brick could be a door-socket (showing a door between loc. 54 and loc. 55). The fire installation loc. 50 discovered partially under loc. 49 and alongside the wall 54 could be linked to wall 54 (fig. 5). These two small walls (loc. 54 and 55), composed of rubble stone, belong to the same building, to which must be linked to the wall loc. 27 discovered during the previous campaign (fig. 6 ; see report 2015). At the north of these walls, it seems that we are here in an outdoor space. According to the sherds from this Level, Level 3A may be dated to the early Middle Islamic Period (fig. 7).

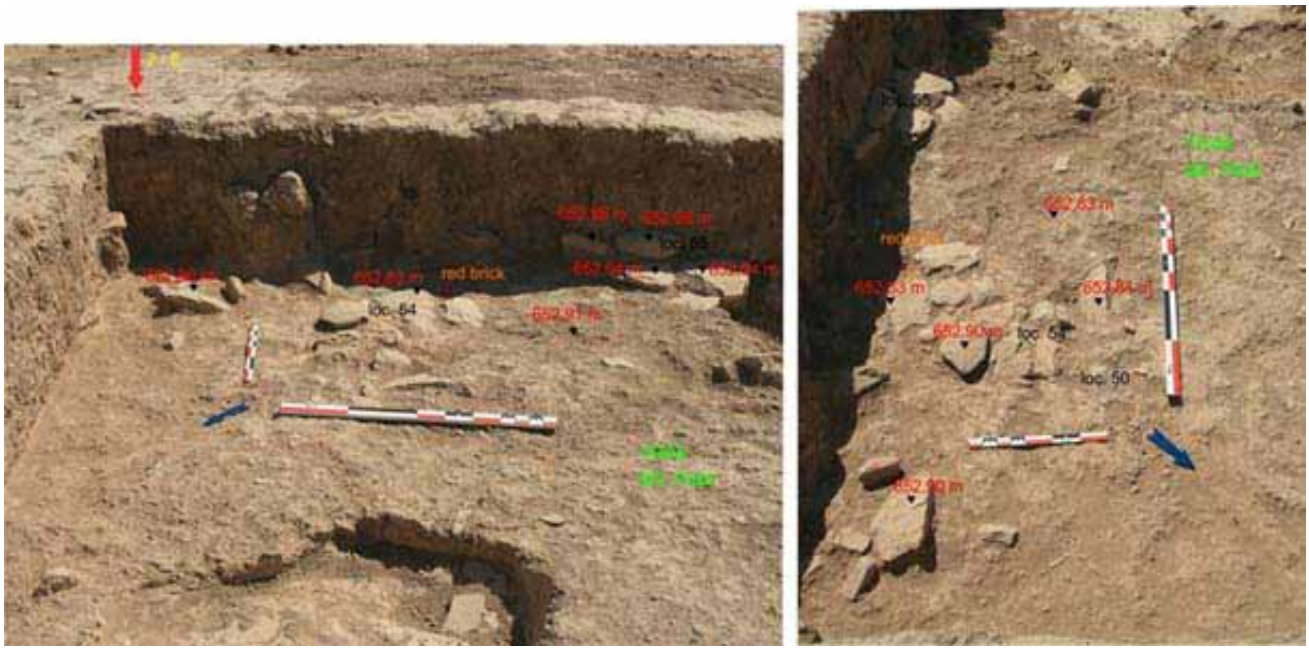


Fig. 5 - VIews of the Level 3a during excavation.

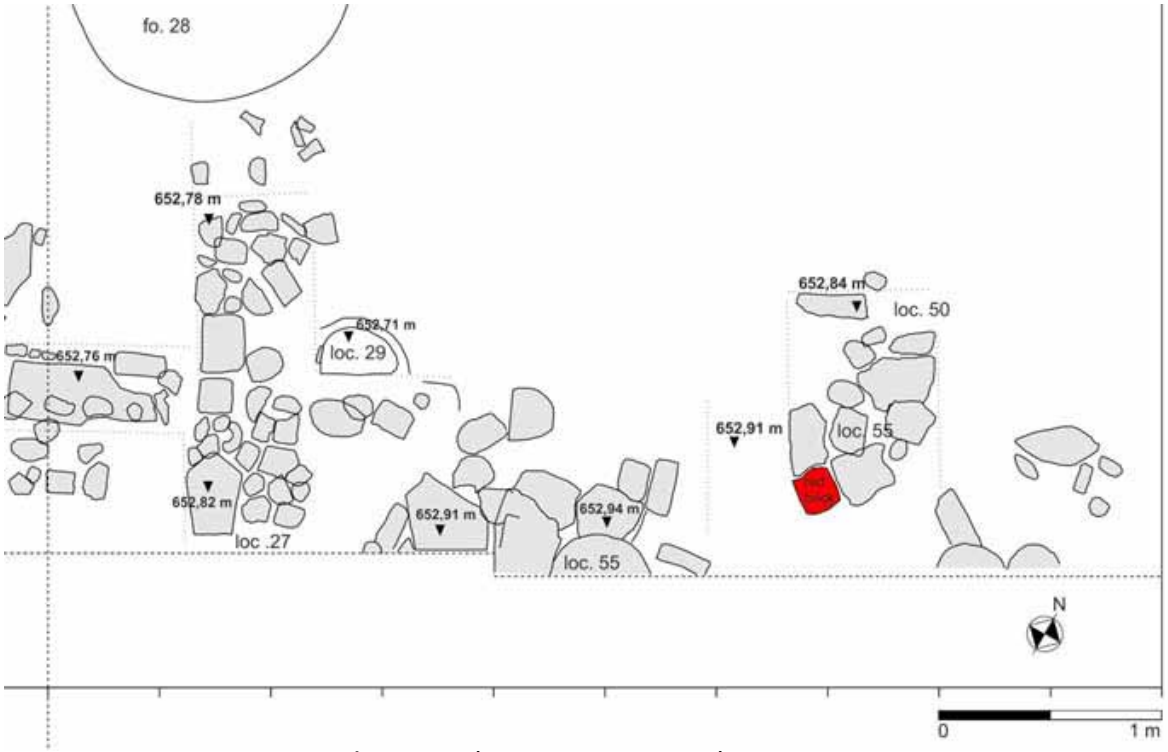


Fig. 6 - Level 3a -seasons 2015 and 2016.

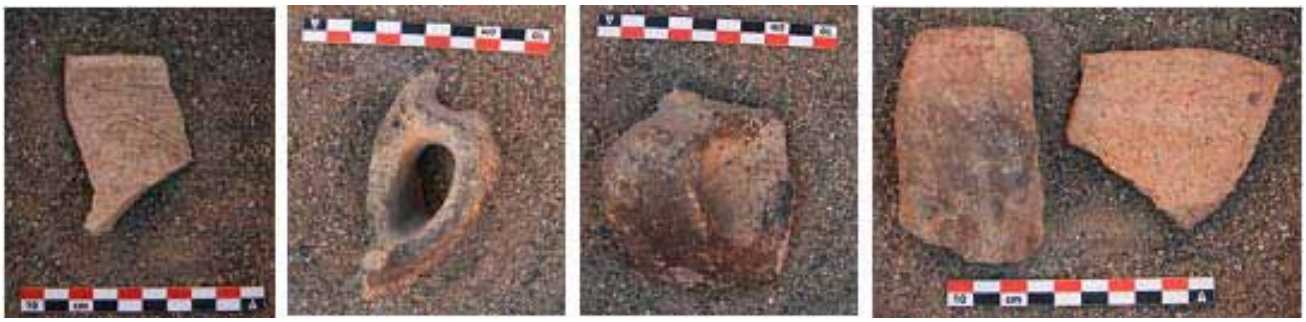


Fig. 7 - Potsherds from the Level 3A - GQ B-1045 («early Middle Islamic periods »).

Level 3b (early MIP)

Level 3b is characterized by a level of pits: loc. 73 (NV 1062, alt. 652, 33 m) at the north of the square, loc. 75 (NV 1063, alt. 652, 18 m) at the south-east of the square, and loc. 33 (alt. 652,45 m) at the east of the square. In the pit 73, we discovered a grinding stone (39 × 43 cm, alt. 652, 34 m), glass fragments, and a jar fragment with handle (fig. 8).

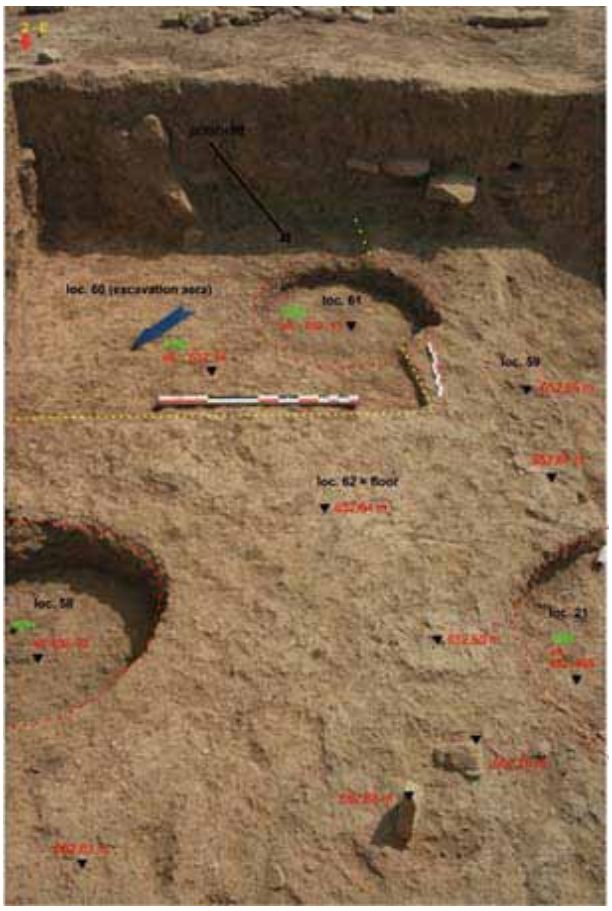
Fig. 8a - GQ B – 1062 = pit loc. 73 (early Middle Islamic periods)

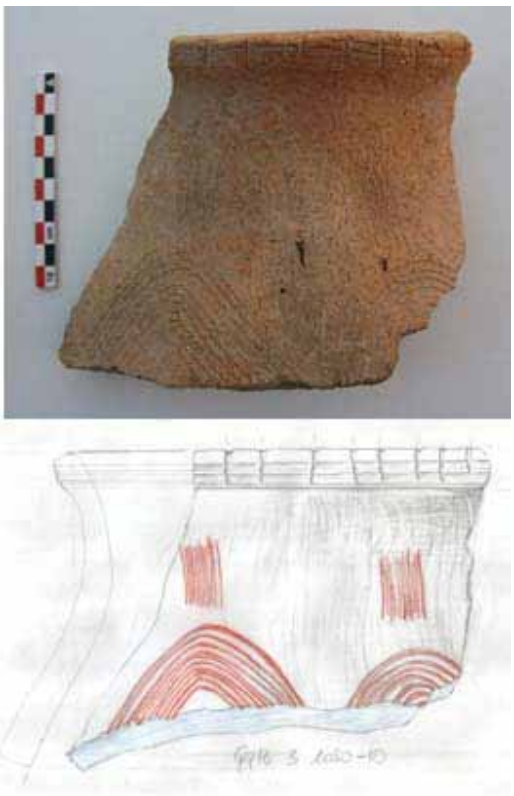
Fig. 8b - GQ B – 1063 – pit loc. 75 (early Middle Islamic periods)

Fig. 8 - Potsherds from pits - Level 3b.

Level 4a (Early Islamic Period)

This level is characterized by a mud-bricks-built wall (loc. 59) and its associated floor (loc. 62), on the northern-east part of square 1. Unfortunately, loc. 59 was largely destroyed because of the level 2 pits (loc. 61 and loc. 21). Nevertheless, we discovered at least three headers bricks and its joints. There dimensions are 43 × 13 cm and more or less 10 cm width. It is possible that the wall loc. 30, discovered in 2015, was contemporaneous with wall 59 (same elevation). Potsherds discovered during the excavation of this level suggest that it is dating from the Late-Sassanian or Early Islamic Period (fig. 9).





Preliminary drawing
Potsherd GQ B 1050-10

Fig. 9 - Square 1, view to the south-east and Potsherd GQ B 1050 from Level 4.

Level 4b (Late Sassanian Period)

Close to loc. 59, we found loc. 65, a wall with a different orientation, which allows us to assume that a connection between those two constructions does not exist. We noticed at least two bricks in foundation and one stone slab that is part of the wall-foundation. A stone door-socket was found near loc. 65 and seems to be in connection with it (fig. 10). Thus, it is possible that this wall was the limit of an outdoor/inner area. After removing loc. 59, it appears that loc. 65 runs under this wall. Loc. 65 was associated to a destruction layer with remains of eroded bricks.

Fig. 10 - Square 1,
view to the south-east - Levels 4a and 4b.

Level 5a (Sassanian Period)

Underneath the levels 4A and 4B on the northern part of square 1, the walls 79 and 81, in connection with the floor 71, seem to be part of a large building. Wall 79 (alt. max. 652,32 m – alt. min. 652,27 m) is located under loc. 65, in the same orientation (NE-SW) (fig. 11). We found alongside this mud-bricks wall the fire installation loc. 74 (NV 1066) (fig. 12)

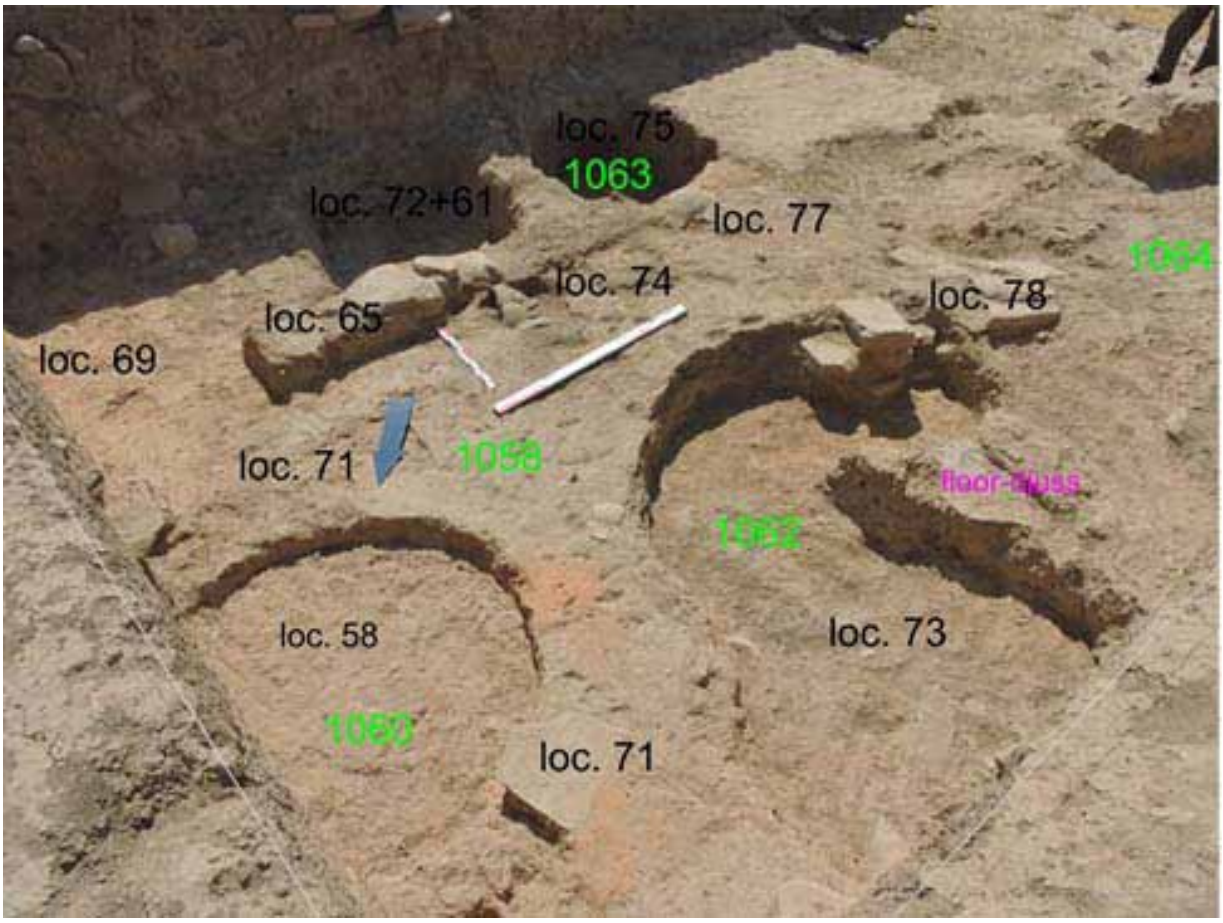


Fig. 11 - Square 1-view to the South - Levels 4 and 5.

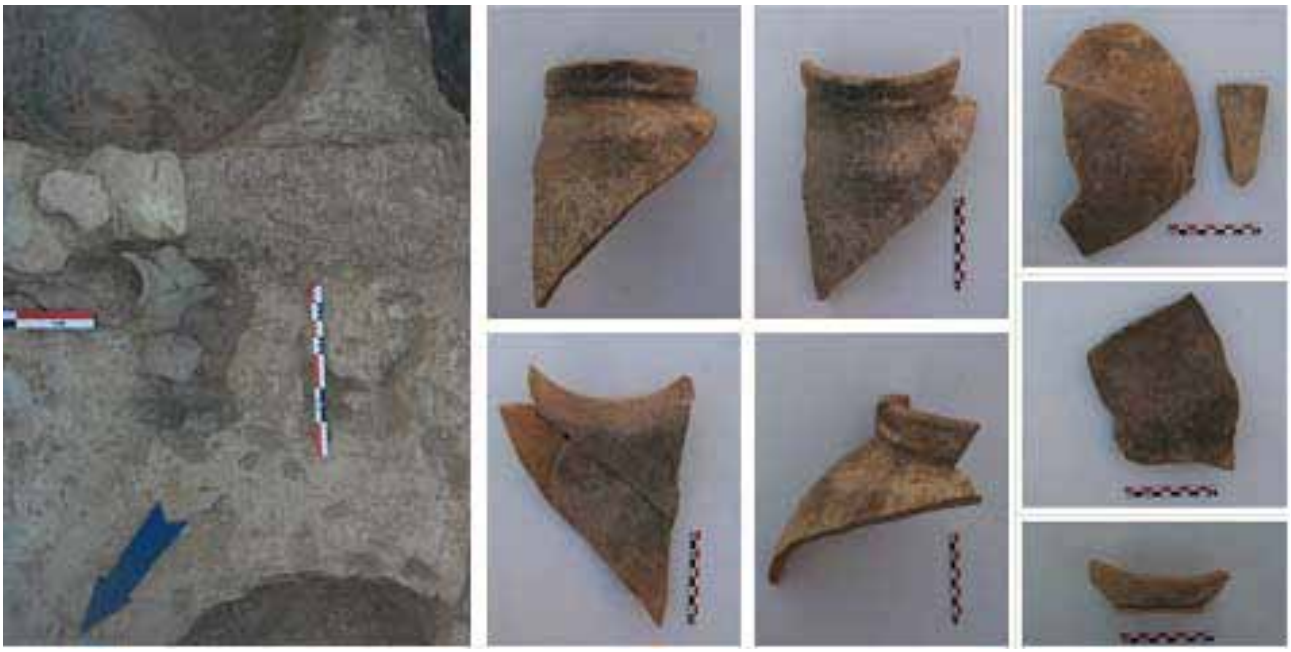


Fig. 12 - Sasanian potsherds from the fire installation loc. 74.

composed of, on its eastern part, one jar fragment and at least two bricks on its western part. It was filled with ashy and silty earth. Bricks were lying on the floor. It could be a platform structure. Between the pits 61 and 75, the wall 81 (alt. max. 652, 28 – alt. min. 651, 97) is perpendicular to loc. 79. It was partly destroyed by those pits and was connected with a pot containing parts of a dog skeleton (loc. 62).

More interesting is this cooking pot (in loc. 72, alt. max. 652, 29 m – alt. min. 651, 94 m) discovered at the south boundary of the pit 61 (fig. 13). The whole pot was found in different fragments, and have been restored (fig. 14). The bottom of it was burned and the pottery was surrounded by a skeleton of a dog (spine at the SSE of the pot and the legs at the NNW). The

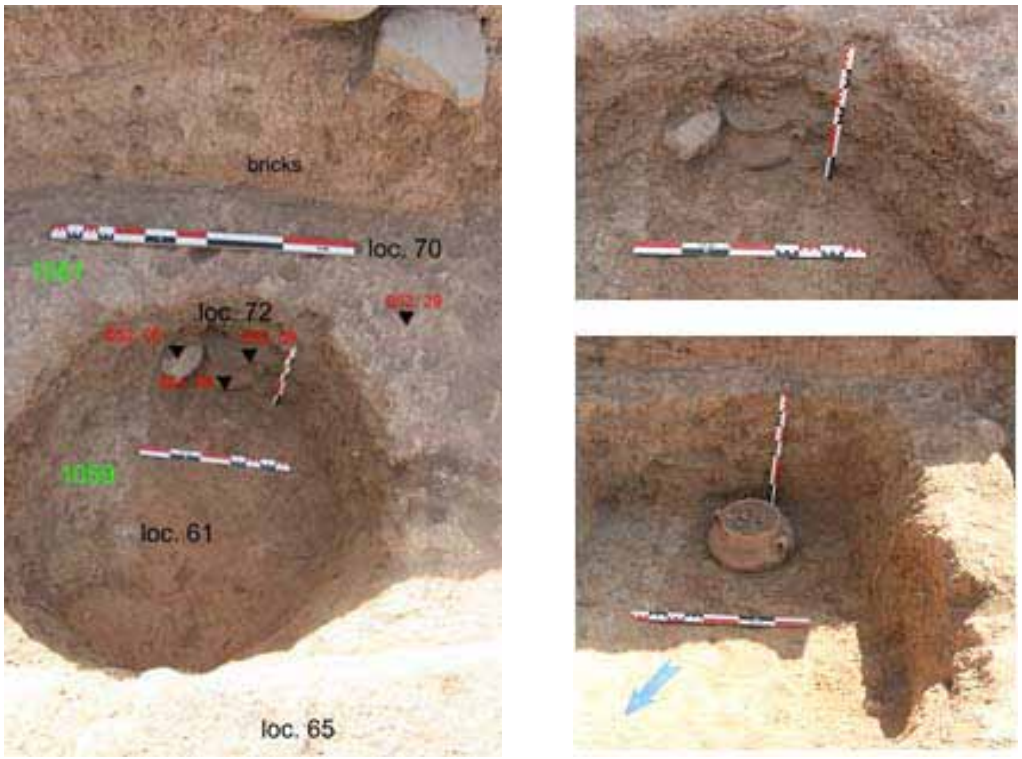


Fig. 13 - Location of the dog grave loc. 72.

Fig. 14 - Cooking pot of the dog grave, loc. 72, GQB.Tc.1061-1 - and potsherd discovered over of the cooking pot GQB-1061 – early Middle Islamic Period.

skull and one vertebra were located inside. According to its linear motive and its shape, the pot is a typical Islamic cooking pot (early MIP, 11-12th centuries AD), well spread in Sulaymaniah (Ahmad, *infra*), and the related tomb is clearly intrusive into a Sasanian level.

Level 5B (Sassanian Period)

This level is characterized by two stone walls. The first (loc. 83, alt. 652, 22 m) oriented east-west and located under loc. 79, and the second (loc. 78, alt. 653, 33 m) parallel to the first in the west part of square 1. Those stone building walls are partly destroyed by the pit 73 (level 3B). We noticed also two groups of square-shaped bricks (35 × 35 × 10 cm), loc. 85 (alt. 652,28 m) and loc. 86 (alt. 652,27 m) (fig. 15 and fig. 16). We did not finish the excavation of loc. 78 (NV 1074), so we are not able to give an interpretation of this structure. It is possible that it was associated to the *djuss* floor found in 2015.

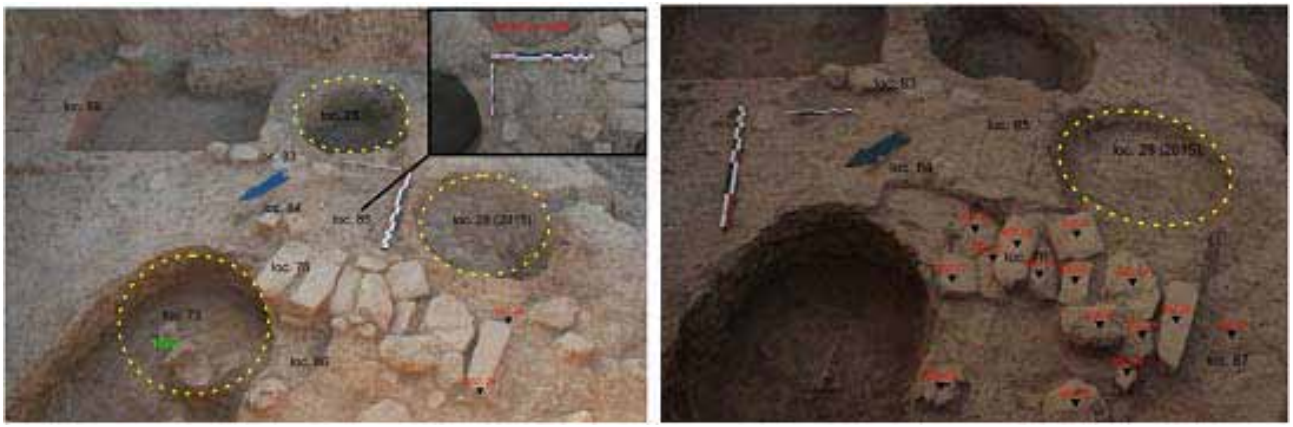


Fig. 15 - Squares 1 and 2 - views to the south-east - Level 5B.

Fig. 16 - Squares 1 and 2 - view to west and the tannur loc. 36.

Level 6 (Hellenistic Period)

This is the deepest level reached this season, on the West part of the square 2. We noticed one floor and a tannur (loc. 36, alt. 651, 96 m), partly damaged by the stony pit loc. 35 (alt. 651, 96 m) (fig. 16). On the NO berm, a fire installation loc. 88 (alt. 651, 86 m) has been discovered, surrounded by ashy earth and located underneath structure 78, which was partly removed. We thus assume that loc. 36 and loc. 88 were part of a same floor, characterized by clay earth and eroded bricks. It delivered a new kind of pottery decoration, with "half-moon" motifs. This potsherd (GQ 16 1075) allows us to date this level to the Hellenistic period (fig. 17).

Fig. 17 - Potsherd with « half-moon » motifs GQ 16 1075 (loc. 87) - Hellenistic Period.

Level 6' (Hellenistic Period)

Loc. 69 is attested by a reddish wall found in the eastern corner of the square 1. It is composed of red/orange bricks of 35 × 35 × 10 cm (fig. 17 and fig. 18). It counts at least five layers of well-preserved mudbricks. Its excavation is ongoing and we did not notice a floor connected to it (except a shallow white line). It seems that this is the most well preserved structure yet found in the trench (fig. 18) and should be more investigated next season.

Fig. 18 - Squares 1 and 2 - View to the west at the end of the excavation - October 2016.

Girdi Qala, a brief overview of the Late Periods' Ceramic

Mustafa AHMAD

The excavation in Girdi Qala yield a collection of pottery that dated to the last occupations' periods in the site; i.e. Hellenistic, Sasanian and Islamic periods. The pottery that are related to the last periods has been obtained from the excavation of two trenches on the top of the main mound (Trenches A and B) in addition to the intra-site survey that has been conducted for Girdi Qala. The amount of pottery collected from the site is still not sufficient to build a complete picture about the pottery production and traditions in Girdi Qala and its region in general. However, it gives us some indicators related to the ranges of dating and the nature of fabrics of each period that can ascribe to this area of the region.

Hellenistic period

The Hellenistic pottery forms the principal collection of ceramic among the whole corpus. The amount of pottery obtained from the excavation is sufficient to know the pottery traditions, typology and techniques used for this period.

The types and fabrics of the pottery dated to this period indicate that the site of Girdi Qala was one of the major cities in the network of Hellenistic sites in the region. The reason is that all the types of the sherds are, in general, the typical Hellenistic pottery types that are found mainly in all the Hellenistic sites in Iraq and Syria.

Some forms such as the **fish plate** form have parallels with sites located in the south and middle of Iraq such as Larsa[1] and Uruk[2] (No. 1030-1; fig. 1:A) and in Tell Beydar[3] (No. 1062-20; fig. 1:B), and sites located in the west; in Syria. It indicates the expansion of Hellenistic pottery traditions in the region, and the role of the network of Hellenistic cities or the strong influence of the Hellenistic culture in this spot of Land.

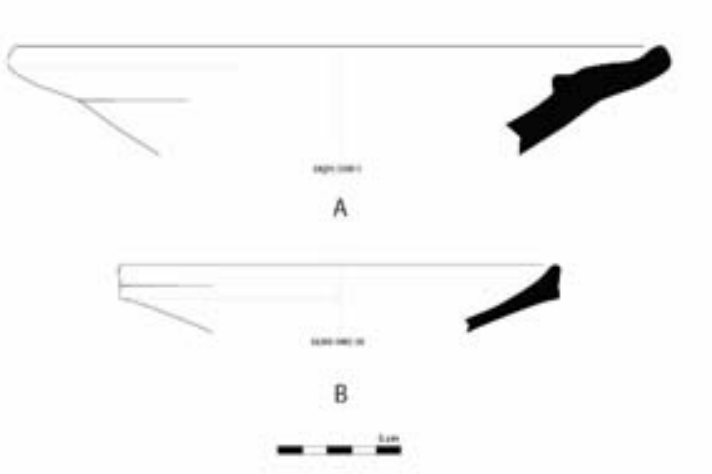


Fig. 1 - Fish Plates.

1. Lecomte 1993, fig 5:16:19.
2. Petrie 2002, fig. 6:1.
3. Katzy 2015, Pl. 55:6.

Many common unglazed pottery sherds collected from trench B dated to this period. Through checking and tracing the techniques used in forming the rims of the pots, it is remarkable that the potter intended to impose his expertise in forming the rims. This is clear in the modeling of the lips on the exterior face of the rim of the **grooved over-rolled rim** type, where we can see many sub-types of the main type (fig. 2). This feature was observed in Tell Arbid,[4] in Jebel Khalid in Syria that was one of the Greek colonies in Syria[5] and in Hatra in Iraq[6].

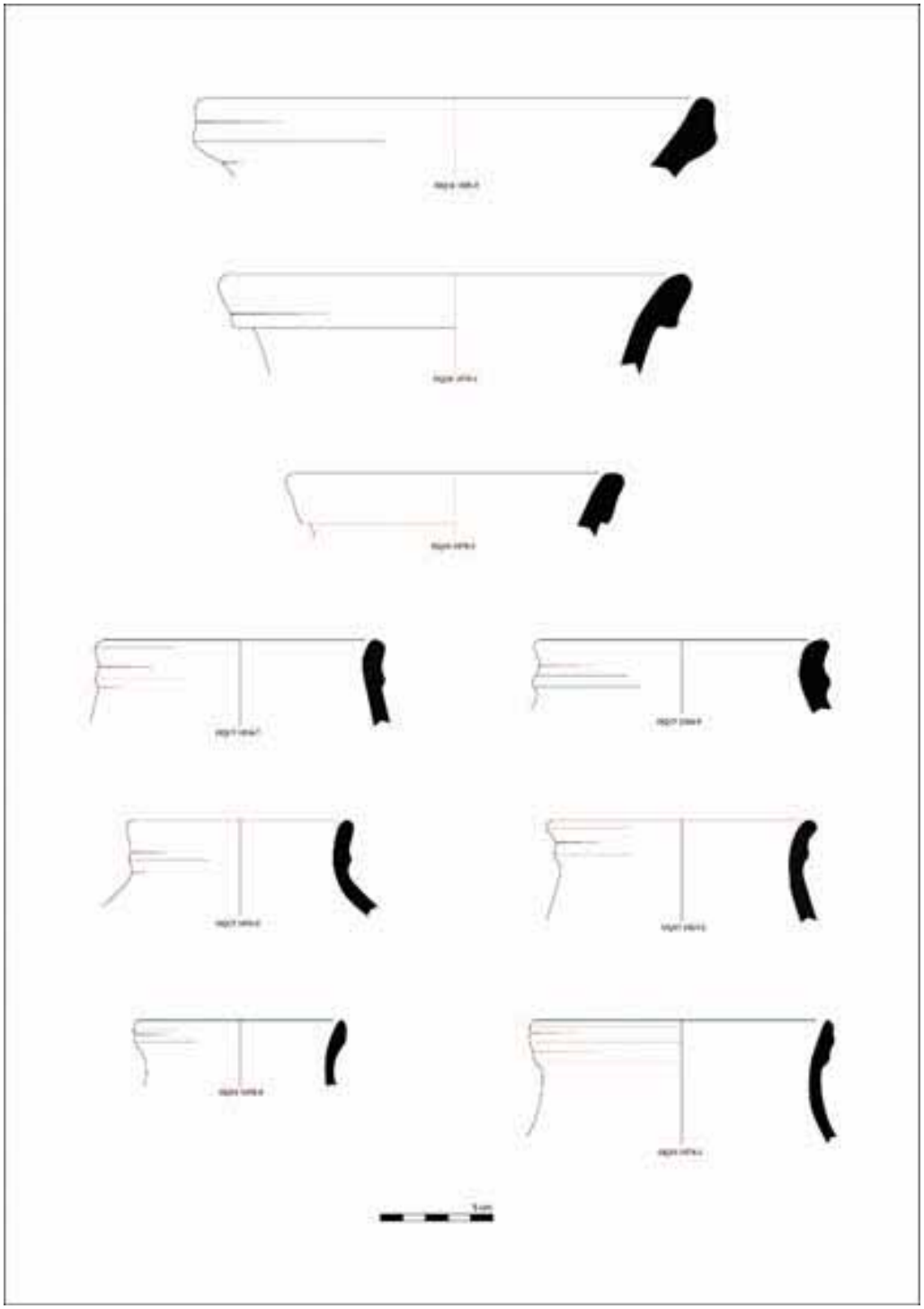


Fig. 2 - Hellenistic Pots.

4. Momot 2011, Pl. IX.
5. Jackson and Tidmarsh 2011, fig. 59-60.
6. Venco-Ricciardi 1997, fig. 4, 6-7.

One of the most important decorations found on the sherds is **the dog-tooth** décor (No. GQ15 1007-15 and GQ15 1007-45; fig. 3). This decoration is found usually on the Hellenistic pottery dated to 4th-3rd century BC. The presence of this decoration on the pottery sherds confirm the date that was proposed for this phase of occupation during the Hellenistic period in Girdi Qala. Many parallels for this type of decoration was found, whether in sites located to the west, in Syria for example, such as Tell Beydar,[7] Tell Arbid,[8] Jebel Khalid[9] and Sheich Hamad[10] and in Nimrud in Iraq[11], or to the south in Iraq such as in the Hellenistic city of Uruk[12] or to the north in Duhok Region[13].

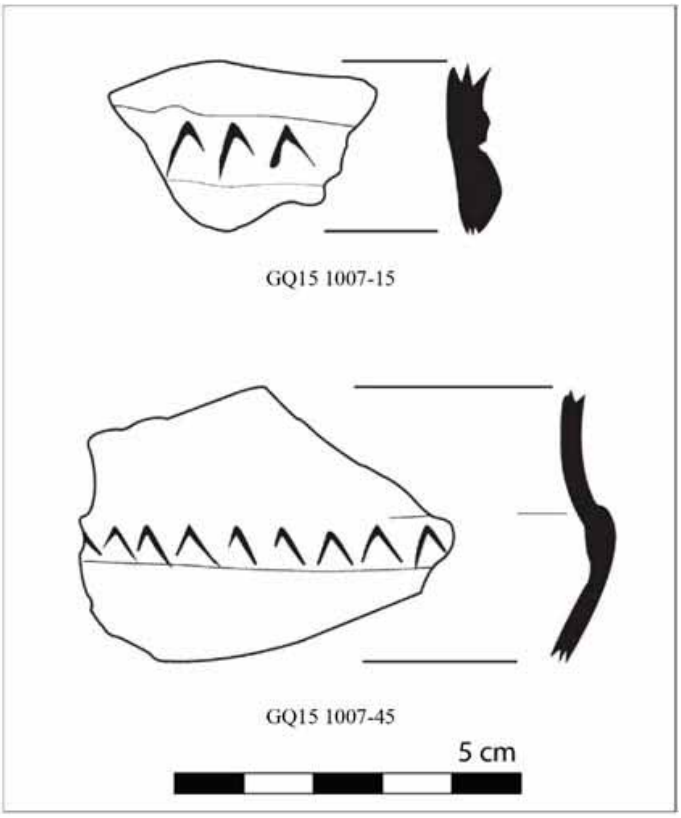


Fig. 3 - Dog-Tooth Decoration.

Another decoration found on the sherds, is the **stamped crescent** décor. This decoration again was well spread in the region during this period (fig. 4). Parallels are to be found in Jebel Khalid[14], in Sheich Hamad[15], in Nimrud[16].

Fig. 4 - Stamped Crescent Decoration.

7. Martín Galán 2003, fig. 4:28-29. ; Martín Galán 2007, fig. 1:14-15; 6:25.
8. Momot 2011, Pl. XIV-XVI.
9. Jackson and Tidmarsh 2011, fig. 71:8.
10. Kreppner 2006, fig. 61:45.
11. Oates and Oates 1958, pl. XXI:17.
12. Petrie 2002, fig. 9:V2a.
13. Gavagnin, Iamoni and Palermo 2016, fig. 22:9-11
14. Jackson and Tidmarsh 2011, fig. 71:5; 169:3.
15. Kreppner 2006, fig. 61:15, 35-36.
16. Oates and Oates 1958, pl. XXVII:4.

Few pottery shards of cooking ware have been found during the excavation. The fabric is mainly hard compact fires in high temperature degree and full of fine to medium size white and gray minerals. A **triangular folded rim type** (QD16 1007-1; fig. 5) comes from trench B. This type of cooking ware's rim is well known in the Sulaymaniah region. Many parallels can be found in Rania[17], Peshdar and the Sharazur plains.[18]

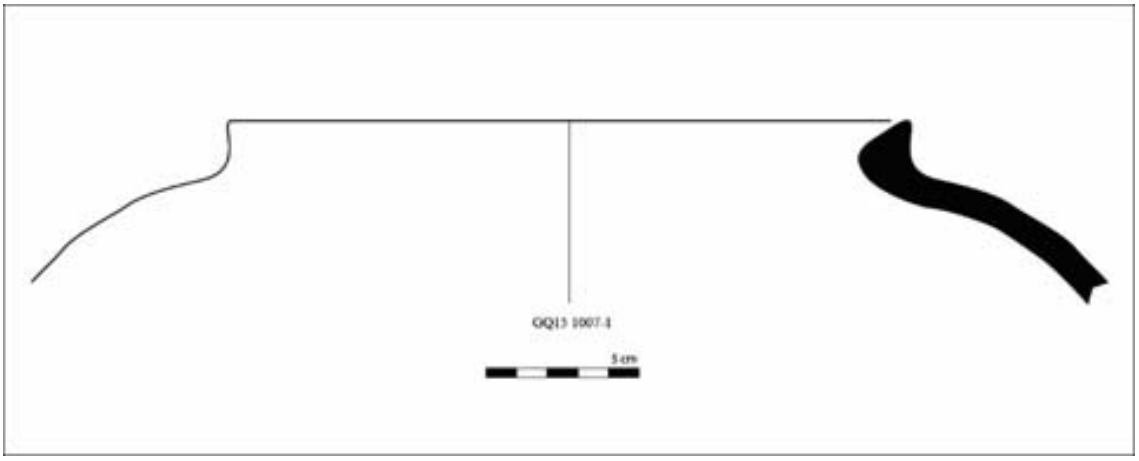


Fig. 5 - Hellenistic Cooking Pot.

Further excavation is needed in order to have more information related to the Slipped wares, and glazed ware pottery. Few sherds of cooking ware have been found during the excavation, but the amount of the sherds do not reveal the pottery traditions related to this ware of ceramic.

Sasanian Period

The pottery sherds that are dated to this period are very recognizable in Girdi Qala. That is due to the fabric of the pottery in addition to the typical Sasanian rim forms. The fabric of the Sasanian pottery is usually sandy to gritty, with different colors ranged from Reddish Buff and reddish brown to greenish buff color. The Sasanian pottery of Girdi Qala is divided into two main phases; first is the typical Sasanian pottery period (SAS) dated to 4/5th-6th centuries AD and the second is the last phase of the Sasanian period that is called Late Sasanian period (LSAS) dated to 7th-8th centuries AD.

In Girdi Qala, the Late Sasanian pottery is very recognizable due to its gritty fabric and the typical forms of this period, while the Sasanian period's pottery needs more investigation. The future excavation will enrich our knowledge about this period (i.e. SAS). The Late Sasanian period refers to the last phase of the Sasanian rule in the region beside of the beginning of Islamic period (Rashedi and partially Umayyad periods). In This period, some modifications could be traced in the production of the pottery. After the advent of Muslims to the region, the pottery production's traditions did not changed directly to be Islamic (until Early Abbasid period). The remarkable feature was the continuation of the Sasanian pottery tradi-

17. Many parallels found in Qalatga Darband, a Hellenistic site located in Rania. (Personal observation).
18. Personal observation.

tions in the production of pottery during this period with some modifications and alterations in forms and fabrics.

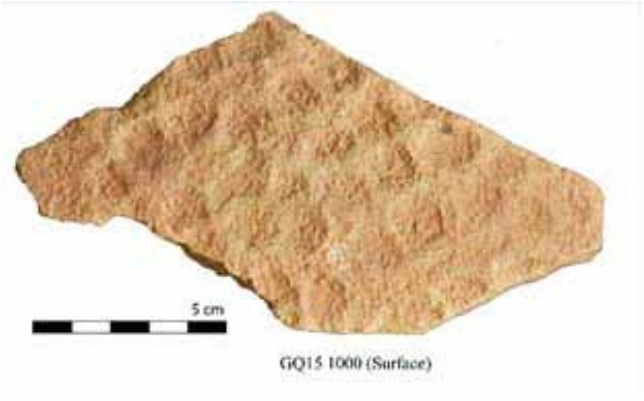


Fig. 6 - Honey-comb Decoration.

Another decoration has been found during the excavation (Nv. 1007-47, fig. 7). The decoration consists of **connected bows** covering the entire outer surface. This type of decoration in addition to the honey-comb decoration are very important for this period, where we they can be used as good tools for dating related to this period.

Fig. 8 - Sasanian stamped decoration.

Specific markers of Late Sasanian pottery has been found in Trench B, particularly the **Honey-comb ware** sherds (Nv. 1000 surface; fig. 6). This type of ware was very popular in Iraq during this period. It has been found in many sites such as in Uruk[19], in Tine[20], in al-Madain[21], beside of its occurrence in some sites in Rania and Peshdar plains[22].

Fig. 7 - Connected bows decoration.

A piece of pottery found in trench B has a **stamped decoration** on a gritty greenish buff fabric (Nv. 1019-1, fig. 8). The depiction represents a standing ram with a scorpion on its right side. A good parallel for this stamp was found in Saddam Dam Salvage project[23].

19. Finster and Schmidt 1976, pl. 60:b; 61:a.
20. Finster and Schmidt 1976, pl. 55:a.
21. Finster and Schmidt 1976, pl. 52:e-f, 53:h-i.
22. Personal observation.
23. Simpson 1996, fig. 1; Simpson 2013, fig. 1-2.

A typical rim of **double rim** type found in this trench is dated to this phase of LSAS (GQ15 1024-5; fig. 9). Many parallels for this type have been found in Bestansur in Shahrizor plain[24], in Saddam Dam Salvage project[25] and in Qal'eh-i Yazdigird in Iran[26].

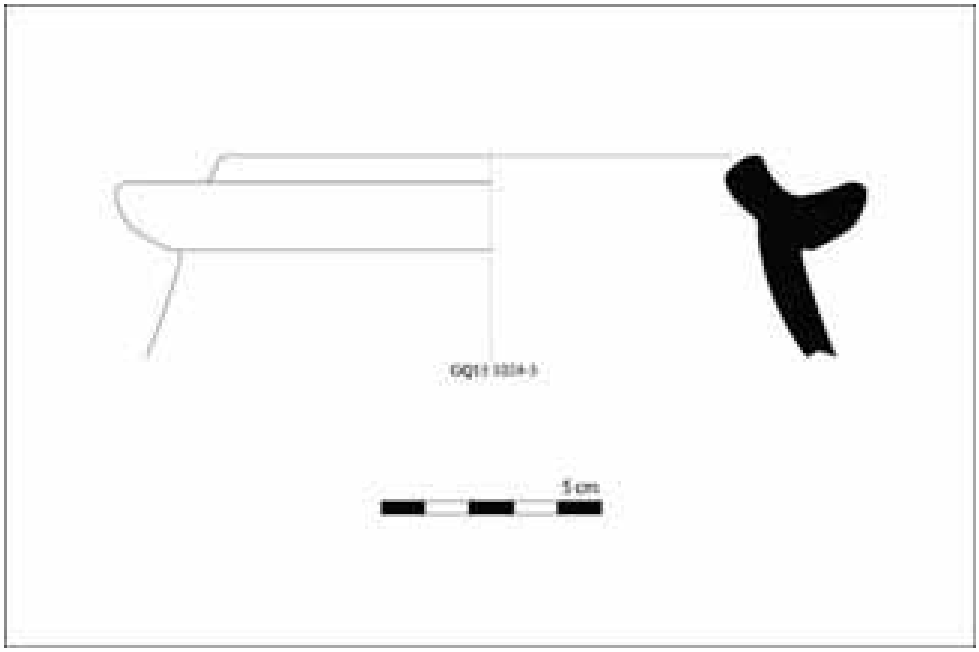


Fig. 9 - Double rim pot.

Islamic Period

The excavation in Girdi Qala Trench B did not yield a good amount of pottery dated to Islamic period. The last levels of occupation were not well preserved; therefore, the results are not sufficient yet to establish a good typological and fabric study. Nevertheless, despite the paucity of the pottery collected, some features can be pointed out.

Through checking the whole collection of Islamic pottery, a remarkable feature is noticeable, the nature of the pottery of Girdi Qala ascribes to the well-spread and well-known ceramic in Iraq and Syria during the period that is dated to the 10/11th-12th centuries AD. Except some local pottery of Handmade ware, beside of the cooking ware that is widely known in Northern Iraq namely Sulaymaniah region.

Few **Glazed ware** sherds were found during the excavation. A **polychrome sgrafitto base** was found in Locus 63 (No. 1053-8, fig. 10) dated to 10-11th century AD. The glaze of light yellow and green colors have been implemented directly on the surface of the base without a usual white slip in-between. The fabric is well lavigated buff color paste with

Fig. 10 - Polychrome Glazed base.

24. Cooper, Rajab and Ahmad 2012, fig. 3:13.
25. Simpson 1996, fig. 3:6.
26. Keall and Keall 1981, fig. 10:3, 10.

tiny black minerals. Another Square grooved on top rim of sgrafitto ware has been found during the survey and can be dated to 10-12th Century AD.

A collection of **cooking ware** handles (No. 1040-18, 1045-2 and 1048-16; fig. 11) beside of a complete pot (1061-1, fig. 12) dated to 11-12 Century AD were found in the upper levels. This type of pottery is well spread in Sulaymaniah particularly in Sharazur, Bazian and Tanjaro regions.[27]

Fig. 11 - Cooking ware handle.

Fig. 12 - Complete cooking ware pot.

The existence of this type of ware in Girdi Qala confirm the expansion of it to Chamchamal region. This type of pottery ware shares many common features; the fabric is mainly formed of hard compact clay containing fine to medium size grits essentially white and gray color grits, the surface finishing on exterior usually polished or well smoothed and the decoration is almost the same on all the pots of this ware that has mainly a wavy wide incised line.

27. Personal observation.

The **common ware** ceramic is mainly predominant on the pottery collected during the excavation. The fabric has fine to medium size minerals of black, white and occasionally reddish color grits. The color vary from buff to light greenish buff colors. Few sherds have **wavy or horizontal incised comb decoration** (fig. 13).

Fig. 13 - Common ware sherd with incised combed decoration.

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Appendix A

Topographical Report

Micheline Kurdy

During the campaign of 2015, Paul Courbon realized the topographical survey of the two sites of Girdi Qala and Logardan and their environments. The implemented system was attached to the UTM38 projection to be integrated into a national Kurdish SIG.

For 2016, work focused on the architectural survey of the excavation sectors in both sites. A three dimensions survey method was applied during this campaign, using photogrammetric technique and linked to the topographic system implemented last year. The target of this work was to realize a three-dimensional geo-referenced documentation of each excavation sectors along the campaign: first, to survey and document in 2D/3D the progress of the excavations of each sector, and second, to provide a high-resolution work support for archaeologists as a base for the site analysis and post-excavation work.

This methodology consisted of series of consecutive photographic shots with a Nikon D80 camera belonging to the mission, accompanied with topographic surveys with a total station LEICA TCR1205 (of the 1200 series), belonging to the archaeological department of Sulaymaniah. The used technique allowed realizing for each excavation sector a set of 3D models geo-referenced in the topographical system with possibilities to produce ortho-images, plans, sections and elevations (Fig. 1).

Fig. 1 - Example of the 3D models realized for sector D, Logardan.

Girdi Qala:

The topographic points were measured based on the two remaining stations from the previous year and three electric pylons. An additional station was added to reinforce the system and served for surveys of the area north of tell. Along the excavation campaign, the two excavation areas (B and D) were surveyed with photogrammetric method and geo-referenced in the topographical system, 8 documentations for sector B and 4 documentations for sector D. 3D models were created and ortho-image plans were generated (Fig. 2 and 3). The objective of these multiple surveys was to provide the archaeologists with a faithful technical support for analysis and a base for the realization of the architectural plans (Fig. 4).

Fig. 2 - Girdi Qala, ortho-image of sector B at the end of the excavations, in plan.

Fig. 3 - Girdi Qala, ortho image of sector D at the end of the excavations, in plan.

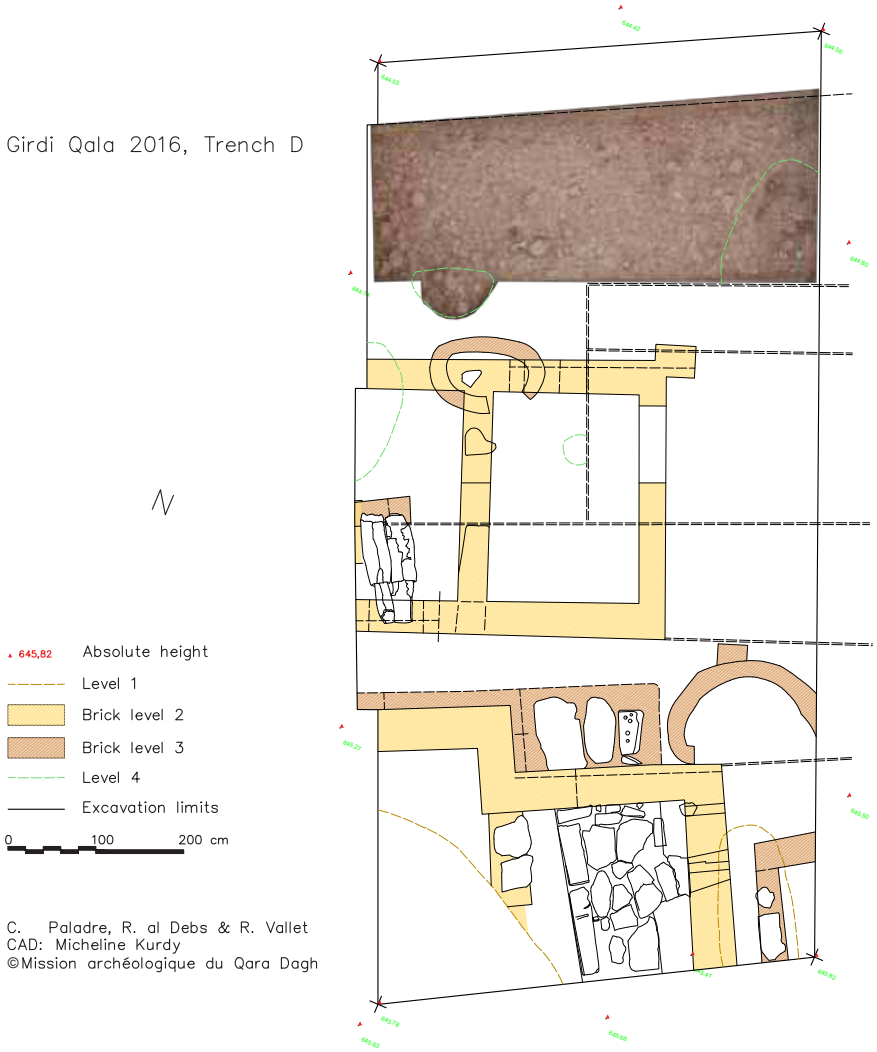


Fig. 4 - Girdi Qala, plan of sector D.

At the same time, a grid has been set up, allowing the geo-location of the geomagnetic survey of the zone at the west of the site. Later, this grid was integrated into the field survey to obtain a correlation between the geomagnetic images and the general study of the region.

Logardan:

The topographic points were measured based on the stations set up the previous year. The two sectors (D and E) were surveyed with photogrammetric method and geo-referenced in the topographical system. Along the excavation campaign, 10 documentations for sector D and 8 documentations for sector E were created, 3D models and ortho-image plans were generated (Fig. 5 and 6). Here again, the objective of these multiple surveys was to provide the archaeologists with a technical support faithful to reality for analysis and a base for the realization of the architectural plans (Fig. 7 and 8).

At the same time, a grid has been set up, allowing the geo-location of the geomagnetic survey west and south of the site. Later, this grid was integrated into the field survey to obtain a correlation between the geomagnetic images and the general study of the region.

Fig. 5 - Logardan, ortho-image of sector D at the end of the campaign.

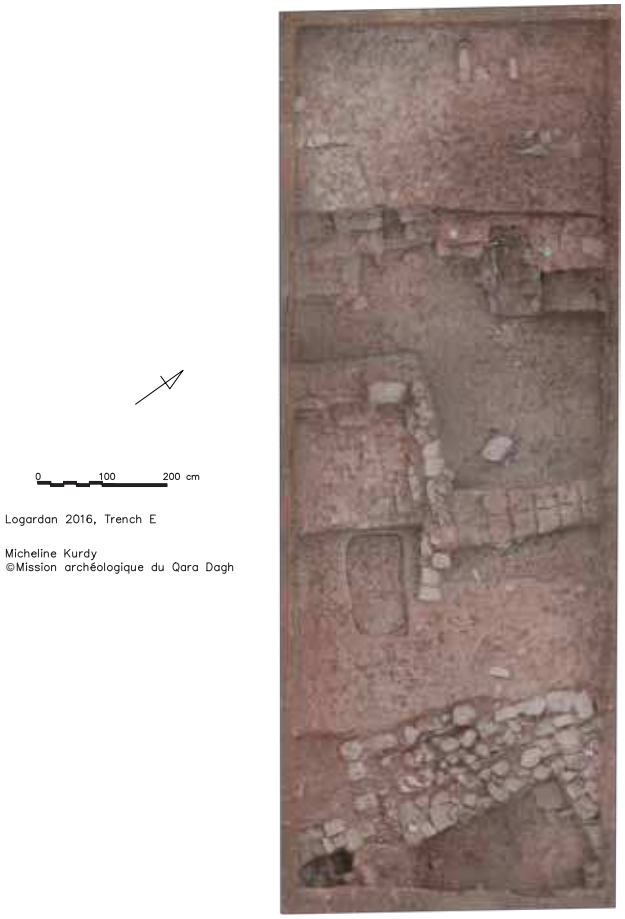


Fig. 6 - Logardan, ortho-image of sector E at the end of the campaign .

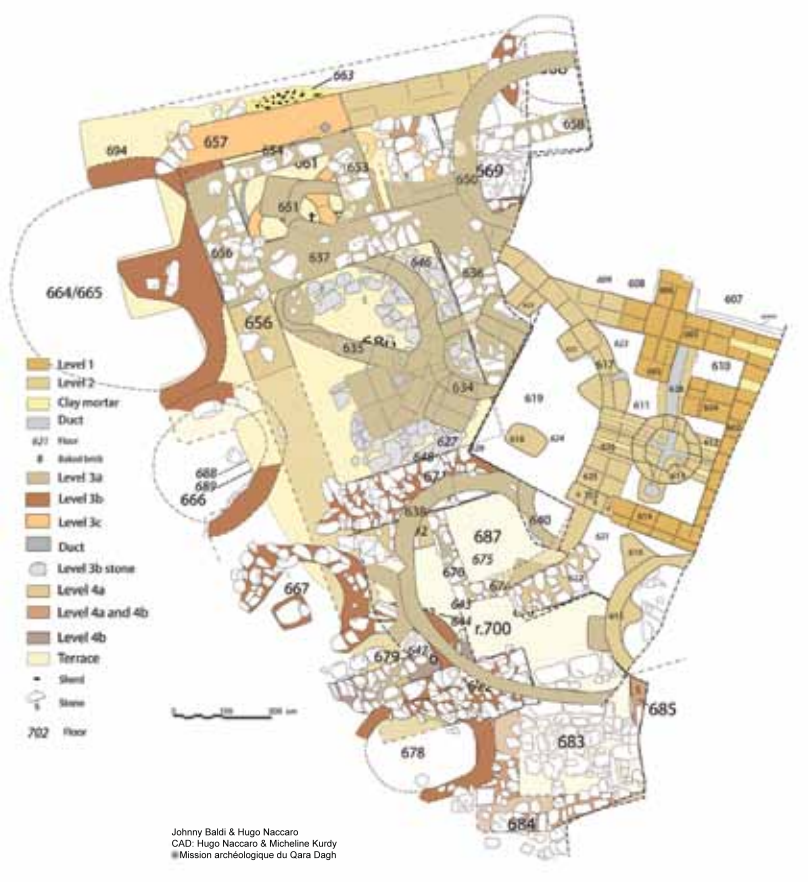


Fig. 7 - Logardan, plan of sector D.

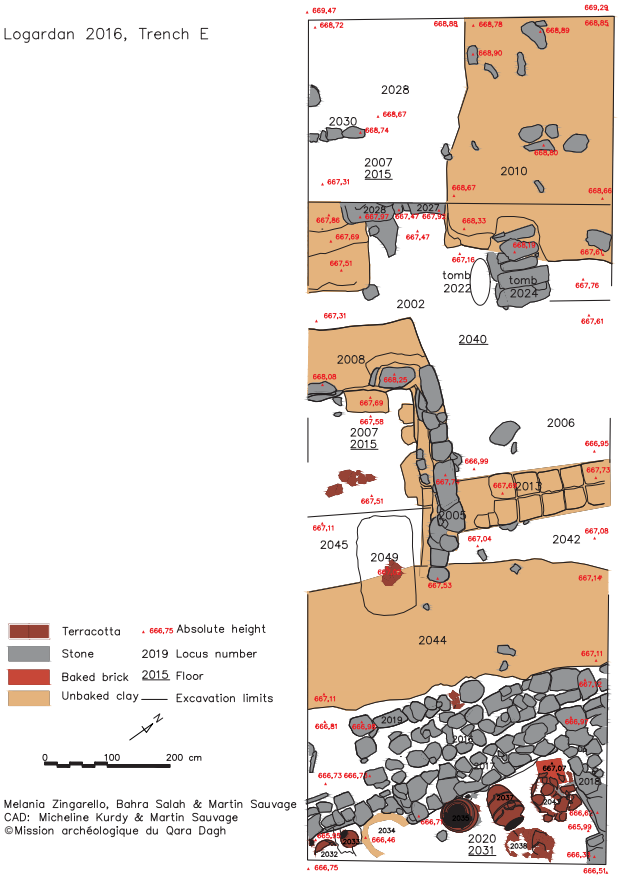
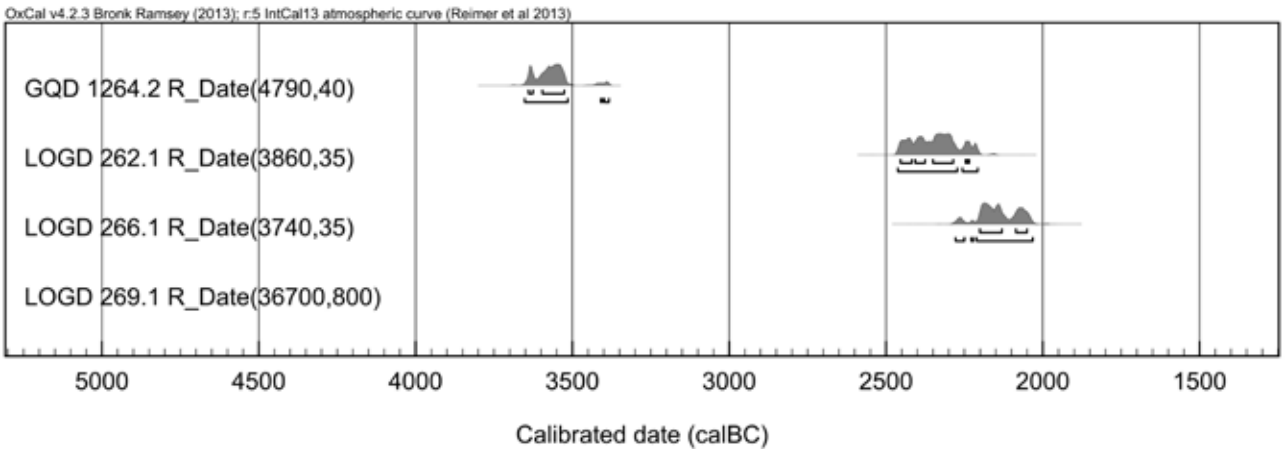


Fig. 8 - Logardan, plan of sector E.

Appendix B

Radiocarbon Dating

Results of calibration of 14C dates



Sample name	*Lab. no.*	*Age 14C*	*Remark*
GQD 1264.2	Poz-91136	**4790 ± 40 BP**	
LOGD 237.1	Poz-0	**>0 BP**	dissolved
LOGD 262.1	Poz-91138	**3860 ± 35 BP**	
LOGD 266.1	Poz-91139	**3740 ± 35 BP**	
LOGD 269.1	Poz-91140	**36700 ± 800 BP**	

Five charcoal samples were analysed in 2016, four from Logardan Trench D and one from Girdi Qala Trench D, north mound. One of them dissolved during preparation (LogD 237.1), while LogD 269.1 produced and aberrant result. A second analysis of the same showed that it was a mixed sample, blending charcoals of different origins, thus polluted. Not nowadays but in the ancient times (which doesn't really explain why the result would be fine, if divided by 10 !). We hope that next season provides convenient radiocarbon samples from level 4 of Logardan D. The three other samples (GQD 1264.2, LOGD 262.1 and LOGD 266.1) produced datings that are totally consistent with their cultural assemblage (respectively Middle Uruk, Akkad and Late Akkad) ans stratigraphical location.

Given are intervals of calendar age, where the true ages of the samples encompass with the probability of ca. 68% and ca. 95%. The calibration was made with the OxCal software.

OxCal v4.2.3 Bronk Ramsey (2013); r:5
IntCal13 atmospheric curve (Reimer et al 2013)

GQD 1264.2 R_Date(4790,40) *(GQ D Lvl 3)*
68.2% probability
3640BC (10.4%) 3627BC
3596BC (57.8%) 3527BC
95.4% probability
3653BC (92.7%) 3515BC
3410BC (0.5%) 3405BC
3399BC (2.2%) 3384BC
LOGD 262.1 R_Date(3860,35) *(Log D Lvl 3b)*
68.2% probability
2454BC (15.4%) 2418BC
2407BC (14.6%) 2376BC
2351BC (35.9%) 2286BC
2247BC (1.1%) 2244BC
2239BC (1.1%) 2236BC
95.4% probability
2463BC (81.7%) 2273BC
2257BC (13.7%) 2208BC
LOGD 266.1 R_Date(3740,35) *(Log D Lvl 3a)*
68.2% probability
2201BC (48.1%) 2131BC
2086BC (20.1%) 2051BC
95.4% probability
2279BC (5.5%) 2251BC
2229BC (1.1%) 2221BC
2211BC (88.8%) 2033BC
LOGD 269.1 R_Date(36700,800) *(Log D Lvl 4)*
68.2% probability
40004BC (68.2%) 38610BC
95.4% probability
40602BC (95.4%) 37839BC

APPENDIX C

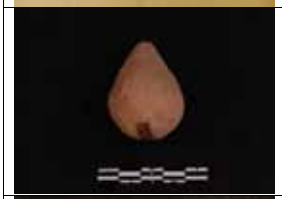
FINDINGS LIST

Excavations at Girdi Qalaa (GQ) and Logardan (LOG) تنقيبات

2016

الصورة او رسم **Photo or drawing**	الوصف **description**	رقم السياق **locus no**	القياسات **dimensions**	مادة الأثر **material**	نوع الأثر **kind of object**	الرقم **Code**
 	Composition of 2 identical and symmetrical groups. A bearded hero wearing a skirt and a belt is mastering with both hands a maned bull whose head is raised. The bull is standing on its hind legs. There is an eight-pointed star between the two groups, and a deletion under the star. Akkadian period, from the reign of Naram-Sin	600	3 x 1,7 cm Diam 1,7 cm Perforation 0,6 cm	Stone (serpentine)	Cylinder seal	LOGD P236.1

	Cylindrical, 6 flattened facets, decorated with incised herringbone motif	611	L 1.7 cm Diam. 1.2-1.7	Clay	pendant	LOGD Tc204.2
	Round, slightly concave base.. Painted black band.	619	Diam. 5.5-5 cm H. 3.5 cm	Ceramic	Stopper	LOGD Tc228.1
	Edge broken in places	619	8x6.8 x3.7 cm	Clay	Wheel (from chariot model)	LOGD Tc228.2

	Truncated. Concave base	638	2.4x3.2 cm cm 2	Clay	Loom weight	LOGD Tc232.2
	Sieve Ancient Uruk (local LC2-3)	634	Diam. 10 cm (irregular) Th. 1 cm (irregular)	Ceramic	Vessel	LOGD Tc237.1
	Small jar with everted rim Early Dynastic II-III	649	Diam. 5.5 cm (mouth) 7,5 cm (body) H. 8 cm Th. 0.3 cm	Ceramic	Vessel	LOGD Tc243.1
	Pear-shaped. Rounded base	652	L. 4.6 cm W. 3.2-1.5 cm	Clay	Token	LOGD Tc279.2
	Bell-shaped	2006	H. 3.6 cm Diam. 4-4.2 cm	Clay	Loom weight	LOGE Tc1037.1

	Wide-mouthed small globular jar, flaring rim, round base. Mid-third millennium BC	2020	H 5.9-6.3 cm Diam. 6.5-6.7 cm	Ceramic	Vessel	LOGE Tc1106.1
	Medium-size elongated globular jar. Round base. Decoration on shoulder: one crescent with diagonal incisions, one protruding ring Mid-third millennium BC	2023	H. 34,6 cm Diam. 16 cm	Ceramic	Vessel	LOGE Tc1068.1
	Truncated. Concave base	2999	H. 1.9 cm Diam. 2.9 cm	Clay	Loom weight	LOGE (UTS) Tc1999.1

	Biconical. Dark red paint.	2999	H.. 2.2 cm Diam. 3 cm	Clay	Spindle whorl	LOGE (UTS) TC1999.3
	Round	75	18.11x17.4 cm	Clay	Bead	GQB Tc1068.1
	Barrel-shaped		1.9x1.8 cm	Clay	Bead	GQB Tc1055.1
	Iron pin in 2 parts. Square section	61	14.4 x 0.5 cm	Iron	Pin	GQB Met1059.3
	Spindle whorl. Unbaked clay	71	H. 2,39 cm Dian. 4 cm	Clay	Spindle whorl	GQB T1058.1

	Ribbed, alternate black and white	73	5.7 x 0.6 cm	Glass (black)	Bangle (fragment)	GQB V1062.2
	round	28	5x3.1 x2.4 cm	Glass (blue)	Base of small vessel	GQB V1072.1
	Overlapping ends	61	Diam 2.,9 x 0.5 cm	Bronze	Ring	GQB Met1059.1
	Cooking pot with 2 handles.	72	Ht 15.5 cm Diam 17-14.8 cm Th. 1.2-0.6 cm	Ceramic	Vessel	GQB Tc1061.1

	Bowl, with pouring lip Middle Uruk	258	Diam 10.5 cm base diam 3 cm H. 6 cm Th : 0.3 cm	Ceramic	Vessel	GQD. Tc1251.1
	Cone fragment	200	L. 5.5 cm Diam. 2-1.3 cm	Clay	Cone (fragment)	GQD Tc1203.2
	Cone. Tip broken	200	L. 8 cm Diam 3-1.2 cm	Clay	Cone (fragment)	GQD Tc1203.1
	Perforated roundel, flat.	214	Diam. 6 cm Th. 1 cm	Clay	Perforated roundel	GQD Tc1215.1
	Sheep? Ears, nose and lower part of legs broken	254	L. 5 cm W. 1,8-2,3 cm Th. 1-1,5 cm	Clay	Animal figurine (incomplete)	GQD Tc1258.1

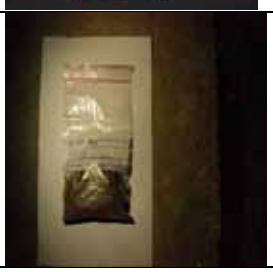
APPENDIX D

EXPORTED SAMPLES

QARA DAGH ARCHAEOLOGICAL MISSION

AUTHORISATION FOR EXPORT OF ARCHAEOLOGICAL SAMPLES

SEASON 2016

Qty	description	sample no.	Photo
1	Charcoal	LOGD Ech266.1	
1	Charcoal	LOGD Ech225.1	
1	Charcoal	LOGD Ech237.1	
1	Charcoal	LOGD Ech262.1	
1	Charcoa	LOGD Ech269.1	
1	Charcoal	LOGE Ech1098.1	

1	Charcoal	LOGE Ech1106.1	
1	Charcoal	GQB Ech1048.1	
1	Charcoal	GQB Ech1056.1	
1	Charcoal	GQD Ech1251.1	
1	Charcoal	GQD Ech1264.2	
1	Charcoal	GQD Ech1264.1	
1	BRB Pastes (TRUE-PROTO)	GQD LOGD	
1	Painted sherds (pastes)	LOG 2016