PRELIMINARY REPORTS OF THE SYRIA-JAPAN ARCHAEOLOGICAL JOINT RESEARCH IN THE REGION OF AR-RAQQA, SYRIA, 2010

INTRODUCTION

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The Syria-Japan Archaeological Joint Research in the Bishri Region has conducted fifteen times of field works as below ever since the start of the field works in the region of Ar-Raqqa in February of 2007.

The 1st season of field works: February 15 to March 3, 2007
The 2nd season of field works: May 6 to 30, 2007
The 3rd season of field works: August 1 to 29, 2007
The 4th season of field works: November 8 to December 12, 2007
The 5th season of field works: March 3 to April 5, 2008
The 6th season of field works: April 25 to June 6, 2008
The 7th season of field works: October 10 to December 2, 2008
The 8th season of field works: February 23 to April 3, 2009
The 9th season of field works: April 28 to June 12, 2009
The 10th season of field works: August 1 to September 9, 2009
The 11th season of field works: October 11 to 25, 2009
The 12th season of field works: November 17 to 21, 2009
The 13th season of field works: December 24 to 30, 2009
The 14th season of field works: March 19 to 30, 2010
The 15th season of field works: October 13 to November 17, 2010

Composed of 18 research teams specialized in natural and cultural sciences, this multi-diciplinary Syria-Japan Archaeological Joint Research worked in the region of Ar-Raqqa and in Japan, in order to clarify how ancient pastoral nomadic tribes contributed to the formation of agriculture-based urban societies along the Middle Euphrates, North-East Syria.

The members who participated in the fifteen times of the joint works are as below:

Syrian Party: Michel Al-Maqdissi (Superviser), Anas Al-Khabour (Director), Shaker Al-Shbib (Director), Mohamad Sarhan (Director), Ahmed Sultan (Director), Ayham Al-Fahry, Mahmmod Al-Hassan, Ibrahim Musa, Mohamad Ali Jajan, Mohamad Ibrahim, Aed Issa and Ibrahim Khalil.

Japanese Party: Katsuhiko Ohnuma (Superviser and Director), Hiroyuki Sato, Masanobu Tachibana, Yoshihiro Nishiaki, Tomoyasu Kiuchi, Hiroto Nakata, Seiji Kadowaki, Masashi Abe, Kazuya Shimogama, Osamu Kondo, Kenji Nagai, Yuichi Hayakawa, Sumio Fujii, Takuro Adachi, Kae Suzuki, Kazuyoshi Nagaya, Hitoshi Endo, Kyohei Inoue, Akira Tsuneki, Atsunori Hasegawa, Morito Iizuka, Hirotoshi Numoto, Shogo Kume, Isamu Ono, Izumi Yoda, Harumi Horioka, Haider Urebi, Mitsuo

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Hoshino, Tsuyoshi Tanaka, Toshio Nakamura, Hidekazu Yoshida, Takeshi Saito, Kazuhiro Tsukada, Yusuke Katsurada, Yoshiyuki Aoki, Suguru Oho, Ken-ichi Tanno, Lubna Omar, Chie Akashi, Yasuyoshi Okada, Sumiyo Tsujimura, Naoko Fukami, Ryuichi Yoshitake, Yo Negishi, Panagiotis Tokmakidis, Shouko Ueda, Natsuko Fujikawa, Kiyomi Mori, Saeko Miyashita, Hitoshi Hasegawa, Tomoya Goto, Shu Takahama, Toshio Hayashi, Ryuji Matsubara, Toshiki Yagyu, Masayuki Akahori, Hidemitsu Kuroki, Kenichiro Takao, Teruaki Moriyama, Yoshihiko Nakano and Hidemi Ishida.

In November of 2009, we held an international symposium entitled "Formation of Tribal Communities: Integrated Research in the Middle Euphrates, Syria" in Tokyo.

This symposium was exercised in the hope that we Japanese researchers, as newcomers into the history of the Bronze Age of the Middle Euphrates, could obtain valuable information to widen and deepen knowledge in the research field concerned.

As we had expected, the symposium was very successful with full of important information and practical suggestions presented by the scholars who joined the symposium, highly experienced in the research of the Bronze Age history of the Middle Euphrates.

Field works in the region currently being continued convince us that the research to follow will lead to the clarification of unknown aspects of how agriculture-based urban societies along the Middle Euphrates were formed with pastoral nomadic tribes.

The reports presented here in *Al-Rāfidān* are the working reports of the 14th and 15th field seasons in the forms of their submission to the Syrian Directorate General of Antiquities and Musems (see Al-Maqdissi, Ohnuma, Al-Khabour, *et al.* (2008, 2009, 2010) for the working reports of the 1st to 13th field seasons).

Also presented is the **Appendix** consisted of three reports, that were unfortunately missed from Archaeological Research in the Bishri Region: Report of the Eighth Working Season (Preliminary Reports of the Syria-Japan Archaeological Joint Research in the Region of Ar-Raqqa, Syria, 2009, *Al-Rāfidān* XXXI: 97–207, 2010).

We like to express our sincerest gatitude to Dr. Bassam Jamous, Director General of the Syrian Directorate General of Antiquities and Musems, who warm-heartedly understands this joint research and is always cooperating with us towards the success of the joint research.

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2010 *Formation of Tribal Communities: Integrated Research in the Middle Euphrates, Syria* (Special Issue of *Al-Rāfidān*), 262 ps.

31/December/2010

ARCHAEOLOGICAL RESEARCH IN THE BISHRI REGION — REPORT OF THE FOURTEENTH WORKING SEASON —

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March 30, 2010

Introduction

The Syria-Japan Archaeological Joint Research in the Bishri Region aims to contribute to better understanding of the development of communities in this region, particularly focusing on the issues of the interaction between pastoral nomads and settled agriculturalists. The project consists of multi-disciplinary research teams in archaeology, physical and cultural anthropology, history, biology, and geology, in an attempt to obtain a wide range of scientific evidence for past and present local communities and their surrounding environments. For this purpose, the project has conducted a series of fieldwork at several locations, concurrently with the analyses of collected materials.

The 14th working season of the Syria-Japan Archaeological Joint Mission to the Bishri Region was carried out from March 19 to 30, 2010. The members of the joint mission from the Syrian and Japanese parties were as follows:

Syrian party: Ahmed Sultan (Director), Mohammad Sarhan, Aed Issa, and Ruba Dib.

Japanese party: Katsuhiko Ohnuma (Director), Takuro Adachi, Chie Akashi, Sumio Fujii, Atsunori Hasegawa, Yu'ichi Hayakawa, Seiji Kadowaki, Osamu Kondo, Kenji Nagai, Hiroto Nakata, Yoshihiro Nishiaki, Kazuya Shimogama, Kae Suzuki.

The project was undertaken with generous supports from Dr. Bassam Jamous, the Director General of the Syrian Directorate General of Antiquities and Museums, and Dr. Michel Al-Maqdissi, the Director of Archaeological Excavations and Research at the Syrian Directorate General of Antiquities and Museums (the Syrian Supervising Adviser for this joint mission). Their warm-hearted cooperation, essential to the success of this field season, is deeply appreciated.

The research of this season comprised the following field and laboratory work: 1) the study of pottery collections excavated from Tell Ghanem al-Ali, 2) the study of human and animal skeletal remains excavated from Rujum Hedaja 1, Wadi Shabbout Area 1, Wadi Daba 1, and Tell Ghanem al-Ali, 3) the archaeological surveys around Tell Ghanem al-Ali, and 4) the excavations of a newly discovered Neolithic settlement on the northern flank of Jabal Bishri.

Map 1 Area including the sites researched by the 14th Syria-Japan Archaeological Joint Mission to the Bishri Region in March, 2010.

1. Pottery study of Tell Ghanem al-Ali

Atsunori HASEGAWA (Doctoral student, University of Tsukuba, Japan)

Tell Ghanem al-Ali is located 50 km east of the city of Raqqa and 2.5 km south from Euphrates. It is located on the river terrace of Euphrates and it measures about 290 m (west to east) and about 250 m (north to south) and 10 m in height. To confirm the chronological sequence of Tell Ghanem al-Ali, we set Square 2 on the northern slope of the site. The 4 (east-west) × 26 (north-south) m trench has already been dug, and it reached northern foot of the mound. We identified eight building levels. At the last season in 2009, we reached the virgin soil below the 8th building level.

In this season, I concentrated to make the database of pottery found from Square 2. I began to draw and take pictures of rim and base fragments of pottery unearthed from the building levels 4 and 5 of Square 2 (Figs. 1 and 2). The fabric of them usually included sand but sometimes included sparse mica. And the color was generally pale yellow. According to the shape, almost all of them were identified with a kind of Plain Simple Ware. Unfortunately, Euphrates Fine Ware was not confirmed in this time. In this time, it is too short to analyze the pottery, and the study of pottery found from Tell Ghanem al-Ali was just beginning. So, we have to continue to study.

Fig. 1 Pottery shard found from building level 4, Square 2.

Fig. 2 Pottery shard found from building level 5, Sequre 2.

2. Human skeletal remains from Bishri region, excavated during 2009 seasons

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During the Syria-Japan Archaeological Joint Research Project in the Bishri Region, considerable amount of human skeletal remains have been uncovered from several sites. Among them, those found from burial cairns of Rujum Hedaja 1 during 2007–08 seasons have been already reported (Nakano 2009). I have conducted anthropological observation on the rest of the human skeletal remains mainly from 2009 season's excavation. Those are composed of four different sites, Rujum Hedaja 1 (RH1), Wadi Shabbout Area 1 (WS1), Wadi Daba 1 (WD1), and Tell Ghanem al-Ali (TGA).

Due to the shortage of research time compared to the amount of the material, the study strategy was focused on the following several lines of targets.

1: Age distribution, which is roughly estimated on the simple criteria of adult and child. The "child" includes those from fetus to juvenile, the latter of which are assessed with having separated epiphyses or epiphysial lines indicating the growing limb bones. The "adult" criterion includes those stop growing after puberty.
2: Individual number per burial (single or multiple), which is counted based on the minimum number of individuals (MNI) per excavation unit. Because I could not proceed in full MNI counting which needs sorting and refitting the fragmented bones, the "single" or "multiple" information will be reasonable.
3: Preserved portion of the skeleton, which is interested because most of the burials are assumed to be suffered from grave robbing by later inhabitants.
4: Human induced markings on the bone, which includes "cut mark" or "punched mark" normally found on edible animal bones, and several kinds of damage scars in reburial or grave robbing.
5: Human dentition, its morphology helps to infer the population affinity, and its microwear texture indicates a polarity of dietary resources or diet-related activity.

Preliminary results are presented for the above themes of 1 and 2.

Table 1 summarizes the age distribution presented for each sites. When we compare the frequency of RH1 and that of WS1, both of which possess reasonable number of identified individuals, RH1 site produces a higher percentage of "child" age class compared to that in WS1. Concerning the "single/multiple" burial patterns, we find the higher percentage of the multiple burial patterns in RH1 in contrast to the more single burial types in WS1.

Table 1 Age distribution (adult/child persentage).

	adult	child
RH1	34 (57.6%)	25 (42.4%)
WS1	21 (84%)	4 (16%)
WD1	4	0
TGA	0	3

Table 2 Frequencies of single/multiple burials.

	single	multiple
RH1	18 (52.9%)	16 (47.1%)
WS1	15 (75%)	5 (25%)
WD1	4	0
TGA	1	1

Fig. 1 Cut marks on animal bone (right humerus RH1 BC117–105).
Cut marks are in the distal end, bite (gnawing) marks of rodents are seen in the left.

Fig. 2 Shallow markings on the human femoral shaft (right femur RH1 BC117-105).
Marks are just on the white-colored periostitis inflammation.

The themes 3 to 5 should be considered after scrutinizing the collected data and analyzing the crown dimensions and microwear observation on the dentition. We can observe sharp "cut marks" on several animal bone shafts associated with the human burials (Fig. 1 from RH1 site). Similar marks are found in one human femoral fragment, although these seem to be shallower (Fig. 2 from RH1). Because of the lack of spiral fracture patterns on all the human bone samples, similar human activity against animal bones and human bones would be implausible. We should discuss the similarity or dissimilarity in markings on the bones after scrutinizing SEM observations.

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3. Archaeological Survey around Tell Ghanem al-'Ali (IV)

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Aims of the survey

As part of the on-going Syro-Japanese field project in the Bishri region, we conducted the fourth season of archaeological surveys around Tell Ghanem al-'Ali, a main site of investigations in this project. The objectives of our survey are built on the results of earlier archaeological investigations in the middle Euphrates, which indicate the contrasting land-use patterns between the Euphrates lowlands and the Bishri Plateau (Nishiaki 2010b). The former area is currently exploited as agricultural fields and distributed with tell sites that probably accommodated settled communities, including those of the Early Bronze Age, such as at Tell Ghanem al-'Ali, Tell Hammadin, and Tell Mugla as-Saghir (Kohlmeyer 1984; al-Maqdissi and Ohnuma 2008 and 2009). On the other hand, the northern edge of the Bishri Plateau, overlooking the Euphrates lowlands, contains areas densely distributed with Bronze Age tombs (Falb et al. 2005; Ohnuma and al-Khabour 2008a: 136; Ohnuma and al-Khabour 2008b: 185–7).

Our survey investigates the areas around Tell Ghanem al-'Ali, mainly targeting the northern edge of the Bishri Plateau, where the steppe environment on the plateau meets the green lowland along the Euphrates. By recording the locations of various human occupations and identifying their dates and natures of the sites, the surveys are aimed at 1) establishing the long-term occupational history since the late Pleistocene to middle Holocene as historical backgrounds of the Bronze Age occupations in this area, 2) clarifying the settlement patterns and the land-use during the Bronze Age, and 3) finding archaeological evidence regarding the relationship between agriculture-based communities and pastoral nomads during the Bronze Age.

Field and laboratory work of this season

The survey areas are within a circle of 10 km radius around Tell Ghanem al-'Ali (Fig. 1). The western border is at the protruding terrace in Jibli, while the east end is around Wadi Beilune. In

the three previous seasons in 2008 and 2009, we conducted pedestrian surveys along more than twenty wadis that dissect the northern fringe of the plateau (Nishiaki et al. 2009, in this volume; Nishiaki and Abe 2010). These wadis are tributary valleys of the Euphrates, and most of them are only a few kilometers in length. However, Wadi Kharar, located between Tell Ghanem al-'Ali and Tell Hammadin, stretches over 20 km and retains well-developed terraces. We recorded the locations of survey paths and sites and collected artifacts following the methods described in Nishiaki et al. (2009: 146–7). The work of this season was carried out from February 28 to March 17, 2010.

The work of this season involved the field walking and the mapping of some sites that were discovered in our previous seasons (Nishiaki et al. 2009, in this volume; Nishiaki and Abe 2010). The mapped areas include the sites in Jezla (Areas 23H and 23J), a rectangular basin near Tell Mugla as-Saghir (Area 26E), and burial cairns in Wadi Beilune (Area 30). The field walking mainly covered the southern parts of the survey area. In these areas, most wadis at the northern edge of the plateau have their upstream ends, and only a few wadis reach in this region, creating gently undulating terrains, which are currently surrounded by steppe environments with sporadic sand dunes. We selected four areas (Areas 9, 24, 27, and 28) that are almost equally spaced out in the southern survey field (Fig. 1). The survey in these areas is intended not only to find the archaeological evidence for the past land-use in these areas but also to clarify the southern extension of the Bronze Age tombs that are densely distributed near the northern end of the plateau. In the selected areas, we surveyed along the paths with the north-south orientation. The paths follow wadis when they are present in the sampled areas (e.g., Areas 9M, 9N, 28C-H, and 28M). If not, we walked towards south or followed roadways to navigate us (e.g., Areas 24AG, 24AH, 27BD, 27BE, and 28N-R). In addition, a wadi located east to Wadi Beilune was also surveyed (Area 29).

Preliminary results of the surveys

1) South to Tell Hammadin (Area 9)

This area was divided into five paths, two of which (9J and 9N) in the north are located on the hills besides the wadi basin to their west. ear these paths, burial cairns were found to be distributed along the edge of the hill (Fig. 2). The cairns are constructed with sediments and gypsum stones, measuring usually ca. 4–5 m in diameter and ca. 0.5 m in height. Stone chambers, constructed with gypsum stones, are revealed at many of the looted tombs. Some of the cairns appear to be surrounded with lines of gypsum stones that extend over more than 10 m. The pottery sherds collected near the looted cairns include Black Euphrates Fine Ware, indicating their contemporaneity with cairns at Wadi Beilune (Fig. 3).

South to the hills distributed with cairns are Areas 9K and 9M, where we transcended shallow wadi channels and low banks. No clear burials were discovered except for sparse scatters of chipped stones of the Palaeolithic and Bronze Age periods. Further south is Area 9L, which is located at the tributary of Wadi Kharar. The density of artifacts was very low in this area despite the better availability of water at present.

2) South to Jezla (Area 24)

Two paths (24AG and 24AH), a few kilometers in length together, are located south to the upstream end of the Wadi Jezla East basin (Fig. 1). The paths cut across low banks and shallow channels with little vegetation. The area has gravel deposits exposed on the surface and is partly covered with sand dunes. Although no mound tombs or cairns were detected, the area was sparsely distributed with chipped stones that include Middle and Late/Epipalaeolithic artifacts as well as probably Bronze Age flakes.

3) South to Tell Ghanem al-'Ali (Area 28)

We started to survey this area along Wadi Abu Hamed, which borders the southern end of the Bronze Age tomb field that was formerly investigated by the German mission (Falb et al. 2005). Some mound tombs that were detected along the survey paths (28C and 28 G) are likely to be part of this site.

On the other hand, a new discovery is the concentrations of chipped stones at the low bank of Wadi Abu Hamed (Areas 28D-F) (Fig. 4). The density of lithic concentration is the greatest at Area 28E (50 m × 70 m), where we sampled the surface remains within a 2 × 2 m square (Area 28F). The lithic scatter at Area 28D is less dense and spreads out widely over ca. 200 m in length. The surface remains here are likely to have been dispersed by wadi channel. The chipped stone artifacts from these spots mainly consist of flakes with water-rolled cortex, showing techno-morphological characteristics similar to those from Tell Ghanem al-'Ali (Nishiaki 2010a).

We continued the survey further south to the Abu Hamed tombs to record their southern extent. A few mound tombs were found to be located in isolation at Area 28O. Besides the low mound tombs was located a few Bronze Age pottery sherds and a concentration of chipped stones, which are similar to those from Area 28E/F in techno-morphological traits. This spot appears to be the southern end of the Bronze Age tomb distribution in the south to Tell Ghanem al-'Ali. Interestingly, this southern limit of the Bronze Age tombs appears to apply to the western side of Wadi Kharar, i.e., south to Tell Hammadin (Areas 10S and 10R).

In addition, the surface collections along the survey paths include Mousterian chipped stones and microliths, suggesting the Middle and Late/Epipalaeolithic occupations in the area. We also recovered some diagnostic Neolithic chipped-stone tools.

4) East to Wadi Beilune (Area 29)

A wadi east to Wadi Beilune is located at the eastern end of the survey area and also borders the eastern side of the cairn field in Beilune. The wadi is relatively long (ca. 5 km) and associated with a spring at the midstream. Because of these conditions, this wadi is often used as an itinerant route for grazing. However, the wadi is steeply cut and not associated with broad terraces. This may explain that no clear sites were detected, although the recovery of Neolithic arrowheads suggests that the wadi was occasionally visited by the past hunters.

5) Cairn field in Beilune (Areas 27 and 30)

Our surveys in the 2009 season discovered the area densely distributed with burial cairns near Wadi Beilune (Fig. 5) (Nishiaki et al. in this volume). We also tentatively dated the cairns to the Early Bronze Age on the basis of the pottery sherds scattered near the burials due to looting. However, its exact location and the extent were still unclear in the 2009 season. As a result of the continued surveys in this area, we found that the cairn field is located on the flat-topped hill at the midstream of Wadi Beilune (Fig. 1). The south of the flat area is bordered by higher hills, while the northern end is marked by a cliff created by the erosion of the wadi. The area thus has a panoramic view towards the basin in the lower stream. Cairns are situated on such a plateau that extends over ca. 2 km [E-W] and ca. 1 km [N-S] between Wadi Beilune and the wadi located to its east.

The plan shape of the cairns varies from round to oval. The round cairns often measure ca. 4–5 m in diameter, and their height ranges from nearly flat to ca. 0.5 m. The oval cairns are usually associated with multiple chambers and often tall, up to 1.5 m in height. Some of the large cairns are located near the border of the cairn field. For example, the southwestern corner of the cairn field is marked by a large cairn (16 m [E–W] × 6.5 m [N–S] × 1.2 m [Height]), sitting on top of the hill (Fig. 6). This cairn has at least three stone chambers, constructed with gypsum stones, which are revealed by looting. Other forms include cairns with rectangular stone structures that consist of 10–20 m lines of gypsum stones (Fig. 7).

The survey of the two paths (Areas 27BD and 27BE), set south to Beilune, allowed us to clarify the southern limit of the cairn field. The southern border of the cairn fields is marked by the hills that overlook the basin of Wadi Beilune. The southern areas beyond the hills are similar to those in Area 24, with shallow wadis and low banks, gently ascending towards the Bishri mountains in the south. The areas are devoid of mound tombs or cairns, although we collected a number of Middle Palaeolithic artifacts with some Late/Epipalaeolithic, Neolithic, and Bronze Age chipped stones.

Topographic mapping of the selected areas

1) Rectangular basin near Tell Mugla as-Saghir (Area 26)

The survey of this area in the 2009 season let to the discovery of a rectangular basin opening to the northern edge of the Bishri Plateau above Tell Mugla as-Saghir. Because the eastern and southern slopes were fringed by many Bronze Age shaft tombs, the rectangular shape of the basin is not the product of modern construction work. The unique plan shape and a flat bottom, coupled with the absence of a major channel that would have created the basin, led us to consider the possibility that the prehistoric earth-work was involved in the creation of this depression (Nishiaki 2000b). In this season, we created a topographic map of this unique basin to examine its formation processes.

2) Small mound at Wadi Jezla West (Area 23)

This area was surveyed in the 2008 season, and a small mound (Area 23H) was then discovered on the west bank of the wadi near the fortress of the historical period (Nishiaki et al. 2009). Because the surface collections at the mound included pottery sherds and groundstones in addition to chipped stones, we suggested that this mound may be a small tell that accommodated long-term occupations. In this season, we created a topographic map of this area to examine the geomorphological settings and the exact shape of this mound.

3) Cairn field in Wadi Beilune

In order to estimate the total number and the density of the cairns in Wadi Beilune, we conducted a topographic mapping and plotted the locations of cairns in the selected area (ca. 400 m [E–W] × 800 m [N–S]) that was demarcated by wadis. More than 350 burial cairns were counted in this sampled area.

Summary

The fieldwork of this season was designed to examine the southern parts of the survey area as well as to investigate the issues that were raised in the previous surveys. As a result of the completion of the planned survey paths and the topographic mapping, the distribution of the Bronze Age tombs was clarified in the areas south to Tell Hammadin, Tell Ghanem al-‘Ali, Jezla, and Wadi Beilune. The decrease in the number of tombs towards south can support our earlier idea that Bronze Age tombs on the northern edge of the Bishri Plateau tend to cluster around the settlement sites on tells (i.e., Tell Hammadin, Tell Ghanem al-‘Ali, Tell Jezla, and Tell Mugla as-Saghir) (Nishiaki 2010b). Given such a spatial association of tombs with settlement sites, it would not be unreasonable to suggest the connections between the inhabitants of the tells and the people buried in the tombs.

However, this does not exclude the possibility that a large number (possibly thousands) of tombs on the plateau included those of pastoral nomads. This question can be pursued through the investigation of the cairns. In addition to the cairn field that was discovered in the 2009 season, we found another area distributed with burial cairns on the southern hills surrounding the wadi basin above Tell Hammadin (Areas 9J and 9N). Interestingly, the cairns are located south to the concentrations of earth-mound tombs in the wadi basin near Tell Hammadin. The cairns tend to be situated at the periphery of the flat-topped hills above the wadi basin, somewhat similar to the settings of the cairns

in Wadi Beilune. These preliminary observations on the distributional patterns and the settings of cairns, however, still need to be verified through further investigations.

By the end of this season, the number of discovered sites amounted to nearly 120. In addition, we also collected surface remains along ca. 180 survey paths. We are currently undertaking the analyses of the surface collections from these spots in order to clarify the long-term occupational history since the late Pleistocene and the settlement/land-use patterns during the Bronze Age communities in the middle Euphrates region.

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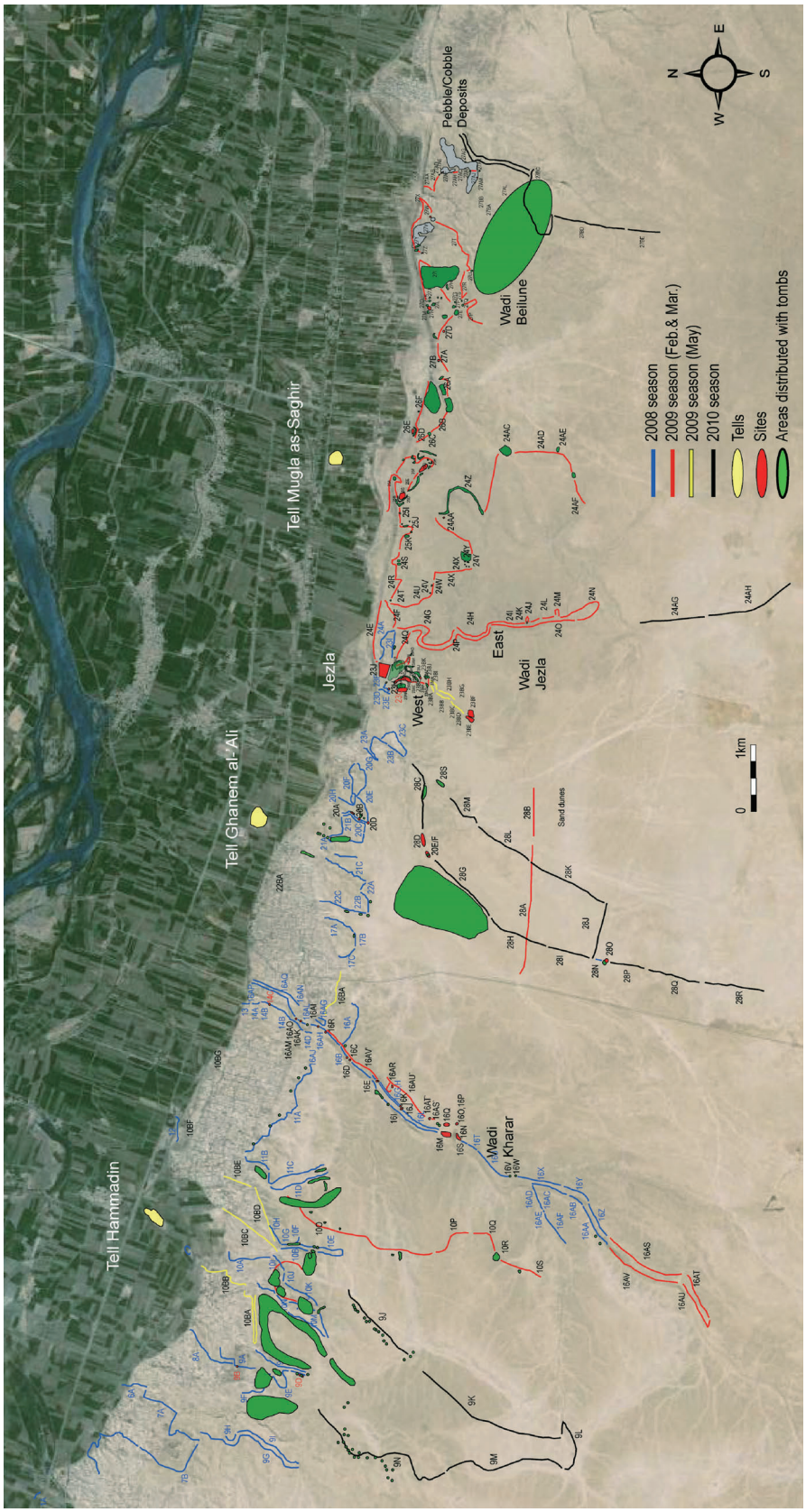

Fig. 1 Satellite image of the survey area, showing the survey paths and sites.

Fig. 2 Burial cairns on the hilltop besides the wadi basin (top left) above Tell Hammadin, looking north.

Fig. 3 Sherds similar to Black Euphrates Fine Ware collected near one of the looted cairns above Tell Hammadin (Area 9J).

Fig. 4 Concentration of Bronze Age chipped-stones in Wadi Abu Hamed (Area 28E/F). The square is a 2 × 2 m sampling area.

Fig. 5 Cairn field on the broad hill in the midstream of Wadi Beilune, looking north.

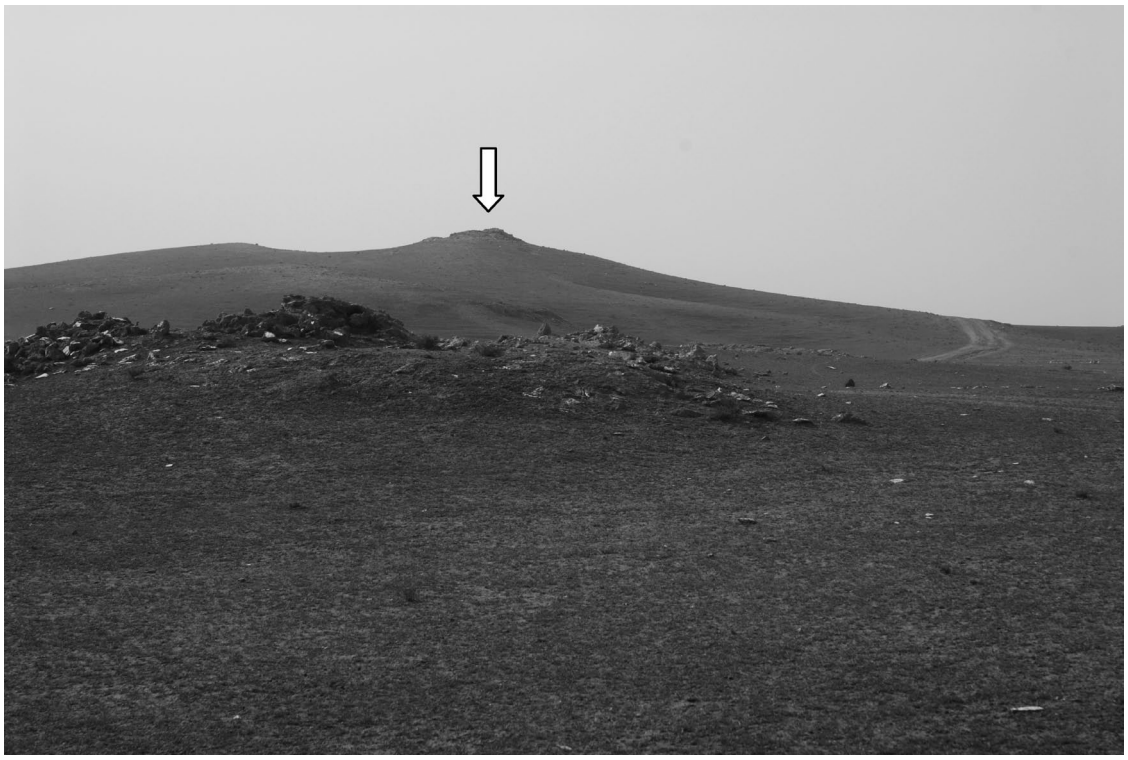

Fig. 6 A large cairn on top of the hill near the southwestern corner of the cairn field (Wadi Beilune).

Fig. 7 Cairn surrounded by rectangular structures (Wadi Beilune), looking west.

4. Wadi al-Hajana 1: A Preliminary Report of the 2010 Excavation Season

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1. Research Objective

Our research project was originally organized to specify archaeological footprints of Bronze Age pastoral nomads in the Bishri region and, in so doing, shed new light on the traditional issue of *Mar-tu*/*Amurru*, an ancient Semitic population that Sumerian and Akkadian cuneiform texts refer to as having been based on the peripheral hilly terrain. For this objective, we have conducted a series of archaeological investigations since the first field season in May of 2007. As a result, it turned out that our research field or the northwestern flank of Mt. Bishri included hundreds of MBI burial cairns and a large number of small features attached to them (Fujii 2008, 2009; Fujii and Adachi 2009, 2010; Fujii et al. 2009a, 2009b). Available evidence suggests that they represent a communal cemetery for a large pastoral population who migrated around the Mari Kingdom in the first half of the 2nd millennium B.C. Given this, it follows that we succeeded in catching a glimpse of the real picture of pastoral *Martu/Amurru* in their homeland.

The next issue is to reassess the archaeological implications of the Bishri MBI cairn culture within a local chronological framework. However, little is known about the general occupational history of the Bishri region, since it has been poorly investigated due to logistic difficulties and seemingly poor archaeological potential. For this reason, the unique cairn culture still remains isolated in terms of archaeological contexts. Our new project was designed to improve this situation. The first field season, conducted for about two weeks from May 13 through May 25 in 2010, focused on a small Neolithic site of Wadi al-Hajana 1. The following is a brief summary of the investigation result at the unique site.

2. Site and Site-setting

The site of Wadi al-Hajana 1 is located ca. 5 km SSW of Bir Rahum, a small village along a local paved road traversing the northwestern flank of Mt. Bishri (Fig. 1). It lies in a foothill below the western ridgeline of Mt. Bishri, belonging to the Raqqa prefecture as an administrative area (Fig. 2). Being located on a facing-north mid slope of the foothill, the site commands a distant view of a gently undulating hilly terrain around Bir Rahum and an extensive fluvial plain further beyond.

The site was found for the first time in the course of our general survey in 2009 and tentatively registered as BS-0951 according to our site registration system. What attracted our attention first were flint artifacts, especially Naviform core-and-blade components, scattered throughout the site. In addition, a few intermittent, curvilinear wall alignments were confirmed at the northeastern corner of the site. Both findings raised our expectation that the site might be a small Neolithic settlement thus far unknown in the Bishri region. This is the reason why we decided to embark on a full-fledged investigation in this season.

The site is located on a triangular gentle slope that is sandwiched between two small gullies flowing down northwards from the foothill ca. 600 m in elevation (Fig. 3). The site itself is ca. 530–540 m in elevation and ca. 500 square meters in total area, covering the lower and upper terraces of the slope. The two gullies converge at the northern end of the lower terrace and, then, meander through a fluvial plain for ca. 500 m to join the main stream of Wadi al-Hajana. Limestone bedrock layers are exposed throughout the channel, forming small-scale natural dams and pools. The upper reaches, on the other hand, ascend steep slopes and extend further southward eroding the original ridgeline

of the foothill. These two topographical conditions – the advantage in water use and the convenience of local communication – provide a key to understanding the site location.

The local climate is very arid and no natural perennial water source is available around the site. Thus the vegetation is poor, being limited to thorny shrubs dotted on wadi beds and their surrounding slopes. (It should be added, however, that small niches of annual herbaceous plants are dotted along well-watered gullies.) Such harsh environmental conditions have long hampered the establishment of sedentary settlements. The only exception is Bir Rahum referred to above, but even this small village was founded merely a few decades ago. This is not to say, however, that the Neolithic Bishri region was also entirely deserted. Our new finding is suggestive of sporadic land use probably taking advantage of less harsh climatic conditions in the earlier half of the Neolithic Age.

3. Research Method

To begin with, we produced a contour map every 1 m with the site being placed in its center (Fig. 4). Since no reliable benchmark was available around the site, we set up an arbitrary level point at the northwestern part of the site, near the two operation areas described below. A simple barometer indicated a value of ca. 530 m for the elevation of the tentative benchmark. The investigation took place based on a 5 m by 5 m grid and locus system with the northwestern corner of the contour map being the coordinate origin.

We set up the following two major operation areas at the densest part of the flint distribution. Area I was arranged at the lower terrace and consisted of a total of fifty-six squares or an area of 35 m by 40 m (Fig. 5). Five test trenches, 2.5 m by 5 m in area respectively, were opened within the area at regular intervals to search evidence for structural remains. In addition, two trenches were set up to the north of the area. Area II, on the other hand, occupied the upper terrace and covered a total of forty-two squares or an area of 35 m by 30 m (Fig. 6). Six test trenches were laid out within the area and two additional trenches were placed between the two operation areas.

A dozen experienced local workers from Bir Rahum took charge of digging under the supervision of several qualified persons including the authors. Excavated soil from the test trenches were not sieved due to time constraints and the scarcity of finds, but lower fill and floor deposits of Structure A mentioned below was brought into 3 mm mesh dry-sieving or water floatation.

4. Surface Finds

In advance of the excavation, we conducted an intensive surface survey at the two operation areas and the four additional squares. The surveyed area totaled 2,550 square meters, which was equivalent to approximately half of the supposed whole range of the site. The surface finds contained flint artifacts only; neither pottery sherds nor metal products were included. The only exception was an old ten Syrian-pound coin found at Area II. This result probably means that the land use around the site centered on the stone age, and that the subsequent use was limited to sporadic pasturing as it is today. As a matter of fact, no settlement sites have thus far been confirmed in our research field.

The collected flint artifacts totaled 7,419 pieces (2,473 from Area I and 4,946 from Area II), a value enough to be identified as a flint production site. Most of them used light to dark gray, slightly mat, fine-textured flint and were produced on the basis of the Naviform core-and-blade technique. There is little doubt that the surface collection falls, as a whole, into the PPNB period. (The few exceptions to this were finds from several squares around Structure A, which included a small number of Khiamian components derived probably from the feature.) The finds concentrated on the eastern slope of the two terraces, being scarce in the western half. This is probably because the slope was protected from the predominant westerly wind.

Two flint concentrations were found along the eastern slope. First, the southeastern corner of Area I produced a total of 928 samples, which was equivalent to 37.5% of the Area I finds or

12.5% of the grand total. Second, the northeastern corner of Area II yielded 3,023 samples (= 61.1% of the Area II finds or 40.7% of the grand total). Since the two additional trenches between the two operation areas produced a total of only 70 artifacts, both concentrations are thought to form two separate units.

Our examination focused on the two units. As for the contents, cores and debitage class samples were predominant (> 95%). They included Naviform cores (Fig. 7), crest blades and other core trimming elements, unmodified blades and flakes, snapped blades, and chips/chunks. In addition, single-platform blade/flake cores, single-platform bladelet cores, and unmodified bladelets occurred in a small number. In contrast, retouched tools were very scarce, being limited to a few dozen samples. The tool kit included retouched flakes, retouched blades, burins, drills, endscrapers, notches, and splintered pieces (Fig. 8). A truncated blade, a round scraper, a chisel, and an adze also occurred, but no points were included. Overall, the tools were *ad hoc* in nature, being characterized by less elaborate secondary retouch.

The predominance of cores and debitage classes and the scarcity of retouched tools clearly indicate that the site served as a flint knapping station. The occurrence of eight hammerstones also supports the view. However, the following two things deserve attention. First, both raw material (i.e. flint nodules) and primary elements (i.e. cortical blades and flakes) were very scarce considering the predominance of core and debitage class samples. Second, unmodified blades as tool blanks were also in a minority despite the frequency of naviform cores. Both observations suggest that initial core reduction took place near a yet-to-be-identified flint outcrop, and that blade blanks were brought back to a mother settlement for performing secondary retouch. In this sense, the site may be defined as a second-stage flint knapping station.

It is still unknown what phase of the PPNB the flint assemblage represents, since no diagnostic elements such as points were included in the collection. To make the matters worse, no charcoal remains for radiometric dating were recovered from the trench excavations mentioned below. Further scrutiny is needed for answering the key issue.

5. Test Trenches

The fifteen test trenches produced a total of 961 flint artifacts. As with the surface collection, a few trenches related to the two units produced the vast majority of the finds. Understandably, they were similar in both raw material and techno-typology to the surface finds, except that the finds from Trench T-18 included a few Khiamian components probably derived from Structure A nearby.

Neither hearths nor pits, to say nothing of structural remains, were confirmed at the trenches. The same was true with faunal/floral remains, although this might be partly due to weathering and slope erosion under the harsh environment. Whatever the case, the absence of small features strongly suggests that the PPNB flint artisans stayed at the site only for a short time. Our tentative perspective is that the site functioned as a temporary flint knapping station for producing blade blanks.

6. Structure A

As mentioned above, our previous survey located a few intermittent, curvilinear wall alignments at the northeastern corner of the site, on a flat terrain beside the eastern gully. Though only slightly exposed on the present ground surface, they appeared to form a single, oblong feature (Structure A). Setting up a 7 m by 7 m excavation area extending over four abutting squares, we scrutinized them. Understandably, we assumed a close correlation between Structure A and the PPNB surface collection, but the assumption proved to be wrong. As described below, excavated finds were suggestive of a Khiamian date for the structure.

Structure A was a roughly round, semi-subterranean feature dug from the upper surface of Layer 2 or the contemporary ground surface, measuring ca. 4.5 m in diameter and ca. 0.3–0.5 m in floor

depth (Figs. 9, 10). It was fringed with a single row and course of undressed or partly dressed limestone upright slabs, which slightly protruded from the contemporary ground surface. (It follows that our previous survey barely noticed their tops.) It seemingly appeared to be a two-roomed structure divided with a partition wall, but the scrutiny showed that this is an accumulated picture of the following three construction phases. To begin with, **Phase 1** or the original form of Structure A leaves its traces at the southern wall, where larger, more standardized construction material are used and any two adjacent slabs are tightly joined without a remarkable gap. Evidence for **Phase 2** comes from several fallen slabs found *in situ* between the southern wall and the partition-like wall. In view of their homogeneous size and morphology, they are thought to be remnants of the second wall that intervened between Phase 1 and Phase 3 mentioned below. **Phase 3** or the final state of Structure A is represented by the northern wall and the partition-like wall, both of which were connected to each other and formed together a small, oblong feature. In contrast to Phase 1, they were constructed with smaller, less standardized construction material. The construction technique was also inferior in quality, leaving gaps throughout the wall.

No clear evidence for an entrance was found. However, smaller slabs were used at the western corner, possibly suggesting that as with the structure itself, the entrance was also located along the eastern gully, in the leeside of the strong westerly or northwesterly predominant wind. Small features incorporated into the structure were limited to a large hearth found at the northwestern corner. This feature, ca. 1.2 m in diameter and ca. 0.2 cm deep, was encompassed with upright stones and contained a large amount of black ash and soot-covered limestone rubble ca. 10 cm long. Seeing that a few construction materials overhanging its eastern edge bears no traces of heating, it is conceivable that the hearth came into disuse in Phase 3. Despite the dry sieving and the water flotation, neither charred seeds nor burned animal bones were recovered from the hearth contents. The function of this unique feature is still unknown, but it is interesting to note that it has much in common with *foyers creusés en cuvette* common in the Khiamian layers at Tell Mureybet (Evin and Stordeur 2008; Molist 2008).

What characterizes Structure A is the repeated collapse and reconstruction. Seeing that the evidence for collapse focused on the southern half higher in elevation, and that any new component shifted northward, it appears that strong lateral soil pressure and/or seasonal floods of the neighboring gully were responsible for the phenomenon. Efforts toward the repeated reconstruction chance to demonstrate that inhabitants visited the site on a seasonal basis. Of interest is the fact that the structure not only reduced in overall dimensions but also declined in quality on every reconstruction. This may be an indication that the visitors gradually became smaller in group size and even more mobile in behavior pattern. It is intriguing to hypothesize that both episodes went hand-in-hand with the end of the Khiamian culture.

7. Small Finds from Structure A

Here again, small finds were limited to chipped flint artifacts. The only exception was a small pierced shell product, which was recovered from the floor deposits (*loc*. 518) of Phase 1. The excavated flints totaled 3,258 pieces: 1,299 from Phase 1, 297 from Phase 2, 1,511 from Phase 3, and 151 from the other loci.

Unexpectedly, the assemblage included several dozen el-Khiam type points (Fig. 12). In contrast, neither Byblos- nor Amuq-type points, to say nothing of Jericho-type samples, were included. Also of significance was the fact that single-platform cores predominated (Fig. 11). There is no doubt that the flint assemblage (and consequently Structure A) belonged to the Khiamian period. The scarcity of microlithic components, especially the total absence of lunates, suggests that the assemblage falls into its final stage. It is indisputable that Structure A has nothing to do with the PPNB surface finds. However, as with the PPNB surface collection, the Khiamian flint assemblage from Structure A is also characterized by the predominance of cores and debitage class samples, the relative paucity of

retouched tools, and the substantial absence of flint nodules and primary elements. It follows that the Khiamian flint artisans also used the site as an intermediate flint knapping station between flint outcrops and a mother settlement.

The tool kit included Khiam-type points, drills, and retouched/used blades and flakes as major tool classes. In addition, sidescrapers, endscrapers, adzes, heavy-duty digging tools, and burins also occurred only in a limited number. Most of them were finely retouched, differing widely from the PPNB *ad hoc* tools described above. The Khiamian flint artisans possibly incorporated the production of several tool classes, especially points and drills, into their primary activities at the site. It is conceivable that their stay was less temporary in nature than the PPNB flint artisans', a likely assumption in view of the repeated reconstruction of the semi-subterranean structure. It is questionable, however, whether the stay was prolonged to such an extent that full-fledged subsistence activities were required, first because brand-new products were predominant among the tool kit, and second because no faunal/floral remains were retrieved despite the dry sieving and the water flotation of a few dozen litters of floor and hearth deposits.

8. Summary

The investigation at Wadi Hajana 1 showed that the Bishri land use history dates back to the Khiamian period. Suggestive in this regard is the existence of a similar site in the Bal'as Mountains northwest of Palmyra (Abbès 2008). Both findings suggest that the Neolithization in Syria involved the inland arid areas from the very beginning, although available evidence suggests that the site of Wadi Hajana 1 functioned as a more or less temporary flint knapping station in both the Khiamian and the PPNB period. Such precursory land use, though limited to flint exploitation, may have paved the way to the prosperity of the MBA cairn culture after several millennia. However, a large gap still intervenes between the two. The next field season, scheduled in the spring of 2011, is to address the issue.

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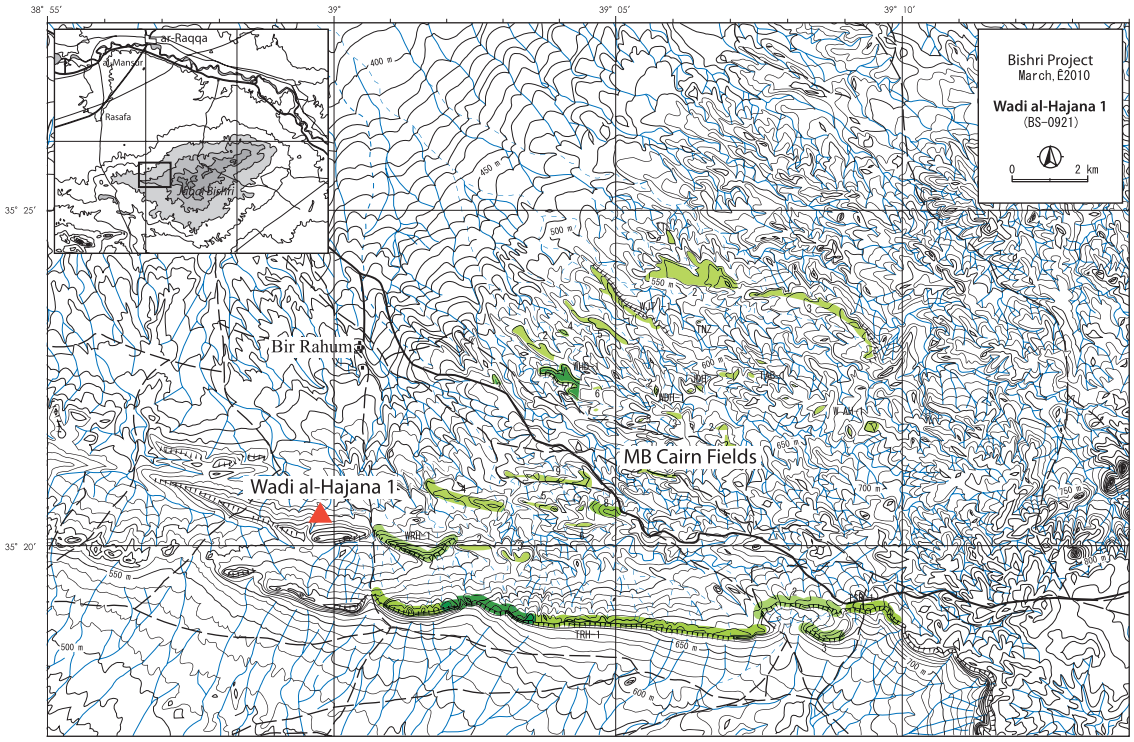


Fig. 1 Wadi al-Hajana 1: site location.

Fig. 2 Wadi al-Hajana 1: distant view (looking S).

Fig. 3 Wadi al-Hajana 1: general view (looking S).

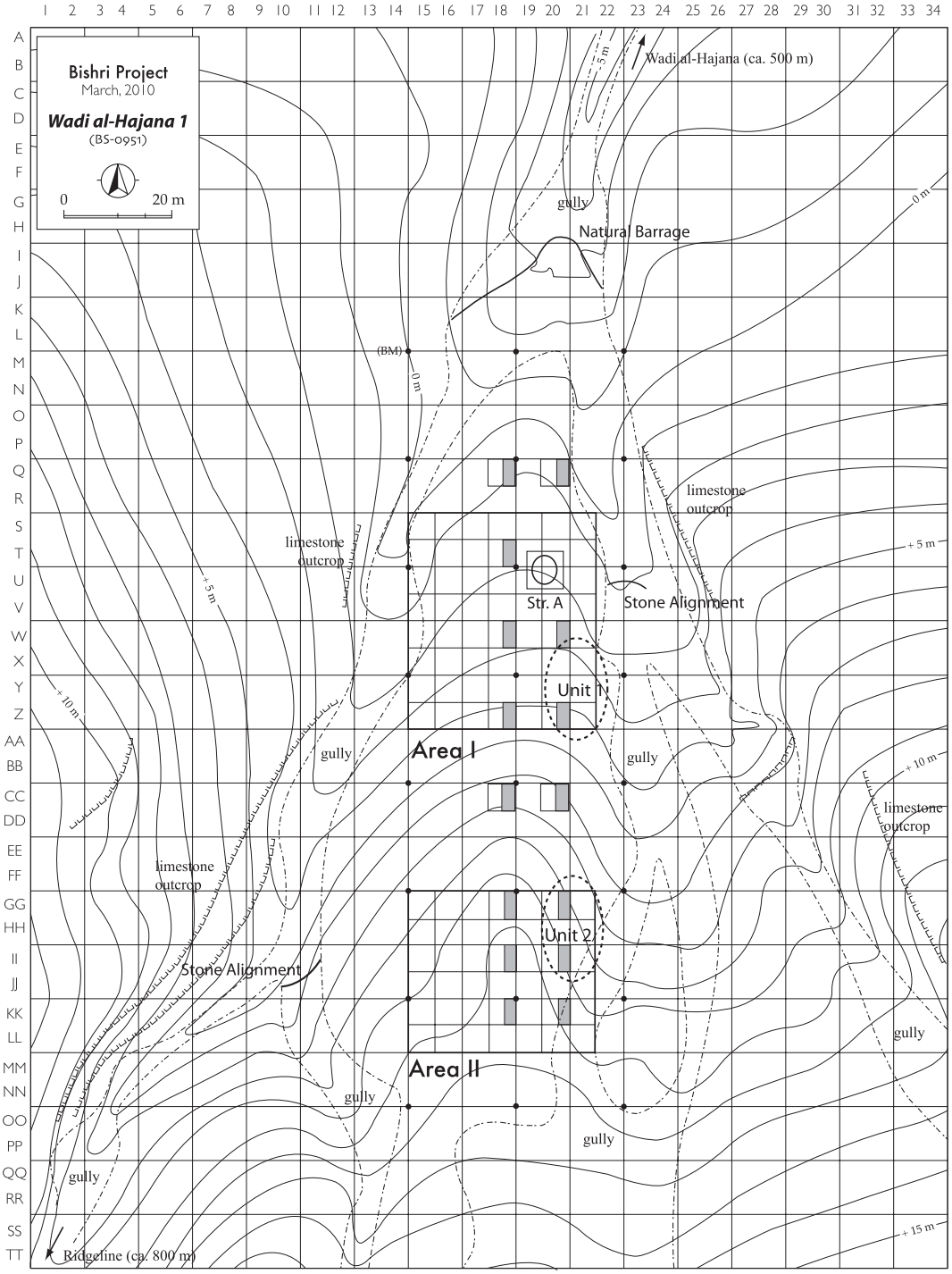


Fig. 4 Wadi al-Hajana 1: site plan and operation areas.

Fig. 5 Area I: general view (looking N).

Fig. 6 Area II: general view (looking NW).

Fig. 7 Surface collection: Naviform cores.

Fig. 8 Surface collection: tool class samples.

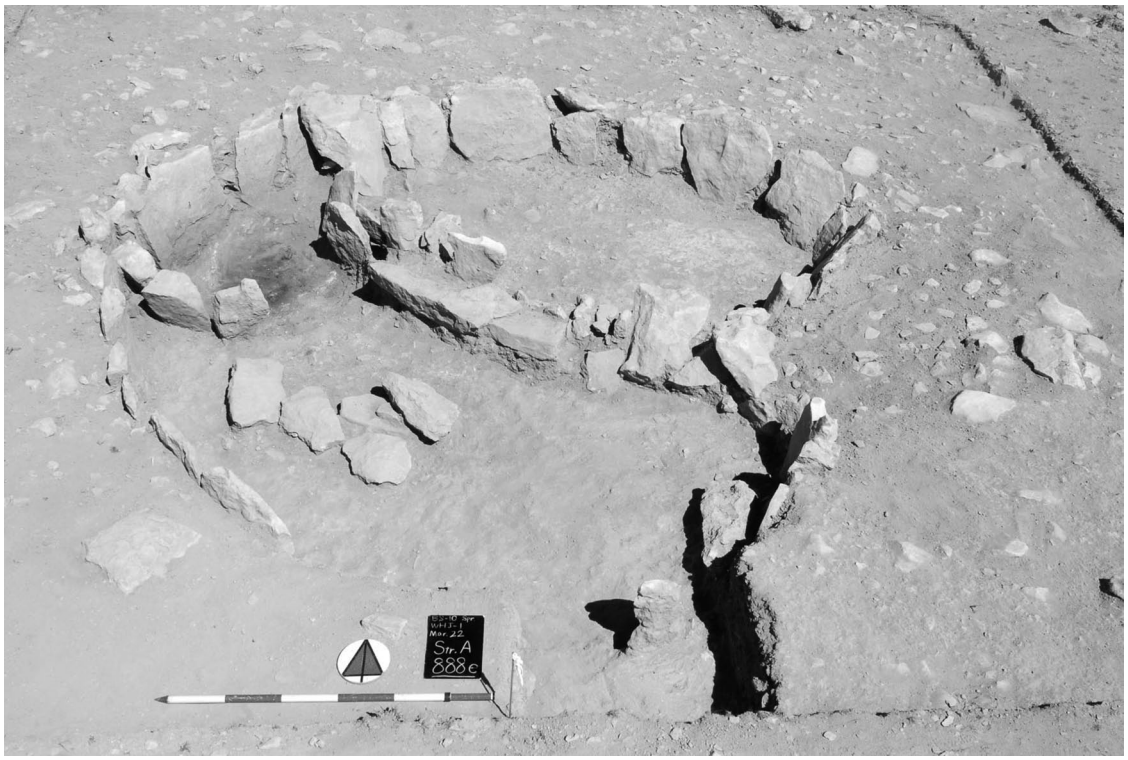


Fig. 9 Structure A: general view (looking N).

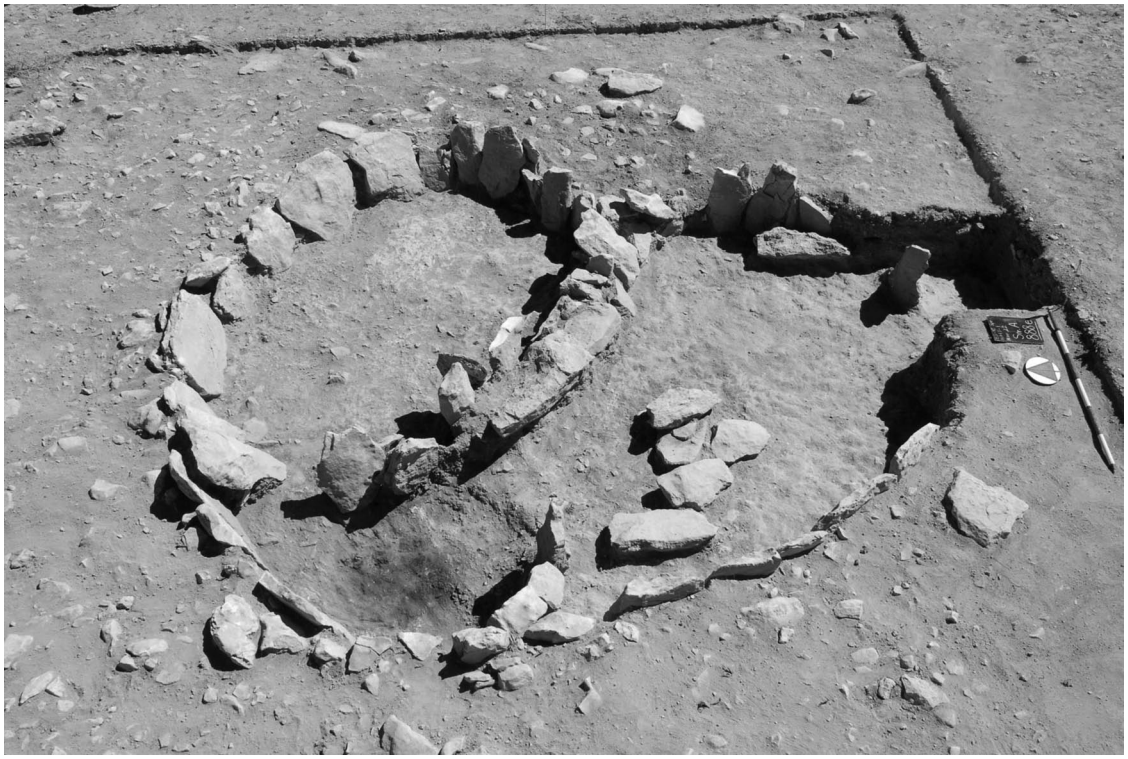


Fig. 10 Structure A: general view (looking E).

Fig. 11 Finds from Structure A : cores.

Fig. 12 Finds from Structure A: el-Khiam type points.

تقرير أولي عن أعمال البعثة السورية – اليابانية المشتركة العاملة في منطقة البشري

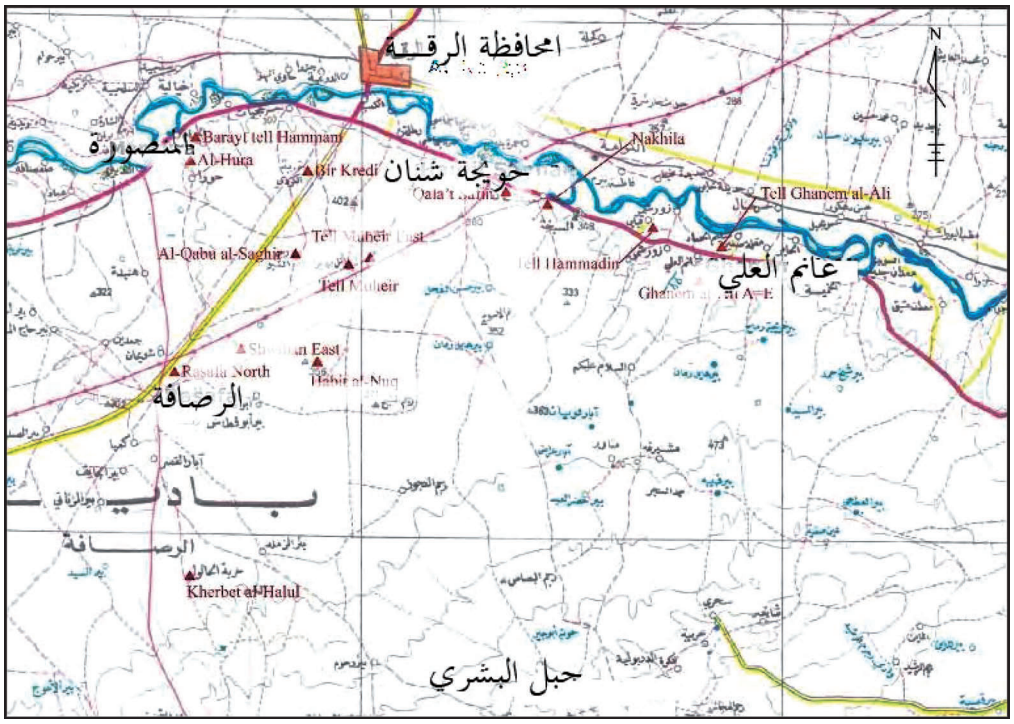
الموسم الرابع عشر خلال الفترة الممتدة من 19 ولغاية 30 آذار 2010

كاتسوهسكوأونوما
مدير الجانب الياباني (جامعة كوكوشيكان ، طوكيو ، اليابان)

أحمدسلطان
مدير الجانب السوري (المديرية العامة للآثار والمتاحف ، دمشق ، سورية)

مقدمة : يهدف هذا البحث المشترك في منطقة البشري إلى متابعة التحقق في تطور المجتمعات البشرية خلال عصور ما قبل التاريخ وحتى عصر البرونز ، مع التركيز على فهم العلاقة بين المجتمعات الرعوية (المتنقلة) والمجتمعات الزراعية (المستقرة) .

بضم هذا المشروع مجموعة من الفرق المتعددة الاختصاصات في مجال البحث الأثري من آثاريين ، جيولوجيين ، انتروبولوجيين ، بيولوجيين ... ، مما يساهم في توفير فكرة واضحة عن مجتمعات الماضي والحاضر لهذه المنطقة ،



(الشكل1) خريطة جغرافية توضح انتشار مناطق البحث

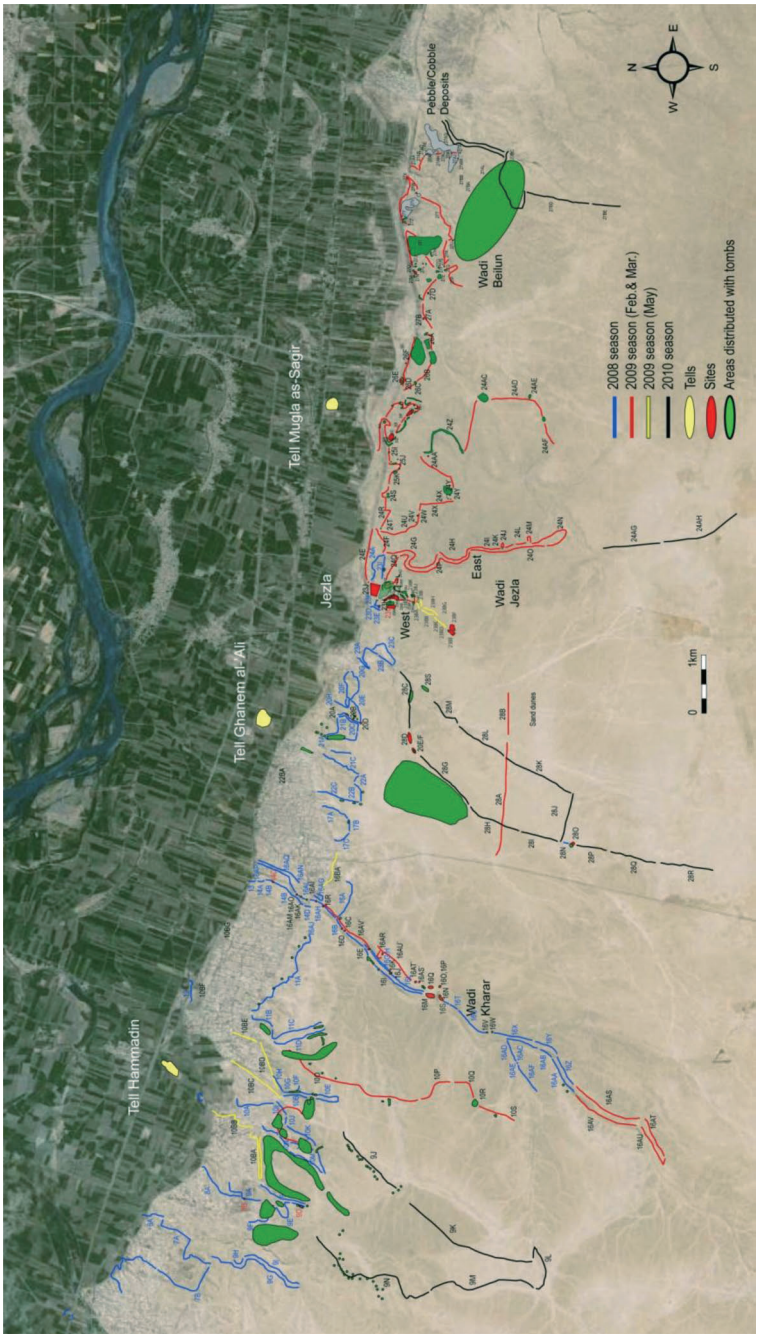
تركز البحث في هذا الموسم على القيام بأعمال ميدانية توزعت ما بين منطقة المدافن الحلقية (tumulus) وبين المسح الأثري المتركز على الحافة الجبلية المطلة على حوض الفرات الأوسط ، بالإضافة إلى القيام بدراسة تحليلية لمجموعة المكتشفات الفخارية والعظمية من منطقة البحث :

أولاً: مسح أثري لمواقع عصور ما قبل التاريخ (البليستوسن والهولوسين) حول موقع تل غانم العلي :

يوشيهيرو نيشياكي (بروفيسور جامعة طوكيو)

يدخل عمل هذا الفريق ضمن الأبحاث الأثرية المنفذة في المنطقة الممتدة بين جبال البشري وحوض الفرات الأوسط ، أعمال مسح هذا الموسم تركزت في الهضبة الجنوبية المطلة على تل غانم العلي والتي تمتد جنوباً باتجاه منطقة البشري ، بهدف التحقق والبحث في مراحل الاستيطان التاريخي والممتد من عصر البليستوسن المتأخر وحتى منتصف عصر الهولوسين كخلفية تاريخية لمستوطنات عصر البرونز في المنطقة ، وكذلك أيضاً البحث في الدلائل الأثرية فيما يتعلق في العلاقة بين المجتمعات الزراعية المستقرة وبين المجتمعات الرعوية المتنقلة في المنطقة خلال عصر البروز

الأعمال الميدانية : تتركز أعمال الفريق بشكل عام ضمن المنطقة الجنوبية المرتفعة المطلة على تل غانم العلي وعلى طول 10كم باتجاه شرق غرب .والممتدة من منطقة الجبلي في الغرب وحتى وادي بيلون في الشرق والتي يمتد خلالها مجموعة من الوديان القديمة والتي يصل عددها إلى حوالي 20 ،والتي كانت روافد قديمة لنهر الفرات،حيث يعتبر وادي الخرار أحد أهم هذه الوديان وأكبرها والذي تم أجراء دراسات أثرية ضمنه في مواسم سابقة ، إذ يقع ضمن المنطقة الممتدة بين تل حمادين في الغرب وتل غانم العلي في الشرق ، وقد تركز العمل خلال هذا الموسم على تنفيذ مسح ميداني تركز وبشكل رئيسي في الجزء الجنوبي من منطقة البحث بالإضافة إلى وضع خرائط طبوغرافية لبعض المواقع والنقاط الأثرية والتي كان قد تم الكشف عنها في مواسم سابقة (جزلة-تل مقلة صغير-مدافن حلقية tumuli في وادي بيلون) .



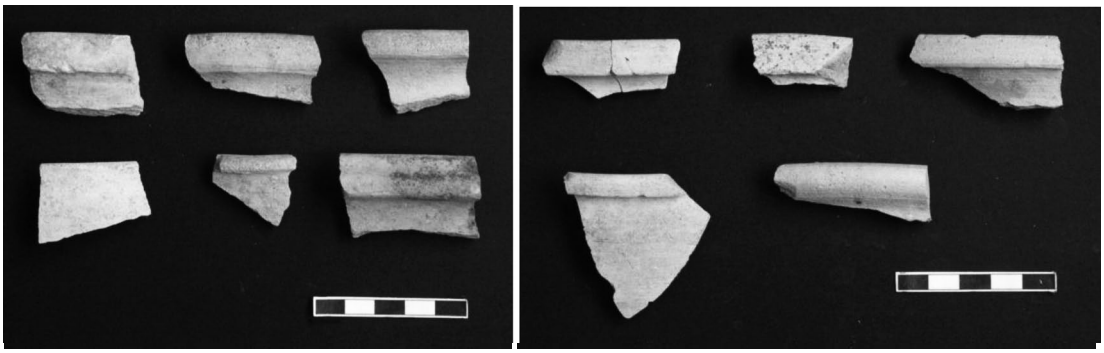
(الشكل2) صورة فضائية توضح منطقة البحث والأماكن التي تم مسحها بالنسبة للمواقع

وكنتيجة لأعمال هذا الموسم تبين بأن الامتداد الموزع لمدافن عصر البرونز كانت تنتشر في منطقة الجنوب من تل حمادين ، تل غانم العلي ، تل جزلة ، وادي بيلون . عند الحافة الشمالية المرتفعة و المطلة على مجموعة هذه التلال الأثرية ، ويتناقص مقدار هذه المدافن كلما اتجهنا باتجاه الجنوب ، مما يدعم فكرة أن مجموع المدافن المنتشرة على الحافة الشمالية المرتفعة لجبل البشري والتي تؤرخ إلى عصر البرونز تنتمي إلى مجموعات استوطنت فوق هذه التلال (حمادين ، غانم العلي ، مقلة ، ...) وبالتالي هذا ما قدم ترابط واضح لهذه المدافن مع مجموعة المواقع المستوطنة والمنشرة على امتداد حوض الفرات الأوسط .

(الشكل3) مدافن حلقية (tumuli) موزعة فوق مناطق مرتفعة في وادي بيلون

دراسة المنتجات الفخارية في تل غانم العلي

يقع تل غانم العلي على مسافة 50 كم شرق مدينة الرقة وحوالي 2.5كم جنوب مجرى نهر الفرات ، هذا الموقع كان قد تم فيه تنفيذ اسبار اختباريه في منطقتين من التل بهدف التعرف على طبيعة التوضع الطبقي للتل ، حيث أنه وخلال أعمال السبر في المواسم السابقة تم الكشف عن كميات من العينات الفخارية التي كانت ضمن سويات التل والتي تم دراسة جزء من هذه العينات خلال هذا الموسم من خلال القيام برسم الكسر التي تحوي أجزاء من شفة أو قاعدة الآنية الفخارية ومن ثم يتم تصويرها وتوثيقها ،

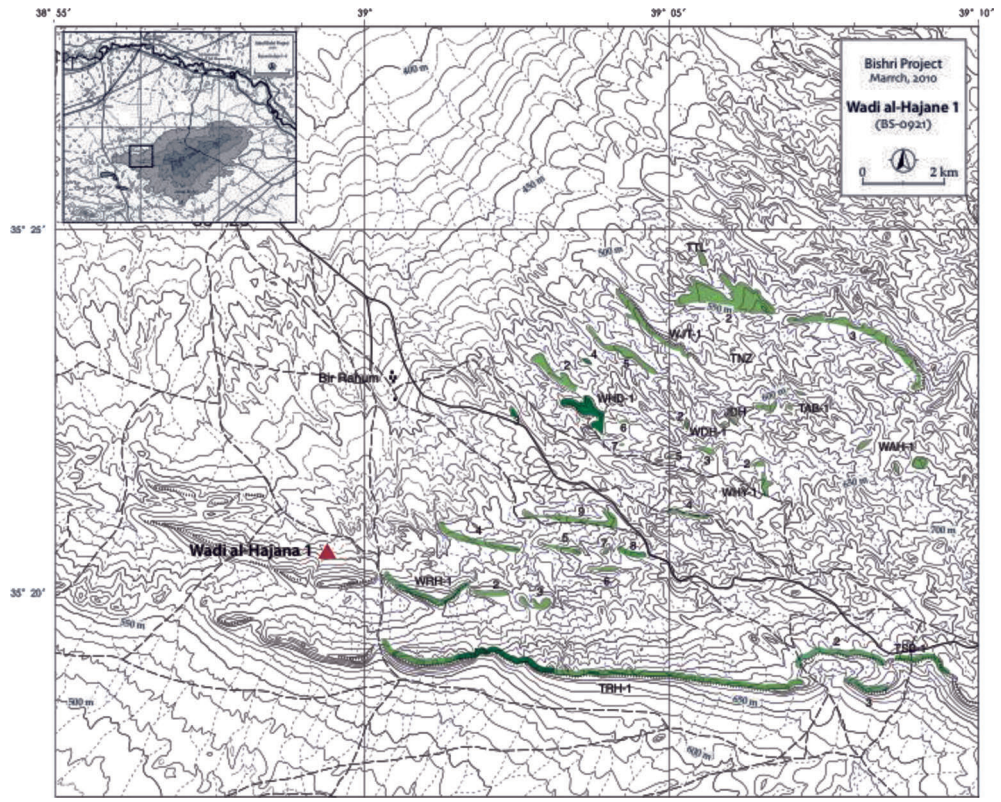


(الشكل 4) مجموعة من الكسر الفخارية من المربع2 ضمن تل غانم العلي

وقد بينت دراسات هذا الموسم أن عجينة هذه العينات الفخارية عادة ما تحتوي على رمل ، أما اللون فقد كان بشكل عام مائلاً إلى اللون الأصفر الداكن ، و بناء على أشكال هذه الأواني يمكن القول وبشكل عام بأن مجموعة العينات الفخارية تنتمي في معظمها إلى نوع من المنتجات الفخارية البسيطة (Plain Simple Ware) إذ لم يتم تأكيد وجود عينات من منتجات الفرات في دراسة هذا الموسم

دراسة أثرية لموقع وداي هجان في منطقة البشري

يمتد وادي هجان على بعد 5كم جنوب غربي منطقة بير رحوم وهي عبارة عن منطقة حدود إدارية بين الرقة ومنطقة حمص ، هذا الموقع كان قد تم الكشف عنه خلال أعمال المسح موسم2009 . وما لفت الانتباه في هذا الموقع هو كميات من الأدوات الصوانية المنتشرة في هذه المنطقة (نواة ، 122تنصلة) وبناء على هذه الأدوات الصوانية المتنوعة يمكن تأريخ هذا الموقع واعتباره مستوطنة نيوليتية صغيرة ، وهذا ما يساهم في تقديم فكرة عن تاريخ الاستيطان في هذا المنطقة ، وهو السبب الرئيسي في تحديد هذه المنطقة كمركز للأبحاث الأثرية لهذا المشروع



(الشكل5) خريطة عامة توضع موقع وادي هجان بالنسبة لمنطقة البحث

في موسم العمل هذا تم تحديد خمسة مربعات اختباريه بقياس 5 × 2.5م في محاولة لإيجاد أدلة أثرية بشكل أوضح تساهم في توضيح ماهية الموقع ، حيث تم الكشف خلال هذا السبر على مجموعة من الأدوات الصوانية بالإضافة إلى بعض الكسر الفخارية والتي تؤرخ في مجملها إلى فترة النيوليت الفخاري .

وكنتيجة للأبحاث الميدانية المنفذة لهذا الموسم يمكن القول وبشكل عام بأن منطقة البشري قد استخدمت لفترات تاريخية قديمة امتدت منذ عصر النيوليت ما قبل الفخار .

(الشكل6) صورة من جهة الجنوب توضح امتداد وادي هجان

(الشكل7) مجموعة من الأدوات الصوانية المتناثرة فوق سطح الموقع

ARCHAEOLOGICAL RESEARCH IN THE BISHRI REGION — REPORT OF THE FIFTEENTH WORKING SEASON —

Katsuhiko OHNUMA
Director of the Japanese Archaeological Mission to Bishri
(Kokushikan University, Tokyo, JAPAN)
Ahmed SULTAN
Director of the Syrian Archaeological Mission to Bishri
(Directorate General of Antiquities and Museums, Damascus, SYRIA)

November 17, 2010

The 15th field season of the Syria-Japan Archaeological Joint Mission to the Bishri Region started on October 13, 2010 and was completed on November 17, 2010. Dr. Bassam Jamous, the Director General of the Syrian Directorate General of Antiquities and Musems, and Dr. Michel Al-Maqdissi, the Director of Archaeological Excavations and Research at the Syrian Directorate General of Antiquities and Museums, kindly helped us towards the completion of this season's works. We express our sincerest gratitudes to them for their heart-warming cooperation.

The members of this season's joint mission were as follows.

Syrian party: Ahmed Sultan (Director), Aed Issa, Mohammed Jajan, Heba Alali and Ruba Deeb.

Japanese party: Katsuhiko Ohnuma (Director), Shogo Kume, Atsunori Hasegawa, Chie Akashi, Morito Iizuka and Isamu Ono.

In this field season, we carried out a series of sondage (trench excavations) at the site of Tell Ghanem Al-Ali and the grave complex at the Wadi Daba area near the site of Tell Ghanem Al-Ali (Fig. 1). Outlines of these works are described in the following sections.

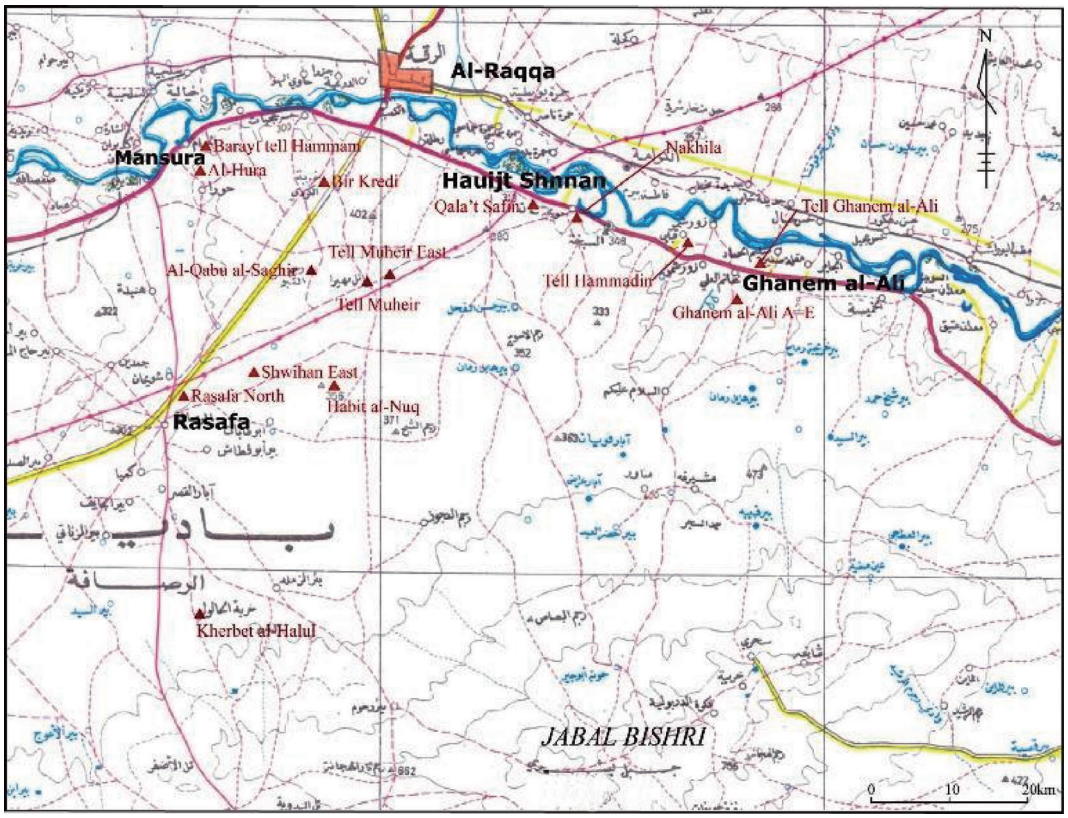


Fig. 1 Map showing the location of the site of Tell Ghanem Al-Ali.

I Sondage in Square 6 of the Site of Tell Ghanem Al-Ali

Katsuhiko OHNUMA (Professor, Kokushikan University)

In this field season, sondage was continued in Square 6 of the site of Tell Ghanem Al-Ali (Fig. I–1). The 9th and 10th field seasons in May of 2009 and August to September of 2009 respectively undertook sondage works in this square, in the view that the archaeological sequence in Square 6 was indispensable for understanding the duration of the site exploitation at Tell Ghanem Al-Ali in the Bronze Age, and for telling its intra-site functional variability. As the results, we revealed a Middle Bronze Age pit grave in the 9th field season and Early Bronze Age building levels in the 10th field season.

And, the sondage work in this field season has confirmed the stratigraphy of Square 6 from the surface soil down to the floor of Building Level 2b, having modified the stratigraphical observation in the 10th field season in September, 2009.

Described below are the features of layers and building levels clarified in this field season.

Layer 1: Surface soil, sloping downwards into the north direction in the thickness of 10 to 15 cm.

Layer 2: Pit grave dated to the end of the Middle Bronze Age I (personal communication with Dr. Michel Al-Maqdissi in August, 2009). This pit grave was made with downward cutting into the underlying Building Level 1. The pit itself was not shaped circle in outline but was the shape of irregular meandering circle, suggesting that it was not made systematically (Fig. I–2).

Pit: At the north-west corner of the square, we unearthed a pit filled with ash and charcoal fragments. Greyish-blue in colour, this pit contains a small quantity of potsherds and small gravels (Fig. I–3).

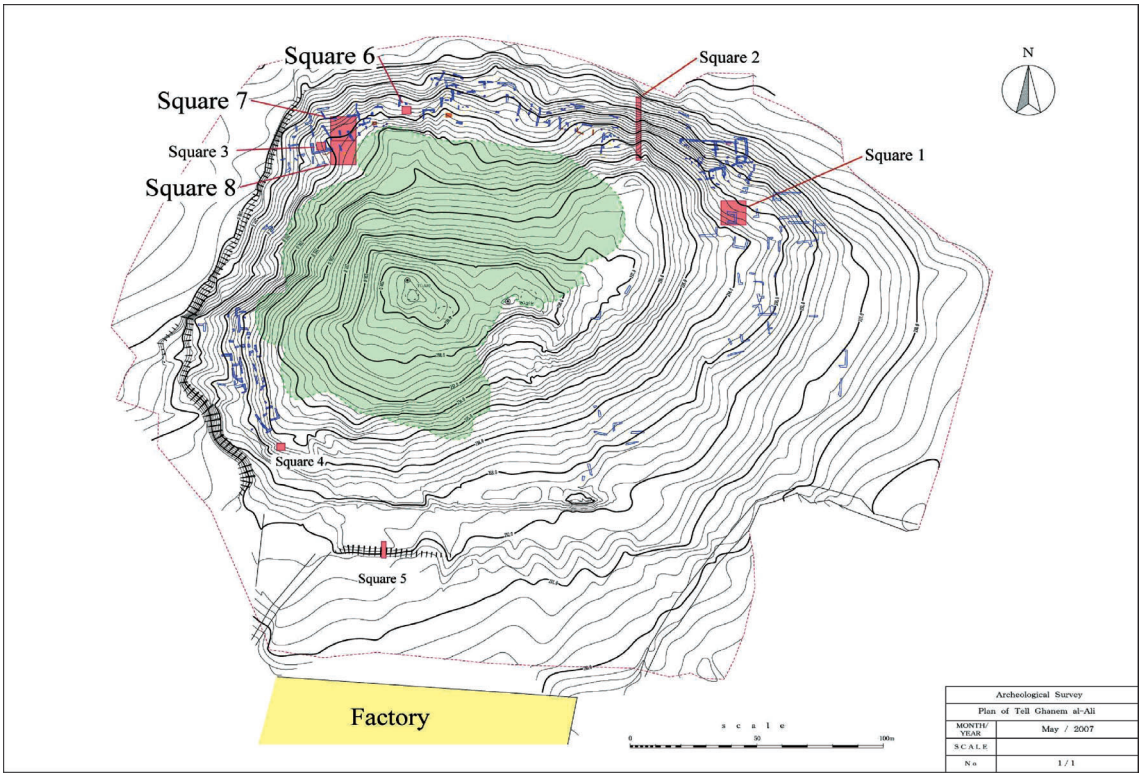


Fig. I–1 Overall plan of Tell Ghanem Al-Ali showing the location of Square 6.

Fig. I–2 Middle Bronze Age pit-grave seen from north (9th field season in May of 2009).

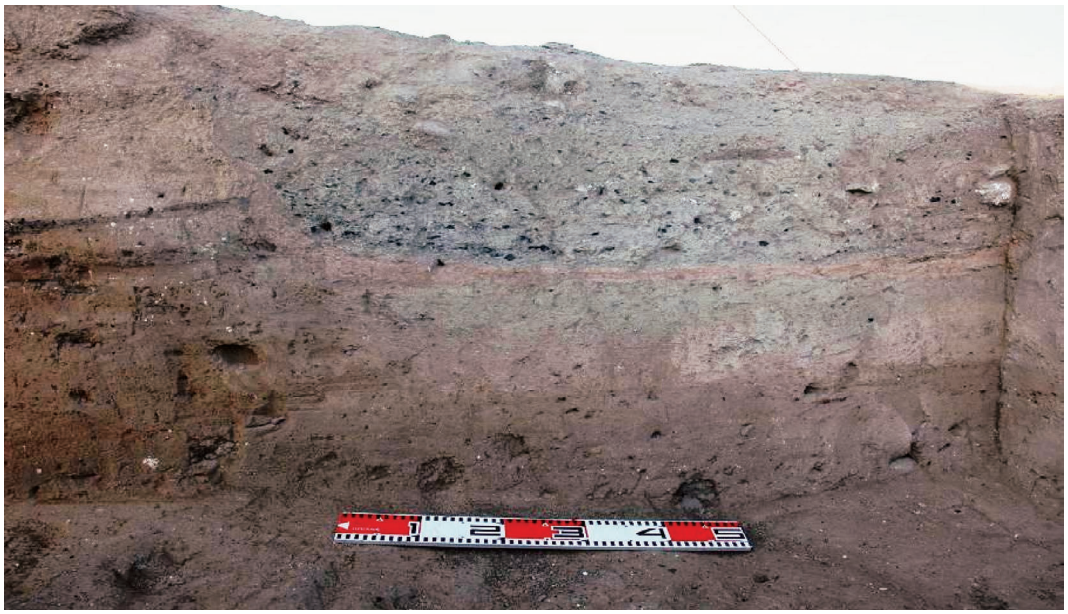


Fig. I–3 Pit seen at the western section of Square 6.

According to the western section of the square, this pit was made after Building Level 1. This pit is dated to the Early Bronze Age Phase III/IVa, on the basis of features of potsherds from it.

Building Level 1: Horizontal thin layers, some 40 cm at the thickest accumulation, altogether forming Building Level 1. These thin layers, brownish or yellowish in colour, are neither very hardened nor bearing continuous ash, and yielded potsherds of the Early Bronze Age Phase III/IVa. In addition, lithic artifacts such as cortical flakes and chips were unearthed in a small quantity. The reason why we collectively call these thin layers Building Level 1 is that a part of a wall, piled with stones and mud-bricks and directed into the north to south and the east to west, is remaining in association with these thin layers at the south-west corner of the square.

Building Level 1 was partly cut at the time when the Middle Bronze Age pit grave discribed above was constructed. The floor of Building Level 1, some 10 cm beneath the bottom of the pit grave, was made with cutting and leveling of a mud brick wall which had more or less existed. Thin *gyus* plaster and rather continuous ash covered this floor. The floor is very hard, and the surface lines of the mud brick wall run in the northwest to southeast and the eastnorth to westsouth directions (Fig. I–4).

Building Level 2a: Under the floor of Building Level 1 with *gyus* plaster and ash described above, a layer with potsherds and cortical flakes/chips of lithic artifacts dated to the Early Bronze Age Phase III/IVa was unearthed in the accumulation of some 20 cm at the thickest. This layer can be defined as Building Level 2a, for it is associated with a floor and the mud brick/stone wall, later cut and leveled for the floor of Building Level 1. The fact that two of the cortical flakes unearthed from this layer are conjoined together also supports this layer to have been a single building level. The floor is very hard and bears thin *gyus* plaster and rather continuous ash (Fig. I–5). The wall runs into the northwest to southeast and the eastnorth to westsouth directions, differently from the wall of Building Level 1 running into the north to south and the east to west directions.

Building Level 2b: In this field season, only the level under the floor of Building Level 2a was excavated. We define this excavated accumulation to be Building Level 2b. Building Level 2b, 30 to 50 cm in accumulation, yielded potsherds and cortical flakes/chips of lithic artifacts, though not in a large quantity. The potsherds unearthed from this level are also dated to the Early Bronze Age Phase III/IVa.

Fig. I–4 Floor of Building Level 1 with *gyus* plaster and surface lines of the mud brick wall which was levelled at the time of the floor making, seen from north (10th field season in August to September of 2009).

Fig. I–5 Wall and floor of Building Level 2a seen from north (10th field season in August to September of 2009).

Fig. I–6 Wall and floor of Building Level 2b seen from north.

Fig. I–7 Wall and floor of Building Level 2b seen from west.

The wall of Building Level 2b was continuously used for the overlying Building Level 2a, thus running into the northwest to southeast and the eastnorth to westsouth directions. The floor is greysh-brown in colour and is very hard with small gravels and potsherds laid horizontally, but it bears neither *gyus* plaster nor continuous ash (Figs. I–6 and I–7).

As discribed above, the sondage work in Square 6 in this field season has revealed the stratigraphy in Square 6 more clearly and has modified the stratigraphical observation in the previous two field seasons in 2009.

Through a series of research we have undertaken in the past four years in the region covering Tell Ghanem Al-Ali, Wadi Shabout and Bishri Desert plateau, we reached a hypothesis that the site of Tell Ghanem Al-Ali was at its height in the Early Bronze Age and that it was diminished in later period in the Middle Bronze Age, with sporadic huts and simple pit graves alone constructed on it.

This supposition is supported by the archaeological sequence in Square 6 of Tell Ghanem Al-Ali, in which we may see processes how the Early Bronze Age village gradually became diminished and later re-used for different purposes in the Middle Bronze Age.

II Sondage at Tell Ghanem Al-Ali, Squares 7 and 8

Atsunori HASEGAWA (Postdoctoral fellow, Japan Society for the Promotion of Science)

Tell Ghanem al-Ali gave us a unique opportunity to study town planning during the last stages of its occupation. We were able to notice a considerable number of building remains through surface observation and survey. To understand the layout of the town we surveyed the surface of Tell Ghanem al-Ali, and recorded a lot of building outlines during the 2008 and 2009 seasons. The survey area covered the north east part of the mound.

The surface survey indicated that many building remains were concentrated in the northwest and the east part of the mound. We investigated Square 1, which is located on the east part of the mound during the 2008 season. Multi-roomed buildings were found and some walls showed signs of re-use and reconstruction.

In the northwest part of the mound, we dug a small trench, Square 3 in the 2008 season. We found a thick plastered floor in Square 3. No plaster flooring was found in Square 1, and the results of sondage in Square 3 were interesting and seemed to indicate a difference in structure and function of dwellings between Square 1 and Square 3. However, Square 3 in its entirety was too small to reveal the plans and structures of building remains in the northwestern part of the mound. Therefore, we set new trenches, named Squares 7 and 8, in the northwest part of the mound near Square 3. Both of them measure 10 (east-west) × 10 (north-south) m (Fig. I–1). During this field season we uncovered two building levels.

Square 7

Building level 1

After removing the surface layer, we encountered a stone structure in the southern half of Square 7. It consisted of three stone walls (Fig. II–1). The main wall is 70 cm in width and runs east-northeast. At least, four rooms divided by a wall were identified. They are supposed to have been a part of multi-roomed building.

The room located at the southern end of Square 7 is well preserved and extends to the south. In other words, almost of all the main rooms are in Square 8.

On the other hand, the other rooms were found in a fragmentary condition. The walls that run north-northwest were not preserved completely, and the northern part of the walls had disappeared. So, the size and plan of these rooms are unclear. Compared with the stone walls found in Square 1, these are ca. 40 cm in height and lower than the wall in Square 1. It is possible that these form the foundation of mud-bricks walls. At the northern end of Square 7, another stone wall was uncovered just below the surface. It runs parallel with the main wall at the southern part of Square 7, but the bottom level of the wall is lower in height. It seems that it is a part of the structure of Building Level 1. However its relationship with rooms of the southern part is uncertain. Unfortunately, we could

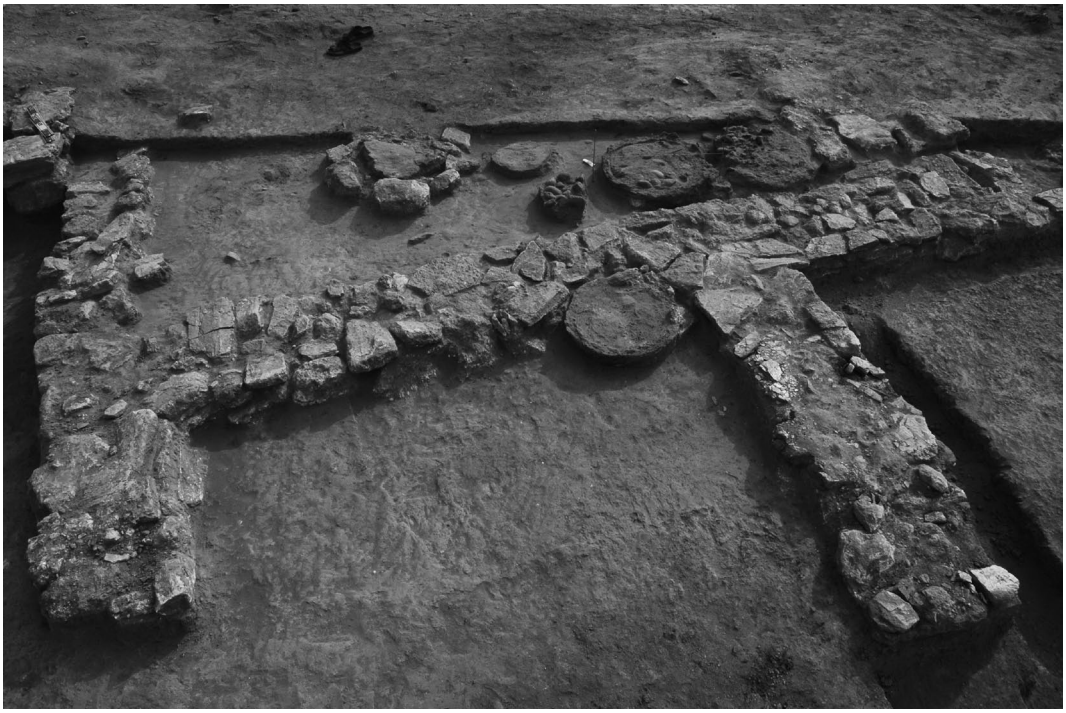


Fig. II–1 Building Level 1of Square 7, from the north.

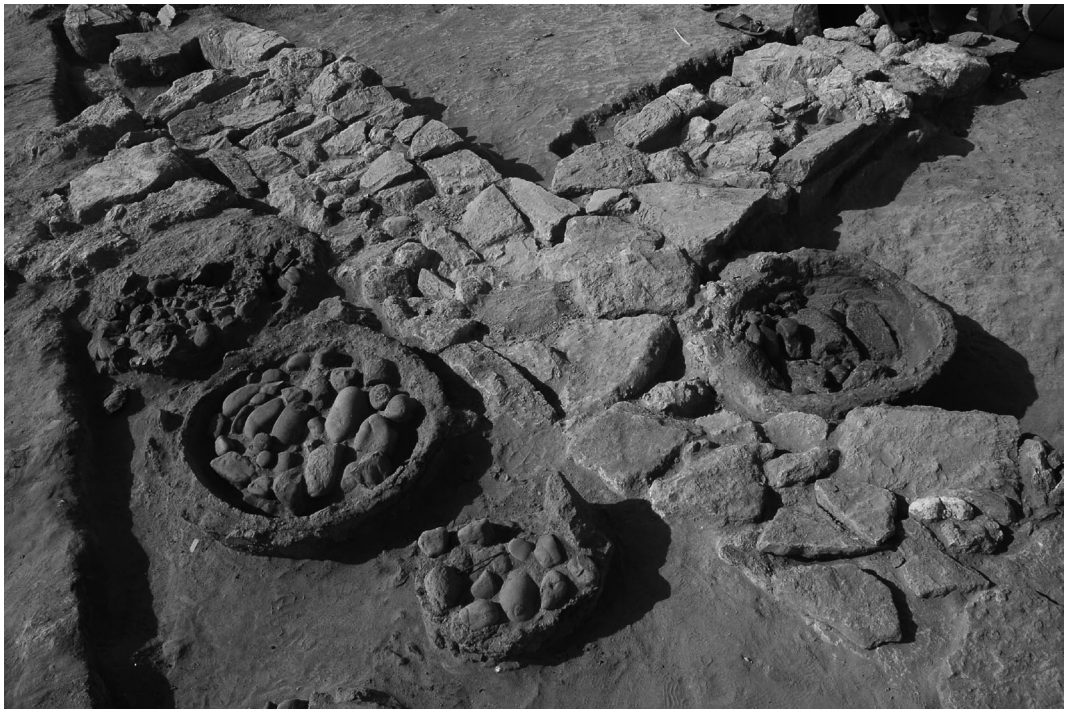


Fig. II–2 Fire instruments found at the main room and built inside the main wall of Square7, from the southeast.

not identify plastered flooring such as that found in Building Level 1, Square 3.

Five fire features were found. Three of them are in the main room, one is in a corner and the others are located in the eastern edge of Square 7 (Fig. II–2). They are ca. 70 cm in diameter. They

have thin walls constructed of clay, ca. 6 cm thick. Only the lower parts remain and they are ca. 20 cm in height (Fig. II–3). Pebbles were found at the bottom of these features. It seems that they served as floors or foundations (Fig. II–4). They contained white ash, soil and burnt soil and gray ash including many charcoal fragments which surrounded them. Their structures seem to be similar to the baker's ovens that are still used in villages now. They are called *tannor*. The fire feature located on the corner of the main wall was built inside the wall (Fig. II–5). It should be noted that the stones used in the floor were not part of the structure of the main wall (Fig. II–6). In other words, the fire feature was built later than the main wall. Five fire features found in Square 7 have almost the same structure and their bottom levels are almost the same. It seems, therefore, that they were used nearly at the same time.

Building level 2

No buildings were identified at the same level, where we found structures in building level 1, in the northern half of Square 7. So, we dug further than Building Level 1. About 60 cm below Building Level 1, part of a multi-roomed building, consisting of six or more square or rectangular rooms, were identified. They are divided by mud-brick walls which are ca. 40 cm in width. The axis of the building is orientated north-northwest to south-southeast. This field season we investigated the eastern part of the multi-roomed building, which was in a poor state of preservation. Three rooms

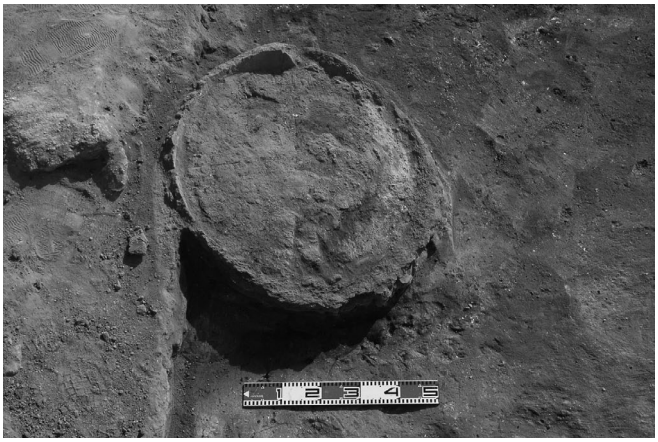


Fig. II–3 Fire instrument fount at the eastern edge of Square 7, from the north.

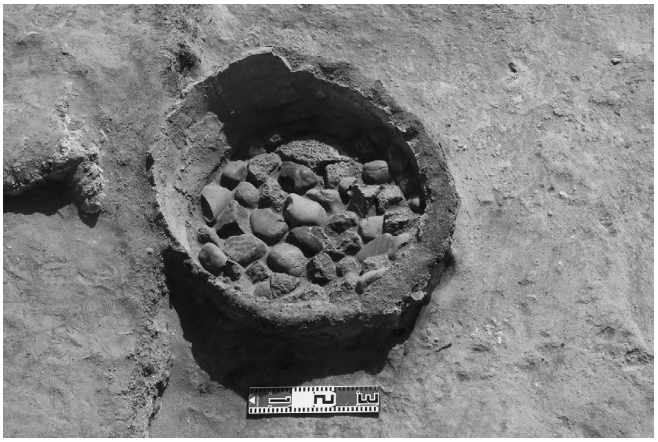


Fig. II–4 Pebble floor of the fire instrument, from the north.

Fig. II–5 Fire instrument built inside the wall, form the north.

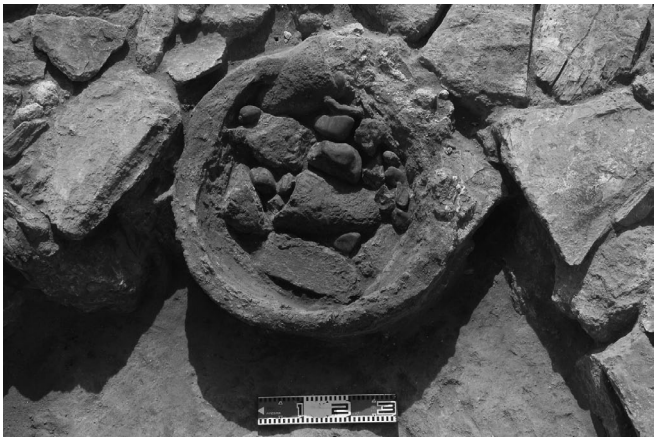


Fig. II–6 Saddle quern re-used as foundation, from the north east.

Fig. II–7 Eastern half of Building Level 2, from the north.

Fig. II–8 Western half of Building Level 2, from the north.

were identified in the eastern part of the building. We discovered stone foundations under the mud-brick walls (Fig. II–7). Not so many materials were found inside the room. A regular square room, measuring 2.4 m × 2.4 m, was located in the center of the western part of the building (Fig. II–8). The investigation of building level 2 is not complete, and we are planning to continue this investigation during the next field season.

Square 8

Square 8 is located to the immediate south of Square 7. We dug down ca. 15 cm below the surface during this field season, and some building remains were unearthed. The main structure was a rectangular building, which was part of the multi-roomed building found at Building Level 1 of Square 1. The long axis of the building is orientated north-northwest to south-southeast. The building, measuring 5 m × 9 m, has two rooms divided by a mud-brick wall extending east-northeast to west-southwest (Fig. II–13). The wall is basically constructed of stones. However, it seems that the walls were partly constructed with mud-bricks. The northern room of the building is the same as the main room identified in Square 7. There was a shallow pit ca. 3 m in diameter containing ash and many charcoal fragments inside the northern room (Fig. II–9). After removing the ash layer, we unearthed a cluster of stones in the center of the pit. We also unearthed at least three plaster basins made from gypsum. These were attached to the southern wall of the northern room (Fig. II–10). They have an irregular square shape, measuring ca. 80 cm × 60 cm and ca. 10 cm in depth (Fig. II–11). Some gypsum plaster, remaining in the floor-like feature, were also identified in a fragmentary condition around

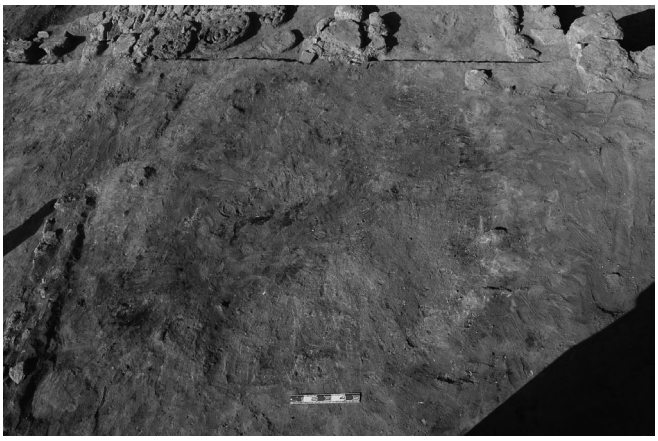


Fig. II–9 Ash pit of Square 8, from the south.

Fig. II–10 A cluster of stones, from the north.

Fig. II–11 Plaster basin, from the north.

Fig. II–12 Plaster basin, from the north.

the cluster of stones. One gypsum basin was located between the stone cluster and the mud-brick wall (Fig. II–12). Their position indicates that they belong to a series of structures. It is possible that the northern room was a kind of workshop which utilized both fire and water. We could not sufficiently investigate these remains and clarify their function and the building details are still in question. We need to continue our research in the next field season. The northern room seems to have had an entrance at the western side, as the western wall came to an end before being attached to the northern wall. We found a big jar, missing its upper part, at the southwestern corner of the southern room. The entrance of the southern room seems to have existed in the southern wall. We ceased digging at the level that the walls of the southern room were revealed. So, the inside detail of the southern room is still unclear. We also need to continue our research not only in the northern part of the square but in the whole of Square 8.

Almost all of the buildings found in both Building Levels 1 and 2 are multi-roomed houses consisting of several rectangular rooms. According to the surface survey results in 2008 and 2009, these types of houses were the main dwelling structures at Tell Ghanem al-Ali. The axes of the buildings found at both levels are orientated in the same direction, that is, roughly north-northwest. However, the main materials used in construction of the buildings are quite different. The walls of Building Level 1 are constructed of gypsum stones and solidly built. On the other hand, mud-bricks are used to build the houses at Building Level 2, and these mud-bricks walls have stone foundations which are thinner than the walls of Building Level 1.

The room that extends over two squares has three fire features, which seem to have been *tannor*, a cluster of stones located on the bottom of the big ash pit, and three gypsum basins. It is possible that the room was related to a kind of workshop, such as a bake-house for example.

Almost all of the potsherds unearthed from both squares are Plain Simple Wares. A few fragments of Black Euphrates Ware were unearthed from Building Level 1. Therefore, Building Level 1 belongs to the third phase of Tell Ghanem al-Ali. This chronological framework was established on the basis of the results from Square 2. It is possible that the buildings unearthed in this field season were used as dwellings during the Early Bronze Age III to the early part of the Early Bronze Age IVa period.

Fig. II–13 Overall view of Building Level 1 of Squares 8 and 7, from the southeast.

III Sondage at Early Bronze Age Cemetery near Tell Ghanem Al-Ali

Shogo KUME (Research fellow, Kokushikan University)
Ahmed SULTAN (Directorate General of Antiquities and Museums, Damascus)
Isamu ONO (Kokushikan University)
Chie AKASHI (Ph.D. student, Waseda University)

Introduction

The fifth field season focused on Early Bronze Age (EBA) mortuary practices around Tell Ghanem al-'Ali was conducted from 17th October to 1st November, 2010. Major aims of the last four seasons of the investigations in 2008 and 2009 were to demonstrate an overview of EBA mortuary variability in the area through cleaning and survey of various types of plundered graves, since the seriously damaged graves merely provided us obscure mortuary evidence. However, the last 2009 autumn season produced a well-preserved shaft and chamber grave at the Wadi Daba (WD) burial area situated in the modern village of Ghanem al'-Ali, some 650 m southwest from the archaeological site of Tell Ghanem al'-Ali. The discovery enabled us to set new goals of the second stage of our investigations since this season. They include collection of concrete archaeological, palaeoanthropological, or other empirical data, in an attempt to understand social relationship between the living and the dead in the third millennium BC Euphrates Valley.

Research area

Wadi Daba burial area is located at slopes of Wadi Daba or the Euphrates terrace in the modern village of Ghanem al'-Ali. Three clusters of EBA shaft graves have thus far been documented. Since the last season, a cluster named WD-Area 1-Unit C (WD1C) has been sounded (Fig. III–1) in an area of 4 × 10 m main square with 1 × 5 m sub-square.

In this season, three graves/looter's pits indentified in the last season were first excavated. At the same instance, the 1 × 5 m sub-square was enlarged into 3.5 × 10 m in order to confirm spread of graves (Fig. III–2). Because two new graves/looter's pits were successfully indentified in the new square, one of the pits was also excavated. As a result, four entrance shafts were opened in this season (Fig. III–3).

Graves and finds

Grave WD1C-2

Destroyed by a large (c. 1.6 m in diameter) looter's pit, the rectangular entrance shaft of the grave measures c. 1.5 × 1.2 m in length and width, and c. 0.9 m in deep. A different extremely large (c. 3.0 m in diameter and c. 2.8 m in deep) looter's pit has also cut the southern half of the burial chamber. The oval chamber measures c. 2.8 m in length and 0.9 m in deep (Fig. III–4). The orientation of the grave indicates the NE-SW direction. Due to the serious disturbances by looters, no *in situ* materials were obtained. However, many complete and semi-complete ceramics and other small finds were salvaged, including small bottles and a short-necked jar of so-called Black Euphrates Banded Ware (Fig. III–5: left) or a pair of bronze pins with mushroom-shaped head (Fig. III–5: right). Concentrations of disturbed human skeletal remains were also attested.

A 0.2 m wide ditch have been laid out at the bottom of the entrance shaft, connecting two small holes excavated into both sidewalls of the shaft (Fig. III–4). The ditch and holes were apparently drainage system associated with infant burials, which located around the main burial as described below. However, purposes of the drainage system still remain unclear.

Grave WD1C-2-3

Adjacent to Grave WD1C-2, an undisturbed small shaft and chamber grave was attested. Because the grave was first found as part of drainage associated with Grave WD1C-2, the entrance shaft has not yet been excavated. Yet, surface observations have confirmed the small entrance shaft of the grave. The burial chamber measures c. 0.7 × 0.7 m in length and width, and c. 0.5 m in height. The entrance to the chamber was sealed with two gypsum flat slabs. The orientation of the grave indicates the NE-SW direction. A c. 0.15 m wide ditch was found across the bottom of the chamber. The ditch leads to Grave WD1C-2 through the small hole (c. 0.3 × 0.2 m) described above (Fig. III–6). It appears that the ditch also lead to Grave WD1C-3 (see below) through another hole dug into the opposite side of the chamber, but the channel have not yet been clearly confirmed.

In the burial chamber, an infant has been laid out in the flexed position on the side. Grave goods include a bowl with rounded rim, a corrugated goblet (Fig. III–6), a spouted jar, and a shell ring.

Grave WD1C-3

The rectangular entrance shaft of the grave measures c. 1.4 × 1.1 m in length and width, and c. 3.1 m in deep, although a looter's pit (c. 1.8 × 1.7 m) destroys the top of the shaft. The orientation of the grave indicates the NE-SW direction. A c. 0.2 m narrow step found from c. 0.4 m below the top might be a foothold. Very few artefacts were recovered from the shaft, but a pendant made of lapis lazuli (Fig. III–7) was collected. A slope has been set at the bottom of the shaft, leading to the burial chamber. Two undressed gypsum stones laid on the end of the slope were perhaps used as a step. Interestingly, the entrance to the chamber was re-sealed by the looter(s), using some eight gypsum slabs.

The semi-square burial chamber measures c. 2.2 × 2.1 m in length and width, and c. 1.0 m in height. Because of serious disturbance by the looter(s), only some five semi-complete ceramic vessels were recovered from the southern corner of the chamber, including a bottle of Black Euphrates Banded Ware and a cooking pot as well as jars of plain simple ware. One of the jars was filled with fragmented

elements of human remains (Fig. III–8). Small amount of beads made of faience and fragmented bronze pins were also collected.

An alternative oval burial chamber was also found from immediately below the top of the entrance shaft (Fig. III–9). The undisturbed niche-like burial chamber measures c. 1.2 × 0.8 m in length and width, and c. 0.8 m in height.A child has been laid out in the flexed position on the side (Fig. III–10). Offering ceramic vessels consist of a bowl with convex wall, spouted and short-necked jars, two lids, and a miniature jar of plain simple ware. Other grave goods include beads, a ring and a pendant with a flower-like motif made of shell or faience (Fig. III–11). The massive use of 'jewellery' as offering materials may indicate that the deceased was a female individual. Curiously, a c. 0.15 m wide ditch was also found across the bottom of the chamber. As has been described above, the ditch leads to Grave WD1C-2-3. The ditch additionally leads to the southeastern wall of the shaft of Grave WD1C-4 (see below) at the opposite side of the burial chamber.

Grave WD1C-4

Destroyed by three looter's pits, the rectangular entrance shaft of the grave measures c. 2.4 × 1.3 m in length and width, and c. 2.2 m in deep. Stratigraphic observations of the section wall of the excavation square suggest one of the pits were perhaps excavated in antiquity. Four complete ceramic vessels consist of small bowls were recovered from the earlier pit.

The grave contains two lateral burial chambers (Fig. III–12). One was dug into the southwestern wall of the shaft, while the other was excavated into the northwestern wall. Both of the burial chambers have not yet been excavated because of limited time of this season, but preliminary observations of the chambers suggest that the looters seriously damaged the burials.

Excavated into the southwestern wall of the entrance shaft, an additional niche-like burial chamber comparable with the example of Grave WD1C-3 was also found from c. 0.8 below the top of the shaft (Fig. III–12). The rectangular chamber measures c. 1.1 × 1.0 in length and width, and c. 0.7 m in deep. The small chamber produced seven complete ceramic vessels, including cups with convex wall, spouted and short-necked jars, and a miniature jar of plain simple ware. Two terra-cotta wheels and undressed gypsum stones were also recovered. However, the scattered nature of the finds suggests that the chamber was disturbed in antiquity or a multi-stage burial practice was performed. More or less complete but disarticulated human remains (Fig. III–13) may support the latter view.

Grave WD1C-5

The rectangular entrance shaft of the grave measures c. 1.8 × 1.3 m in length and width, and c. 1.3 m in deep. A looter's pit (c. 1.6 × 1.4 m) destroys the top of the shaft like other graves. The orientation of the grave indicates the NE-SW direction. A c. 0.6 m long steep slope leads to the entrance to the burial chamber. The height of the slope measures some 1.0 m. At the end of the slope, a c. 0.15 m wide ditch has been excavated (Fig. III–14). The ditch was apparently associated with a drain outlet attached to Grave WD1C-5-6 (see below).

The oval burial chamber measures c. 1.9 × 1.1 m in length and width, and c. 0.9 m in height. The chamber produced a few complete and semi-complete ceramics vessels, including long-necked and spouted jars and a bowl with rounded rim. A shell bead and fragmented bronze pins and rings were also collected.

Grave WD1C-5-6

Like Grave WD1C-2-3 described above, the grave was first found as part of drainage associated with Grave WD1C-5. The burial chamber measures c. 1.6 × 0.9 m in length and width, and c. 0.9 m in height. The entrance shaft has not yet been confirmed, but two small holes identified from the interior wall of the chamber might be the entrance shaft and looter's pit. The orientation of the

grave indicates the NE-SW direction. A c. 0.6 × 0.4 m small hole dug into the northwestern sidewall leads to the entrance shaft of Grave WD1C-5. Purposes of the small entrance are still unknown. No ditch was found at the bottom of the burial chamber, but a small drain outlet (0.1 m in diameter) dug into the northwestern bottom also leads to the entrance shaft of Grave WD1C-5. The small outlet was apparently associated with the ditch discovered from WD1C-5.

Despite apparent disturbance in modern or antiquity, eight complete and semi-complete ceramic vessels found from the chamber include a bottle and a short-necked jar of Black Euphrates Banded Ware (Fig. III–15). A few human remains were obtained from the chamber, but fragmented elements of cranial bones (of perhaps a child) were recovered from inside a ceramic vessel. Fragments of bronze pins and rings were also collected.

Concluding remarks

Soundings at Wadi Daba burial area have yielded mortuary evidence of the limited period of Early Middle Euphrates (EME) 4 or 2450–2300 BC, as has been seen from uncovered ceramic vessels including specimens of Black Euphrates Banded Ware (Fig. III–16). Unfortunately, discovered five larger burial chambers in this season have been damaged by looter's activities. However, well-preserved smaller burial chambers produced significant dataset for further analysis, allowing us to consider the nature of mortuary practices in the EBA communities of the middle Euphrates Valley. At the moment, the following preliminary observations were obtained. First, intra-site variability of shaft and chamber graves in size, shape, and number of burial chambers is evident, suggesting that domestic grave construction was most probably conducted. Second, a multi-stage burial practice was apparently performed, as is the case of WD1C-4. Whether fragmented elements of human bones from inside the pots at lower chamber of WD1C-3 and WD1C-5-6 was secondary burials, or other factors like looter's activities remains to be determined. Third, infants/children and adults were apparently interred in different manners. For example, smaller shaft and chamber graves (Graves WD1C-2-3 and perhaps WD1C-5-6) or niche-like burial chambers (upper chamber of Grave WD1C-3) have been used for burials of infants/children, although it is not clear whether only adults were interred in the disturbed larger burial chambers. Last, smaller infants/children burial chambers contain drainage at the bottom, connecting them to adjacent graves. The function of these structures is still uncertain.

Acknowledgements

We sincere thank to Syrian and Japanese researchers who helped our investigations, especially Heba Alali, Ruba Deeb, Tomoya Goto, Abudallah al-Hamid, Aed Issa, and Mohammed Jajan.

Fig. III–1 Research area (satellite images after *Google Earth* and *Quickbird*).

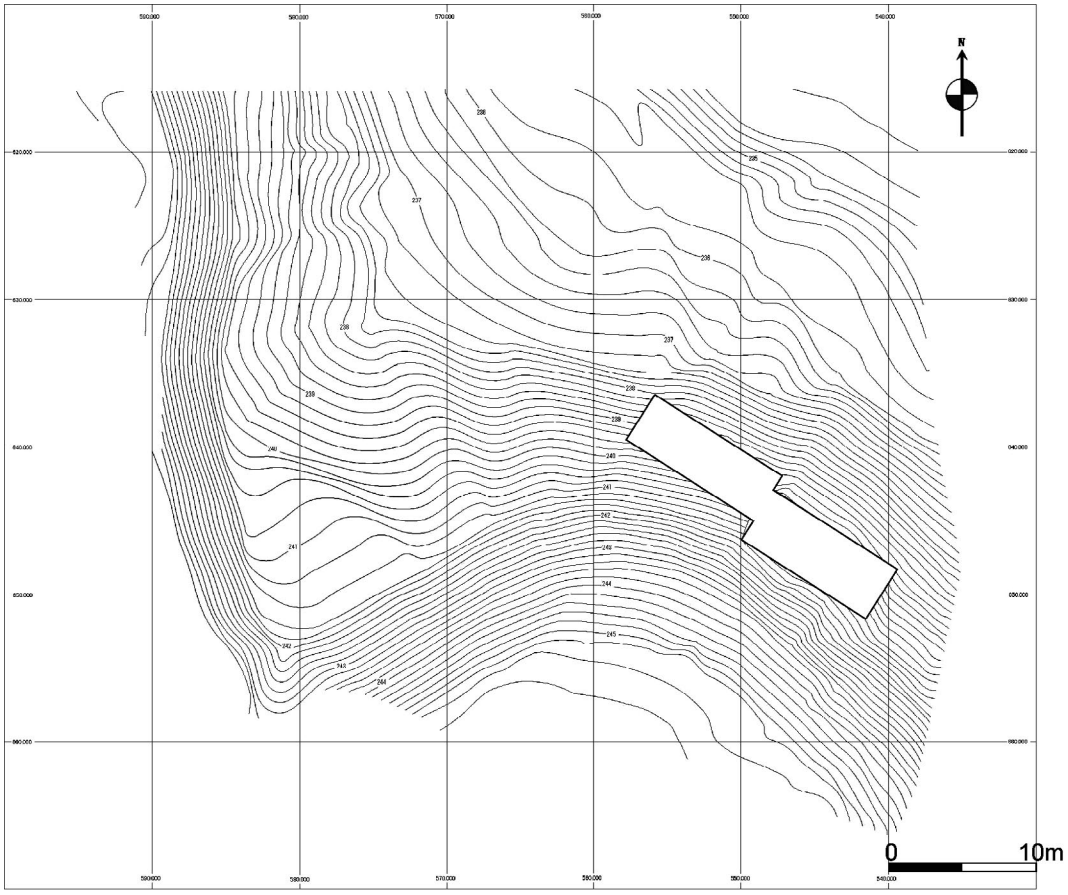


Fig. III–2 Topographic map of WD1C and location of the sounding square.

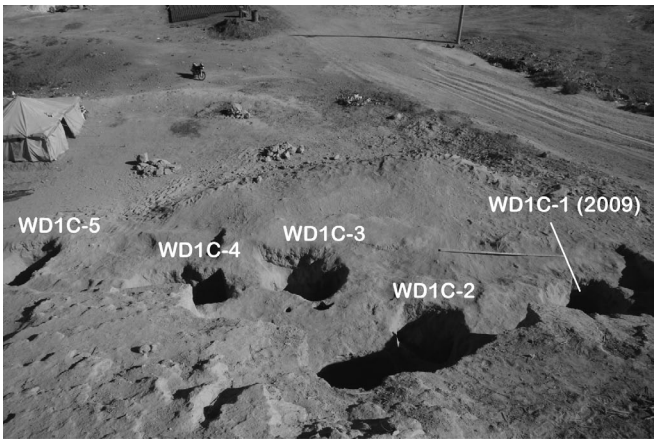


Fig. III–3 Spread of investigated entrance shafts at WD1C, looking NE.

Fig. III–4 Grave WD1C-2, looking SW.

Fig. III–5 A Jar and bottles of Black Euphrates Banded Ware (left) and a pair of bronze pins (right) from Grave WD1C-2.

Fig. III–6 Small hole between WD1C-2 and WD1C-2-3. An infant skull and complete vessels were located at the entrance, looking NW.

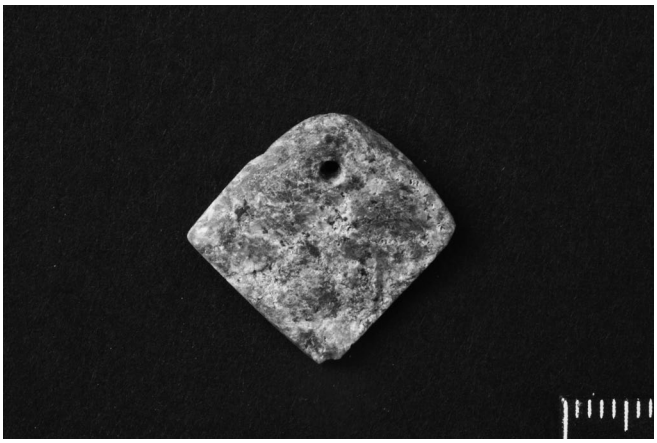


Fig. III–7 Lapis lazuli pendant.

Fig. III–8 Fragmented human remains.

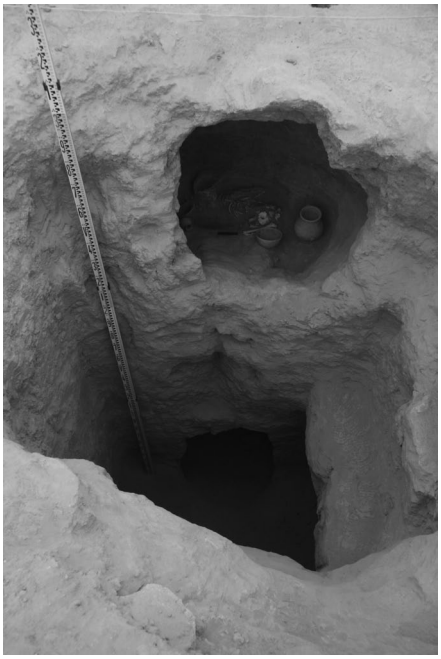


Fig. III–9 Two burial chambers of Grave WD1C-3, looking SW.

Fig. III–10 Recovered human remains from niche-like chamber of Grave WD1C-3, looking SW.

Fig. III–11 Pendant with a flower-like motif from WD1C-3.

Fig. III–12 Two lateral chambers and a niche-like chamber of Grave WD1C-4, looking SW.

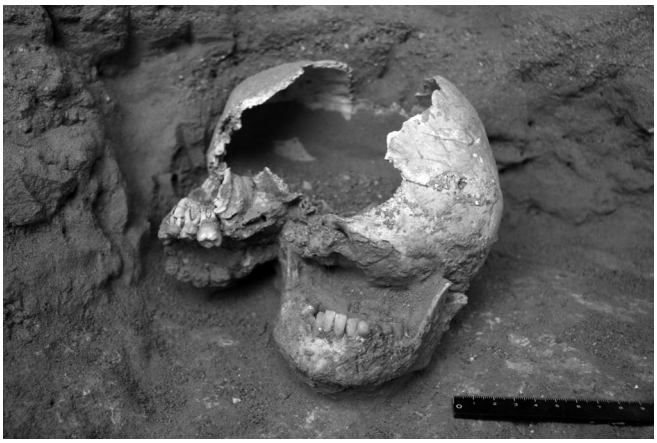


Fig. III–13 Disarticulated human skull from niche-like burial chamber of Grave WD1C-4.

Fig. III–14 Uncovered ditch and the entrance to the burial chamber of WD1C-5. A small entrance to Grave WD1C-5-6 and a drain outlet are shown at right in the photo, looking SW.

Fig. III–15 Complete and semi-complete ceramic vessels in the burial chamber of WD1C-5-6, looking NW.

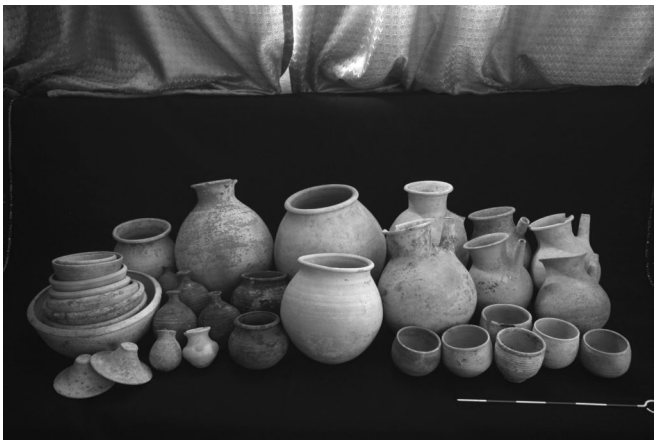


Fig. III–16 Discovered complete ceramic vessels during the 2010 season (Scale: 30 cm).

IV Archaeobotanical Research

Chie AKASHI (Doctoral Student at Graduate school of letters, arts and sciences, Waseda University/D.C. Research Fellow, Japan Society for the Promotion of Science)

Archaeobotanical investigation was carried out from October 23 to November 2 at Tell Ghanem al-Ali, and eight soil samples (70 littres) from Square 7 and seven (53 littres) from Square 8 were processed with water-flotation. Many of the samples have been secured in *tannor* or around *tannor*, and it was observed that they were rich in charred remains. Heavy fractions like bones and pottery sherds were also collected through the flotation work. Most of the macro-remains are wood fragments, probably used as fuel.

From graves of Wadi Daba'a, eleven samples had been taken during the last field season, and

three more samples were secured this year. In total, 57 littres of soil were processed, but they produced only a few charred remains.

In addition to the charred remains, I tried to find impressions of plants on pottery sherds and on wall fragments of the *tannor* discoverd from TGA. Plant impressions sometimes contain more information than charred seeds, if they are fresh and well-preserved. Silicone was used to get the replicas of the impressions. Some look like cereal chaff, but need observation with SEM for their identification. Those charred remains and replicas will be examined under a microscope in Japan for further analysis.

I also surveyed the current vegetation in Wadi Shabout and Wadi Harrar. Most predominant shrub was Chenopodiaceae, like *Anabasis* and *Noaea*. Chenopodiaceae is most abundant species among wild taxa in macro-remains of TGA as well. So, seeds of several Chenopodiaceae were collected as comparative materials.

قرير أول

ت ي عن أعمال البعثة السورية – اليابانية المشتركة العاملة في منطقة البشري

الموسم الرابع عشر خلال الفترة الممتدة من 19 ولغاية 30 آذار 2010

كاتسوهسكوأونوما

مدير الجانب الياباني (جامعة كوكوشيكان ، طوكيو ، اليابان)Roughly

أحمدسلطان
مدير الجانب السوري (المديرية العامة للآثار والمتاحف ، دمشق ، سورية)

باشرت البعثة السورية اليابانية المشتركة أعمالها الميدانية لهذا الموسم بتاريخ 13 تشرين الأول واستمرت لغاية 17 تشرين الثاني من عام 2010 .

بداية نود أن نوجه الشكر العميق للدكتور بسام جاموس المدير العام للآثار والمتاحف والدكتور ميشيل مقدسي مدير التنقيب والبحث العلمي في المديرة العامة للآثار والمتاحف والمشرف المستشار لهذا البحث الأثري لما قدّماه من دعم في سبيل إنجاح هذا الموسم .

الجانب السوري : أحمد سلطان (مديراً) ، محمد جاجان ، ربا ديب ، هبة العلي ، عايد العيسى .

الجانب الياباني : كاتسوهيكو أونوما (مديراً) ، شوغو كومي ، اتسونوري هاسيكاوا ، شي أكاشي ، موريتو أيزيكا ، إسامو أونو

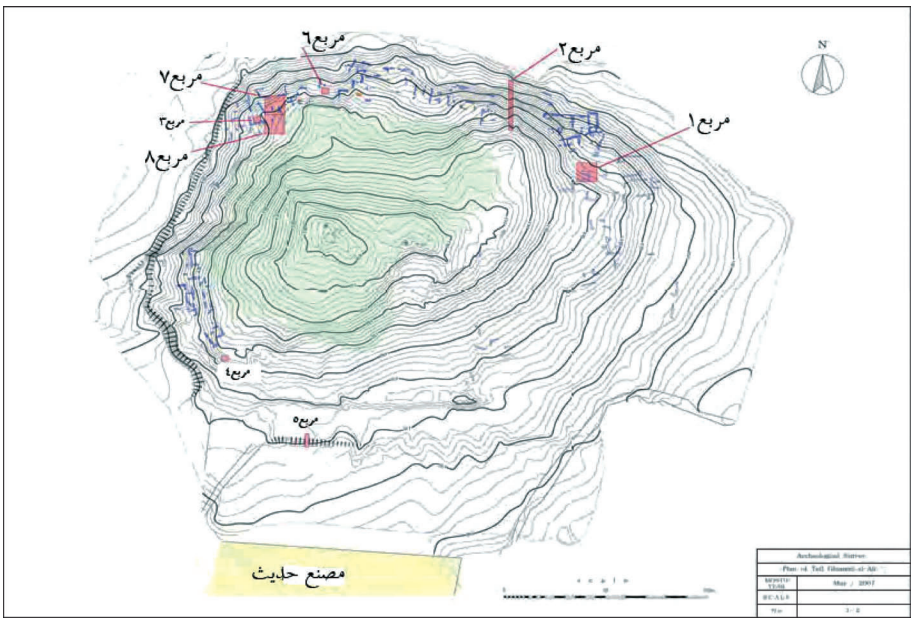
تركزت أعمال هذا الموسم وبشكل رئيسي على استكمال تنفيذ مجموعة من الأسبار الأختبارية في موقع تل غانم العلي ومنطقة مدافن وادي الضبع المجاورة لتل غانم العلي

أولاً : تل غانم العلي (القطاع 6)

(كاتسوهيكو أونوما ، جامعة كوكوشيكان ، طوكيو)

يقع هذا القطاع في الجهة الشمالية من التل الأثري ، والذي تم بدأ العمل فيه خلال أعمال الموسم التاسع والموسم العاشر عام 2009 ، والذي تم الكشف ضمنه على حفرة لمدفن يؤرخ إلى عصر البرونز الوسيط ضمن أعمال الموسم التاسع ، وفي

الموسم العاشر تم الكشف عن سوية لمجموعة من الكتل المعمارية التي تؤرخ إلى عصر البرونز القديم

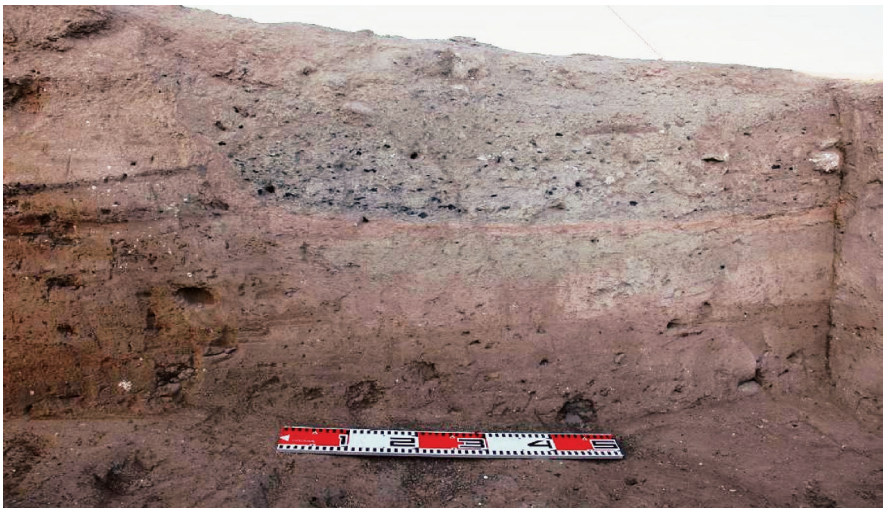


(الشكل1)خريطة طبوغرافية لتل غانم العلي توضح توزع مربعات السبر في التل

وبناء على نتائج أعمال هذا الموسم يمكن وصف السويات المعمارية التي تم الوصول عليها في المربع6 على النحو التالي :

السوية الأولى : عبارة عن طبقة من التربة السطحية المنحدرة باتجاه الشمال والتي كانت بسماكة تراوحت بين 10 إلى 15 سم

السوية الثانية : تمثلت هذه السوية من خلال حفرة تحتوي على قبر يؤرخ إلى نهاية عصر البرونز الوسيط ، كما تم الكشف عند الزاوية الشمالية الغربية من المربع على جزء من حفرة صغيرة من الرماد والتي احتوت على كمية من المواد المتفحمة



(الشكل 2) الزاوية الشمالية الغربية من المربع 6 واlلتي احتوت على حفرة من الرماد

وبناء على دراسة المقطع الغربي للمربع ، تبين بأن هذه الحفرة كانت قد تكونت مباشرة تحت السوية الأولى للمربع ، وعلى ذلك يمكن تأريخ هذه الحفرة من خلال الكسر الفخارية التي تم العثور عليها ضمنها إلى عصر البرونز القديم المتأخر III/IVa.

وقد ظهرت الكتل المعمارية الأولى ضمن هذا المربع على عمق40سم عبارة عن قطع من مادة اللبن مرصوفة على صف واحد مشكلة احد الجدران الرئيسية لهذه السوية، قطعت أجزاء من هذا الجدار بواسطة حفرة القبر العائد لفترة البرونز الوسيط

أما الكتل المعمارية الثانيةa ضمن هذا المربع فقد ظهرت مباشرة تحت أرضية السوية المعمارية الأولى ، وكانت عبارة عن جدران من اللبن مدعمة بأساسات حجرية باتجاه شمال غرب إلى جنوب شرق وجنوب شرق إلى جنوب غرب حيث تختلف عن اتجاه الكتل المعمارية في السوية الأولى والتي كانت باتجاه الجنوب إلى الشمال ومن الشرق إلى الغرب

الكتل المعمارية الثانية b والتي ظهرت من خلال طبقة بسماكة تراوحت بين 30 إلى50سم والتي تم الكشف ضمنها على مجموعة من الكسر الفخارية التي أرخت هذه الطبقة إلى فترة البرونز القديم المتأخر ، كما توضح أيضا ضمن هذه الطبقة أن هناك استمرارية للجدار المكتشف ضمن سوية العمارة الثانيةa كانت أرضية هذه الطبقة ذات لون بني غامق

(الشكل 3) جدار وأرضية البناء b2 من جهة الجنوب

يمكن القول وبشكل عام بأن أعمال السبر التي تم تنفيذها في هذا الموسم ضمن المربع 6 قد قدمت معلومات أوسع و أوضح للتسلسل الطبقي لهذا المربع والتي يمكن أن تساهم وبشكل كبير في عملية التأريخ للتل بشكل عام .

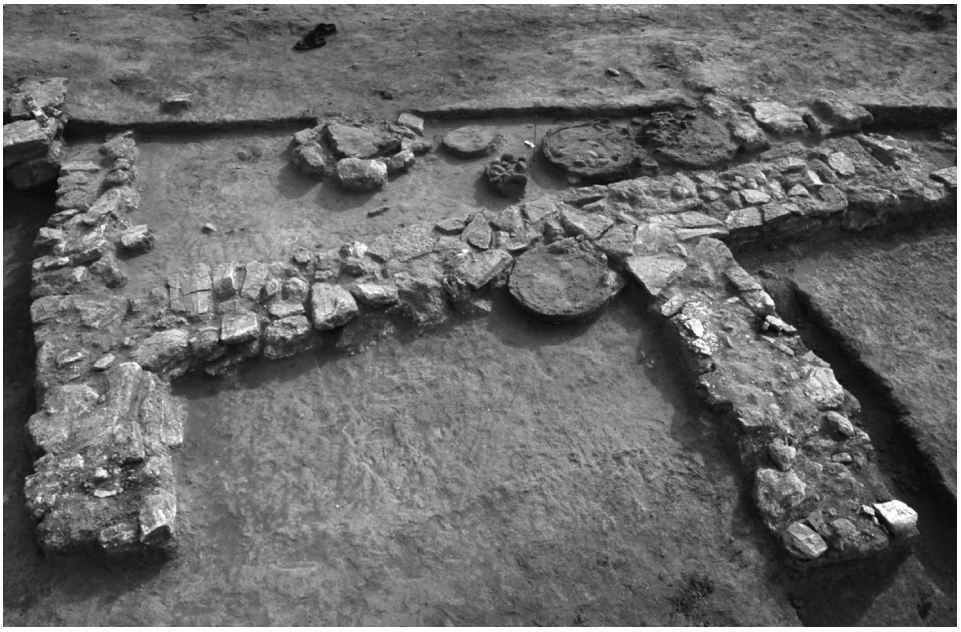
ثانياً : تل غانم العلي (القطاع 7-8)

(اتسونوري هسيكاوا : طالب دكتوراه جامعة واسيدة)

لقد قدم تل غانم العلي معطيات جديدة وفريدة من نوعها في مجال دراسة التخطيط المعماري وبشكل خاص خلال المرحلة الأولى من فترة استيطان التل وذلك من خلال الكشف على مجموعة من الكتل المعمارية والتي تنسب إلى مراحل زمنية مختلفة

وبناء على نتائج أعمال البحث الأثري الذي تم تنفيذه خلال المواسم السابقة ، تبين بأن معظم الأساسات والكتل المعمارية تتركز في الجزء الشمالي الغربي من التل الأثري ، والتي تم تنفيذ سبر (مربع3) في موسم 2008 بهدف دراسة مخطط العمارة الموزعة ضمن هذه المنطقة ، حيث أن هذا السبر لم يكن كافياً لفهم طبيعة التركيب المعماري ضمنها وعلى ذلك تم تنفيذ سبرين جديدين في هذه المنطقة (المربع7، المربع8)

المربع رقم 7 : **السوية الأولى** :فبعد إزالة الطبقة السطحية من المربع تم الكشف على مجموعة من الكتل المعمارية المتوضعة في النصف الجنوبي من المربع ، والمؤلفة من ثلاثة



جدران حجرية ، وقد بلغ عرض الجدار الرئيسي حوالي 70سم باتجاه شرق- جنوب شرق يقطعه أربع غرف واضحة المعالم . كما تم العثور ضمن هذا المربع على خمسة تنانير، ثلاثة منها ضمن الغرفة الرئيسية وواحد في زاوية الجدران وواحد عند الحافة الشرقية من المربع ، مجموع هذه التنانير أخذت الشكل الدائري بقطر70سم وقد بدا واضحاً استخدام مادة الطين وبسماكة6سم في تشكيل هذه التنانير ، حيث ظهرت مغطاة بطبقة من الرماد الأبيض الذي يتخلله كمية من المواد المتفحمة حيث فرشت أرضية هذه التنانير بالحصى وبناء على ذلك يبدو أنها مشابهة تماماً لأفران تصنيع الخبز المستخدمة حديثاً في المنطقة .

(الشكل5) مجموعة من التنانير التي تم العثور عليها في المربع7

السوية الثانية: ظهرت هذه السوية من خلال الكشف على مجموعة من العناصر المعمارية التي شكلت حوالي خمسة غرف مربعة الشكل ، حيث تم تقطيع هذه الغرف بمجموعة من الجدران المشكلة من اللبن بعرض 40سم ، وقد كان محور هذه العمارة باتجاه شمالي وشمالي غربي –جنوبي وجنوبي شرقي ،

المربع رقم8 : والذي يتوضع إلى الجنوب من المربع رقم7 ، بداية تم الحفر على عمق 15سم من سطح الأرض حيث بدت تظهر بقايا لعناصر معمارية والتي تمثلت بمجموعة من الجدران التي كان المحور الأطول فيها باتجاه شمالي وشمالي غربي حيث بدا أن هذا المحور يقطعه جدار من اللبن باتجاه شرقي – شمالي شرقي

(الشكل 6) منظر عام للأعمال المنفذة ضمن السوية الأولى من المربعين7و8

معظم العينات والكسر الفخارية التي تم العثور عليها من هذين المربعين من المنتجات الفخارية ذات النموذج البسيط ، وقد تم العثور علي بعض الكسر الفخارية من منتجات الفرات ضمن السوية الأولى من هذا القطاع

وبناء على ذلك يمكن القول وبشكل عام بأن مجموعة الكتل المعمارية العائدة للسوية الأولى تنسب إلى المرحلة الثالثة من تل غانم العلي ، والتي تم اعتمادها من خلال أعمال السبر المنفذة في المربع2، حيث تم وضح تسلسل طبقي واضح لمراحل استيطان التل بشكل كامل .

ثالثاً : اسبار اختباريه لمدافن البرونز القديم المجاورة لتل غانم العلي

(شوغو كومي : جامعة كوكوشيكان ، أحمد سلطان : المديرية العامة للآثار والمتاحف ، اسامو أونو : جامعة كوكوشيكان ، ربا ديب : جامعة دمشق ، هبة العلي : جامعة حلب)

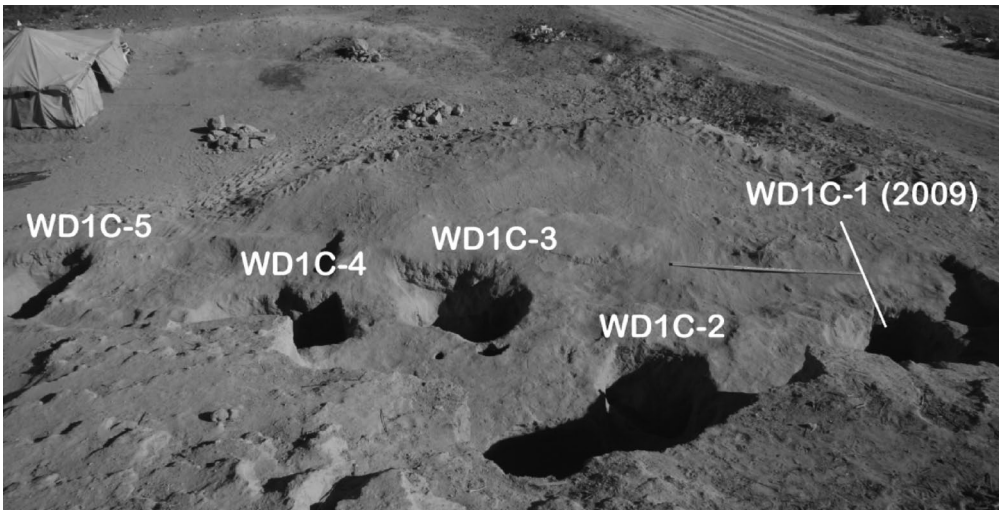
تركزت أعمال هذا الموسم ضمن مدافن البرونز القديم الواقعة حوالي 650م إلى الجنوب من تل غانم العلي

(الشكل 7) صورة فضائية تظهر منطقة البحث في وادي الضبع

في موسم العمل هذا تم التركيز على تنفيذ مجموعة من الاسبار الأثرية ضمن ثلاثة مدافن بئرية كانت قد تعرضت للنهب بشكل مسبق من قبل لصوص الآثار في منطقة وادي ضبع الذي المجاور لقرية تل غانم العلي .

ثلاثة مدافن بئرية (shaft tombs) كان قد تم إجراء أبحاث فيها ضمن هذه المنطقة في أعمال الموسم الماضي والتي تم الكشف فيها عن مجموعة من الأواني الفخارية المؤرخة إلى عصر البرونز القديم المتأخر .

في موسم العمل هذا تابع الفريق أعماله ضمن هذه المدافن إضافة إلى مدافن جديدة مجاورة



(الشكل8) نظرة عامة على مجموعة المدافن البئرية التي تم العمل فيها لهذا الموسم

منطقة البحث هذه تم ترميزها ب WD اختصار لوادي ضبع , وبناء على ذلك فقد أخذ كل مدفن من هذه المدافن رقم خاص إلى جانب رمز المنطقة

المدفن WD1C-2 حيث بلغ قطره 1.6م وقد تعرض للنهب والسرقة ويتألف من ثلاث حفرات للدفن ،وقد بلغ عمقه90سم وكان المدفن باتجاه شمال شرق- جنوب غرب تم الكشف ضمن هذا المدفن على مجموعة من الأواني الفخارية الكاملة ينسب البعض منها إلى منتجات الفرات الأسود، بالإضافة إلى العثور على مسمارين برونزيين

المدفن WD1C-2-3 وهو مجاور للمدفن السابق ويتألف من حجرة للدفن بقياس 70×70سم وارتفاع 50سم ، المدخل إلى هذا المدفن لم يكن مفتوح من قبل مما يدل على عدم تعرضه للنهب تم العثور ضمنه على هيكل عظمي لطفل صغير وبجانبه أواني فخارية تنوعت ما بين زبدية وجرار بالإضافة إلى خاتم صدفي

(الشكل9) مجموعة الأواني الفخارية المكتشفة من مدافن وادي ضبع هذا الموسم

لقد قدمت الدراسات والأبحاث الأثرية التي تم تنفيذها في منطقة مدافن وادي ضبع دلائل أثرية هامة تمثلت في التعرف على أشكال وطرائق الدفن في منطقة حوض الفرات الأوسط خلال عصر البرونز القديم حوالي 2300-2450 ق.م

رابعاً: التحليل النباتي

(شي أكاشي : جامعة واسيدة)

خلال أعمال هذا الموسم تم القيام بتحليل ثمان عينات ترابية من المربع رقم 7 وكذلك سبعة عينات أخرى من المربع رقم8 ، حيث تعتمد عملية التحليل على استخدام طريقة الطوافة ، وخلال هذه العملية تم الكشف عن العديد من العينات النباتية والخشبية الصغيرة بالإضافة إلى العديد من الكسر العظمية والفخارية ، أخذت معظم العينات من منطقة التنانير المكتشفة ضمن المربع8 و7 في تل غانم العلي.

كما أُخذت ثلاث عينات من مدافن وادي الضبع وتم تحليلها أيضاً والتي عثر فيها على بقايا نباتية . معظم العينات المأخوذة من الموقع تتم دراستها وتحليلها بشكل علمي في مخابر جامعة واسيدة في اليابان من أجل التوصل إلى تأريخ دقيق للمنطقة بشكل عام .

APPENDIX

ARCHAEOLOGICAL RESEARCH IN THE BISHRI REGION — REPORT OF THE EIGHTH WORKING SEASON —

(To be added on Page 111 of Archaeological Research in the Bishri Region: Report of the Eighth Working Season (Preliminary Reports of the Syria-Japan Archaeological Joint Research in the Region of Ar-Raqqa, Syria, 2009, *Al-Rāfidān* XXXI: 97–207, 2010))

3. SONDAGE AND SURFACE RESEARCH AT TELL GHANEM AL-ALI

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Introduction

This season's work at Tell Ghanem al-Ali mainly consisted of two operations; Sondage of Square 2, and surface survey in the eastern half of the mound. The purpose of the former operation was to determine a local chronology of the Early Bronze Age layers. We began this operation at the beginning of our research at Tell Ghanem al-Ali, and at last, we reached virgin soil this season. Now, we have recovered material that establishes a good sequence from the EBIII to EBIV. The result of this sounding also indicates that almost all of the cultural deposits, except the modern cemetery on top of the mound, belonged to the EB period. Therefore, we recognize again that Tell Ghanem al-Ali played an important role in the emergence of Semitic nomads, which appeared during the late third and the early second millennia bc. The aim of the latter operation was to understand the town layout through surface observation. We began this operation in the northern part of the mound last season, and continued in the eastern part of the mound this season. The result of this research indicates that the townscape of the EB period at Tell Ghanem al-Ali was not planned and that the town was constructed in a relatively haphazard manner.

Surface research in the eastern half of the mound

From the beginning of our first visit to Tell Ghanem al-Ali, we noticed that a considerable number of buildings could be detected by surface observation. It seems that this condition gave us a unique opportunity to study town planning of the last stages of occupation, probably the EB III–IV period, without the need for excavation. Therefore, we started this operation on the northern slope of the mound during our 7th season. The surface layer was removed and then each structure was cleaned and recorded. However, removing the surface layer sometimes disturbed the building outlines. Therefore, we decided to record the building outlines directly using a total station system. The whole mound surface was divided into 100 m × 100 m squares along the four cardinal points, centering on the Bench Mark (0, 0). In this season, building traces in the areas of the eastern four 100 m × 100 m squares were surveyed. We temporarily named them Area A to D (Fig. 1). Most of the buildings, except those in the northern half of Area A, which had been surveyed in the previous season, were traced.

As the summit of the mound is covered with the modern graves of Ghanem al-Ali villagers (green-colored area in Fig. 1), Bronze Age buildings couldn't be observed in the southwest of Area A and the northwest of Area C. Therefore, EB buildings were most evident in the southeast of Area A and the southwest of Area B, especially south of Square 1. However, we did detect some building traces here and there in all areas (Fig. 2). Let us introduce the most recognizable buildings.

Str.901 A rectangular plan building, measuring 6 × 5 m, located just south of Square 1 in Area A. The long axis of the building is orientated WNW-ESE. Beside the north wall, a parallel wall runs in the same direction. A series of five *tannors* were built into this parallel wall at its northern side (Figs. 3, 4). Another large *tannor* was also installed near this series. Therefore, it seems that this building was not merely a kitchen, but a bakehouse. The potsherds collected in and around Str.901 belong to the EB III – EBIVA varieties (Fig. 5).

Str.902, Str.903 These rectangular rooms, measuring 6.5 × 4.5 m and 5 × 4 m each, were supposed to be part of a large multi-roomed building, which is located c. 10 m south of Str.901 (Figs. 6, 7, 8). The building probably consists of five rectangular rooms and a courtyard. It seems that this kind of building was one of the main house types in the EB period at Tell Ghanem al-Ali. Most of the potsherds collected from this building belong to the EBIII-EBVIA varieties. However, a small ring-based jar (Fig. 9), having a MB profile, was also collected from the room north of Str.903. This is rare evidence indicating the existence of a MB cultural layer at Tell Ghanem al-Ali.

Str.905 This is another type of large building, consisting of a series of small square rooms in two rows (Fig. 10). It is located in the northwest of Area C. One of the rooms of this building measures 4 × 4 m. As the next room includes a *tannor*, the building was for used for domestic purposes. Potsherds from this building belong to the EB varieties (Fig. 11).

Str.907 A multi-roomed building, consisting of five or more rectangular rooms in a row, located in the southeast of Area B (Fig. 12). Its external form, measures 20 m long from east to west and 5.5 m wide from north to south. Some EB potsherds were collected from this building.

Str.909 This is the sole circular structure detected by our surface survey (Fig. 13). It consists of a cluster of limestone measuring 2.5 m in diameter. It seems to have been a grave cover. A broken clay animal figurine was collected from this structure (Fig. 14).

Str.912 It is one of the largest buildings detected from the surface. It is located in Area D, measuring 18 m × 14 m (Fig. 15). It consists of five or six rooms with a large courtyard.

Str.913 It is a multiple-roomed rectangular building, located in Area B, near the foot of the mound.

It is notable that almost all of the potsherds collected from the surface survey at Tell Ghanem al-Ali are EB varieties, especially those from the BIII and EBIVA periods. Though we collected EBIVB and MB potsherds, their number is limited. We did not collect potsherds from any later periods, such as the Iron Age or Byzantine period. This evidence indicates that almost all of the building traces observable from the surface of the mound belong to the late EB periods.

Almost all of the buildings detected by surface survey are multi-roomed houses consisting of a series of rectangular small rooms. Therefore, we can conclude that these types of houses were the main dwelling structures at that time. The axes of the houses are orientated almost east to west, especially in the southeast of Area A. Some buildings in peripheral areas, such as Areas B and D, point WSW.

The differences between these two building groups were probably caused by time or building characteristics. We identified many *tannors* fixed to the outer house walls, and they indicate the domestic nature of the buildings. No public buildings were identified by our surface survey.

Although the building traces were not always clearly detectable, they show us a general settlement plan at least in the last phases of EB occupation. On the whole, we could not identify straight streets or well-defined blocks. Many vacant plots came to a dead end bounded by building walls. Though there were some rough similarities in building layout, such as direction and structure, the late EB people at Ghanem al-Ali built their houses one after another without any town planning.

Sondage of Square 2

To confirm the chronological sequence of Tell Ghanem al-Ali, we set Square 2 on the northern slope of the site in the first season, 2007. The 4 (east-west) × 26 (north-south) m trench had been excavated previously, and it extended to the northern foot of the mound. We dug this trench in six stages, and identified seven building levels (Fig. 16). This season, we continued the operation and mainly dug the lowest, 6th stage, because we wished to reveal the earliest cultural deposits at Tell Ghanem al-Ali. The excavation lasted for two weeks from March 8 to 21, 2009. Though the excavation period was very short, the 7th and 8th building levels were uncovered. Then, at last, we reached virgin soil at below the 8th building level.

Level 7

The sixth stage was located in the northern end of Square 2. The three rooms divided by walls, which we reported last season, were removed. The walls were constructed by piling mud-bricks, measuring ca. 30 × 60 cm. Each wall was ca. 60 cm wide and ran north-west and south-east (Fig. 17). In contrast to the walls of level 6, they did not have stone foundations. This is to say, mud-bricks were piled directly on the ground. At the south-west part of the room, which is located in the south part of the sixth stage, a pit was found. It measured 60 cm in diameter and 50 cm in depth.

Level 8

Three rooms were identified at about 40 cm below level 7 (Fig. 18). The walls extended north and south. In a similar way to the building walls of level 7, walls were constructed by using mud-brick. The size of mud-bricks was also similar. However, the arrangement of mud-bricks was different. In level 7, mud-bricks were placed side by side longitudinally, and the wall was 60 cm wide. By contrast, in level 8, they were placed transversally and the wall was 30 cm wide.

This wall did not have a stone foundation either. A quern and Canaanean blade were found in the room. It is notable that traces of bitumen were visible on the edge of this blade (Fig. 19).

Below level 8

After removing the structure of building on level 8, we excavated further. Below the building on level 8, a thick ash layer, including a lot of charcoal, extended in a layer ca. 40 cm thick. In this layer, a badly broken hearth was discovered. Except for this, we did not find any structures.

Below the ash layer, we encountered a brown soil layer. This layer included a few potsherd fragments of and charcoal. There were not any structures in this layer. The next layer consisted of more dark colored soil. It was a homogeneous wet silt-like soil. No potsherds and no other remains were recovered. It is certain that this layer was the virgin soil of Tell Ghanem al-Ali (Fig. 20). The altitude of virgin soil in Square 2 is ca. 226.80 m. It was found at a depth of 3.4 m from the mound surface at the north end of Square 2. We dug until a depth of 3.6 to verify this virgin soil layer.

During the four seasons' excavations at Square 2, we accomplished our main objective. We do not have a definite chronology at present because pottery classification is ongoing. However, we can indicate that Tell Ghanem al-Ali lacks cultural deposits prior to the Early Bronze Age, because we did not collect any diagnostic potsherds older than those of the EB periods. According to the results obtained from our work, we can safely say that Tell Ghanem al-Ali has the cultural deposits from the middle of third millennium to the beginning of second millennium. In other word, this site flourished during the Early Bronze Age. Therefore, Tell Ghanem al-Ali provides a unique environment for the study of emergence of nomadic people.

Notable Object

We collected a clay figurine from the mound surface during the last season (Fig. 21). Together

with the excavated specimens, we have many clay figurines. Most of them were typical figurines as the Euphrates EB specimens. However, this specimen is unique. It should be noticed that a similar figurine was found at Abu Hamed (Falb et. al. 2005, Abb.41). Abu Hamed is an EB cemetery, located at the edge of Bishri Plateau, south of Tell Ghanem al-Ali. Discovery of this same peculiar type clay figurine at two sites indicates a strong relationship between them. Tell Ghanem al-Ali was a settlement and Abu Hamed was a cemetery, and these types of figurines are important materials when considering the people buried at Abu Hamed.

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Falb, C., K. Krasnik, J.-W. Meyer and E. Vila
2005 *Gräber des 3. Jahrtausends v. Chr. im syrischen Euphrattal: 4. Der Friedhof von Abu Hamed*. Saarländische Druckerei & Verlag, Saarwellingen.

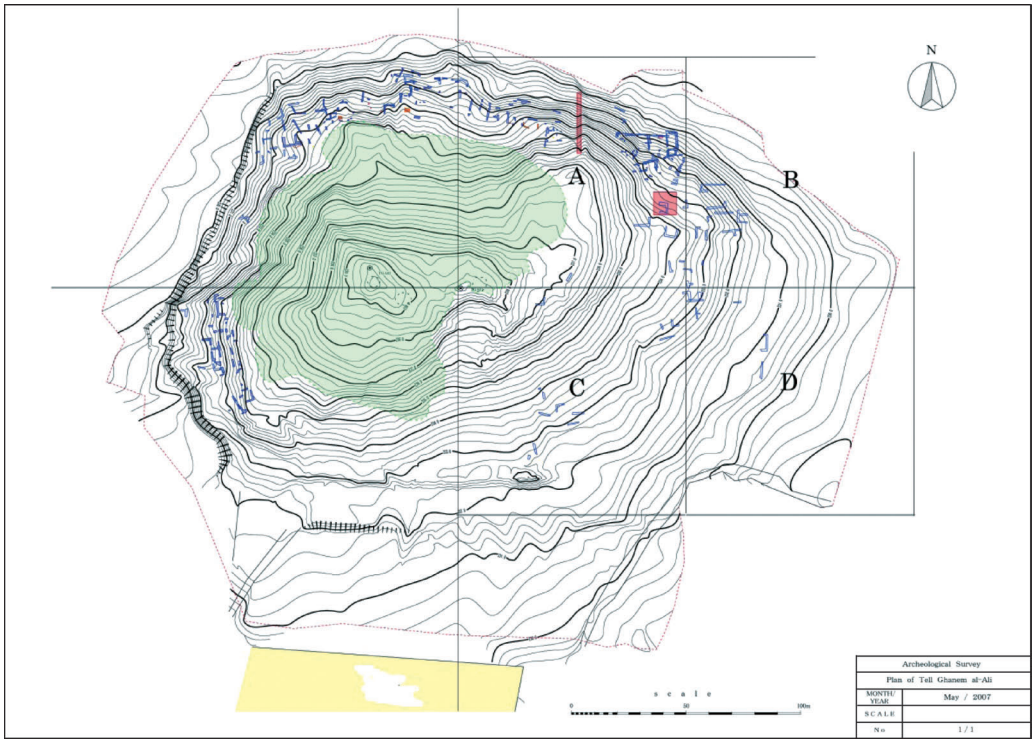

Fig. 1 Map of Tell Ghanem al-Ali and the areas of surface research.

Fig. 2 Result from surface research.

Fig. 3 Str.901.

Fig. 4 Str.901 north, a series of *tannors*.

Fig. 5 Potsherds from Str.901.

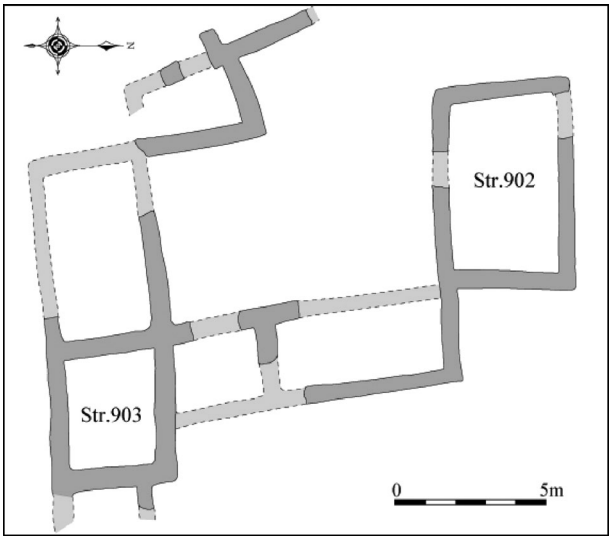

Fig. 6 Plan of the building including Strs.902 and 903.

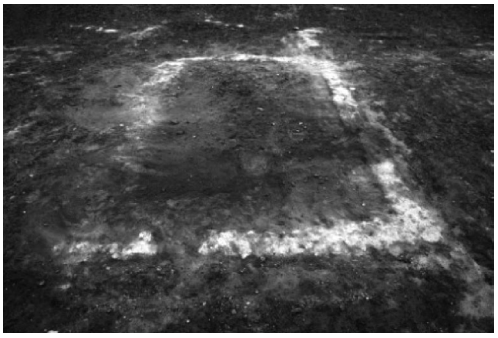

Fig. 7 Str.902.

Fig. 8 Str.903.

Fig. 9 MB small jar.

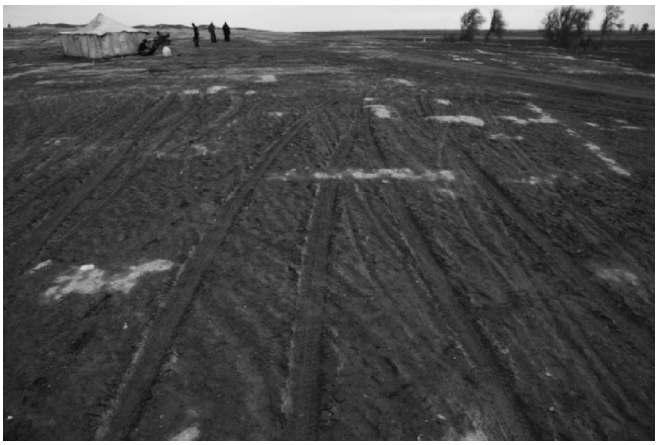

Fig. 10 Str.905.

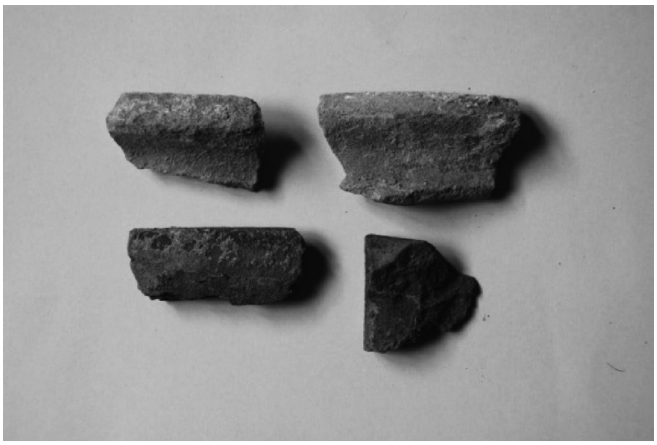

Fig. 11 Pottery from Str.905.

Fig. 12 Str.907.

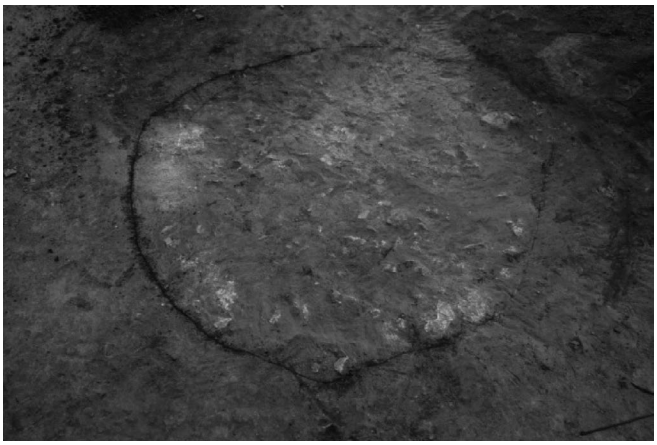

Fig. 13 Str.909.

Fig. 14 Clay animal figurine from Str.909.

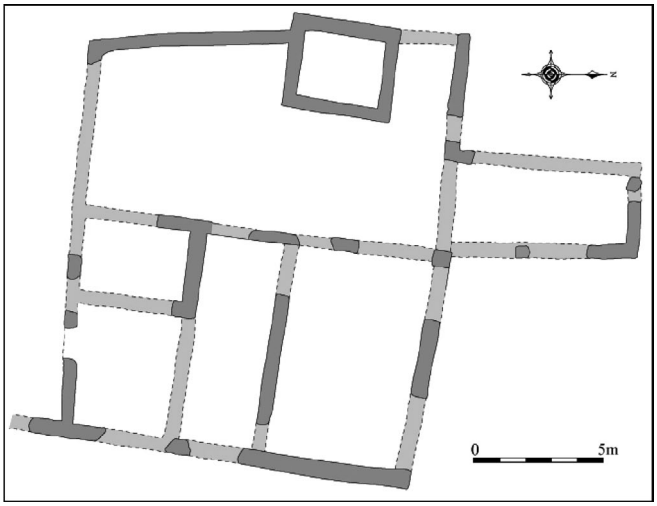

Fig. 15 Plan of Str.912.

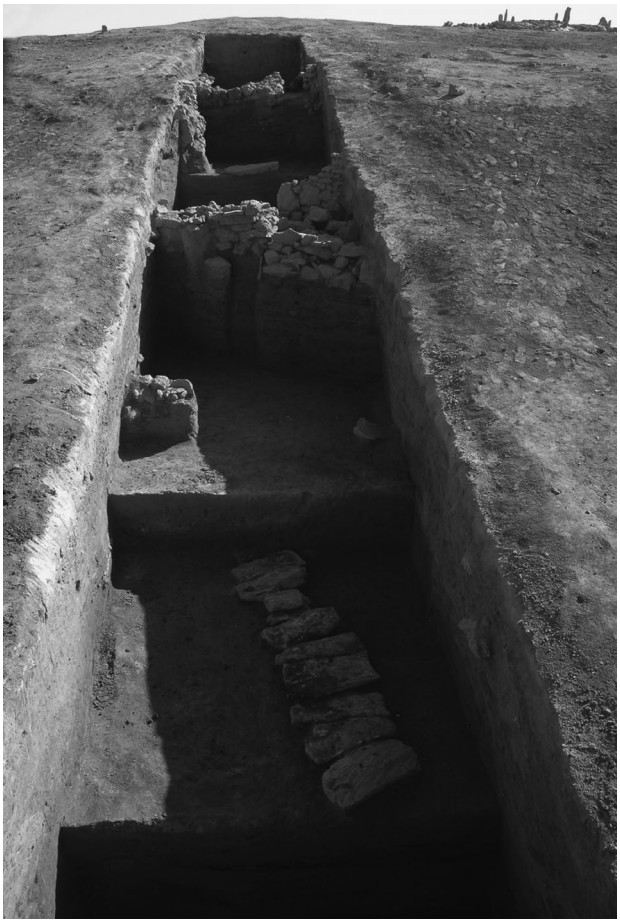

Fig. 16 Square 2, from the north.

Fig. 17 Three rooms, level 7, from the south.

Fig. 18 Three rooms, level 8, from the south.

Fig. 19 Cannanean blade.

Fig. 20 West section showing the virgin soil.

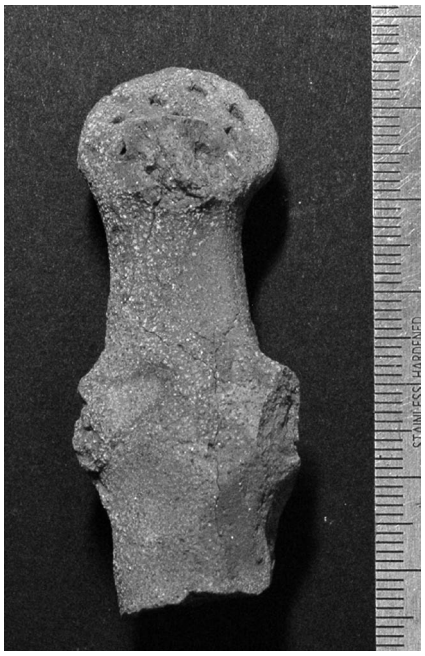

Fig. 21 Clay figurine.

4. Archaeological Survey around Tell Ghanem al-'Ali (II)

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Introduction

The eighth working season in the Bishri region involved an archaeological survey (February 23 to March 10, 2009) that covered an area with a radius of 10 km around Tell Ghanem al-'Ali, a main site for excavations in this project. With this area as the target, the survey aimed at an intensive reconnaissance of archaeological sites in order to obtain insights into settlement and land-use patterns in the past. The initial season of our survey, which was in the spring of 2008, resulted in (1) the collection of artifacts of a wide chronological range—from the Paleolithic to the Islamic period, (2) the discovery of occupational sites in the Paleolithic period and the Early-Middle Bronze Age, and (3) the recording of the distribution of Bronze Age tombs at the northern fringes of the Bishri Plateau.

While building on these previous results, the eighth season focused on unexplored areas in order to discover more archaeological sites.

Earlier archaeological investigations in the middle Euphrates indicate that the lowlands along the Euphrates were the central loci of tell-based communities, including Early Bronze Age (EBA) settlements such as Tell Ghanem al-'Ali and Tell Hammadin (Kohlmeyer 1984, al-Maqdissi and Ohnuma 2008). On the other hand, the northern edges of the Bishri Plateau, which overlook the Euphrates lowlands, contain areas that are densely distributed with tombs and appear to have belonged to EBA communities that were based at the tell settlements (Falb et al. 2005, Ohnuma and al-Khabour 2008a: 136, Ohnuma and al-Khabour 2008b: 185–187). Drawing on these earlier insights into the contrasting use of the Euphrates lowlands and uplands during the EBA, our survey aims to examine land-use patterns during this time period by recording the locations and nature of settlements, activity areas, and tombs in this region. The survey also aims to uncover a wide range of archaeological sites since the Paleolithic period in order to provide basic information on the long-term population history. This in turn should facilitate a better understanding of the historical background of the EBA communities in this region.

1. Survey area

The survey area is a circular one with a radius of 10 km around Tell Ghanem al-'Ali (Fig. 1). This area encompasses green agricultural fields in the lowlands of the Euphrates, its river terraces, and the steppe environment at the northern edges of the Bishri Plateau. Focusing on the southern bank of the river, our survey mainly examined the transitional area ascending from the Euphrates lowlands to the Bishri Plateau. The northern fringes of the plateau are incised by a series of wadis that are tributary valleys of the Euphrates. While these wadis usually stretch over at most a few kilometers, Wadi Kharar, which is located between Tell Ghanem al-'Ali and Tell Hammadin, stands out for its length (ca. 20 km) and well-developed terraces. We surveyed the plateau primarily by walking along these wadis and in the areas between the wadis.

In the last season, we surveyed the western and central parts of the survey area. The western end, which was used as a modern cemetery, is a protruding terrace located in the village of Jibli, while the eastern border is at Jezla. By focusing on the areas that were not explored in the last season, this season aimed to investigate four locations with different surrounding environments. The first was the area further east of Jezla: there are four main wadis between Wadi Jezla East and Wadi Beilune at the eastern end. The second target was the southern extension (upper reach) of Wadi Kharar. The third was Tell Mugla as-Saghir, which is located in the Euphrates lowland, ca. 5 km to the east of Tell Ghanem al-'Ali. The former survey in this area (Kohlmeyer 1984) dates Mugla as-Saghir to the Bronze Age, and its occupational period may overlap with that at Ghanem al-'Ali. The fourth location was the area further south (ca. 5–6 km) on the plateau. This area gently slopes down toward the north; it has a few, shallow wadi channels that are covered with very sparse vegetation.

2. Objectives of this season

The survey of these new areas allowed us to test some of our insights from the last season. For example, the results of the last survey indicate that Paleolithic occupations are relatively well preserved on the terraces of Wadi Kharar; however, we could find only dispersed, probably re-deposited, remains of Paleolithic occupations in other areas. In addition, we encountered only a few artifacts that date to the Neolithic or Chalcolithic period in the last survey. We could identify three site types from the Bronze Age: long-term occupations, temporary camps, and tombs. The first type includes tell sites such as Tell Ghanem al-'Ali in the Euphrates lowland and a small tell that our last survey discovered at the location of 23H in Wadi Jezla West. The temporary camps only consist of chipped-stone clusters without architecture or pottery that would usually provide chronological evidence.

However, the patterns in the selection of raw material and the core reduction technology at these sites and Tell Ghanem al-'Ali are rather similar. This suggests their chronological proximity. These temporary camps from the Bronze Age were probably abandoned as a result of some activities that were performed periodically on the plateau at some distance from the sedentary settlements. However, the exact nature of the activities that were performed at these camps remains to be investigated. The third site type, tombs, was most frequently encountered in the last survey, indicating their dense distribution at the edge of the plateau. This view was already proposed by previous studies at Abu Hamed, Jezla, and Tell Shabout (Falb et al. 2005; Ohnuma and al-Khabour 2008a: 136; Ohnuma and al-Khabour 2008b: 185–187). However, our last survey revealed a dense distribution of mound tombs in two distinct areas on the plateau around Tell Ghanem al-'Ali and Tell Hammadin (few tombs were found in Wadi Kharar, which separates the two tells). This suggested that tombs tend to be concentrated particularly in the areas close to the tell settlements in the Euphrates lowland. Thus, one of the main purposes of this season was to test whether the above site types and the patterns of their spatial distribution are observable in the area around Tell Mugla as-Saghir that is roughly contemporaneous with Tell Ghanem al-'Ali and Tell Hammadin.

3. Survey methods

To achieve an intensive reconnaissance of archaeological sites, our survey was primarily conducted by walking. We navigated the area using high-resolution satellite images and a compass. This allowed us to record the locations of survey paths and discovered sites. The surveyed wadis and areas were assigned numbers (nos. 1 to 28). We named the survey paths and discovered sites within each area by attaching an alphabet. Thus, survey paths and sites are identified as the combination of an area number and alphabet, such as 20A and 16K.

A survey path fundamentally corresponds to a single topographic unit, such as a terrace or wadi. The identification of archaeological sites was primarily based on the density of artifacts, as apart from tomb mounds and cairns, we rarely encountered features on the ground surface. We collected artifacts from the survey paths and archeological sites. At the archaeological sites, we measured the extent of artifact distribution and general topography around the sites. When we encountered mound tombs, the extent of their distribution was sketched on hard copies of high-resolution satellite images.

4. Sites and finds

Employing the above methods, we conducted our survey from February 23 to March 7 and recorded 85 sites and 61 survey paths. The discovered sites mainly consist of tombs and sites from which artifact scatters were recovered. The former site type usually dates to the Early to Middle Bronze Age, while the dates of the latter type range from the Middle Paleolithic to the Bronze Age. We shall now provide an areawise description of the discovered sites and finds.

4.1. Tell Mugla as-Saghir

This tell was originally reported in Kohlmeyer (1984). The site is located in the Euphrates lowland, ca. 5 km to the east of Tell Ghanem al-'Ali. It measures 110 m [N–S] × 120 m [E–W] × 6 m [Height] (Fig. 2). The tell is currently covered with modern graves; many pottery shards and lithics lie scattered on the surface. This collection of artifacts indicates that the tell was mainly occupied during the EBA; however, the recovery of a Neolithic arrowhead also suggests the presence of Neolithic occupation at or near the site. We also noted several alignments of gypsum stones that are exposed on the surface (Fig. 3). Some of them seem to represent foundations of rectangular building structures. On the whole, like Tell Ghanem al-'Ali and Tell Hammadin, the tell appears to have functioned as a sedentary settlement during the EBA. Given the apparently regular distance (ca. 5–6 km) between the three sites, it is possible that their occupational periods overlapped at some point.

4.2. On the plateau above Tell Mugla as-Saghir (Areas 24, 25, 26, and 27)

Bronze Age Tombs

We surveyed the edge of the Bishri Plateau, which overlooks Tell Mugla as-Saghir, in order to investigate prehistoric land-use patterns from the Paleolithic period to the Bronze Age. The area was divided into four spatial units (Areas 24, 25, 26, and 27 from west to east) according to the major wadis. Area 24 mainly covers the drainage of Wadi Jezla East, while Area 27 corresponds to Wadi Beilune.

The lower part of Wadi Jezla East is deeply incised and flanked by steep slopes. There were very few finds in the lower part. On the other hand, surface finds became more frequent in the upper parts of the wadi. Although we found a rain of chipped stones that apparently date to the Middle Paleolithic, there was no clear concentration. Area 24I refers to a site on the eastern bank from where a small scattering of Middle Paleolithic artifacts was recovered (Fig. 4). The scarcity of Bronze Age tombs in the areas adjacent to Wadi Jezla East, which contrasts with their dense distribution in Jezla (a few hundred meters to the west), is truly remarkable.

We noted that the number of Bronze Age tombs increased again as we moved eastward to Area 25, where hundreds of shaft tombs were densely distributed on the low bank (4–5 m in height) that stretches over several hundred meters around a drainage basin (Areas 25D and 24Z, Fig. 5). Most of the tombs have been plundered and are scattered with pottery shards that date to the EBA (Fig. 6). Shaft tombs were also found in Area 26E, which is a large rectangular depression measuring 160 m [E–W] × 63 m [N–S] × 10 m [Depth] (Fig. 7). The depression opens to the northern edge of the plateau. Given its rectangular shape and the absence of a water channel in the basin, the depression could have been formed through the construction of prehistoric earthworks. Because the southern and eastern slopes of this basin are covered with shaft tombs, the rectangular basin may have been created to imitate the low banks that naturally occur in the neighboring areas and were used as locations for shaft tombs. In addition, the recovery of apparently Bronze Age chipped stones within the rectangular basin suggests that other activities were also performed there, although their exact nature is still unknown.

To the east—namely, in Areas 26 and 27—the dense distribution of shaft tombs in the above areas is suddenly replaced by mound tombs with stone chambers (Fig. 8). The western side of the wadi (Areas 26A and 26F) contains more than one hundred mound tombs that are ca. 2–3 m in diameter and 1 m in height. The distribution of mound tombs with stone chambers continues eastward with sporadic concentration near the northern fringes of the plateau or on hilltops (Areas 27F–M, Q–U, and Y). The number of mound tombs suddenly decreases in the areas along Wadi Beilune, which seems to represent a break in their distribution. On the eastern side of Wadi Beilune, we suddenly encountered numerous cairns over a wide area on a plateau (ca. 1 km [N–S] × 0.5 km [E–W]) (Area 27AL, Fig. 9). More than 100 cairns are distributed over this area. They are built with gypsum rocks and contain stone chambers. Some cairns form large mounds (up to 35 × 10 × 2 m at Area AI) containing several stone chambers that are linearly placed. Most of them have been plundered. Using the pottery shards that were scattered around the mounds, we dated the cairns to the Early Bronze Age (Fig. 11). However, we found that some of the cairns with low mounds have not been plundered (Fig. 10). Thus, it seems that this cairn field has suffered less looting as compared to other burial areas such as Abu Hamed and Shabout, which are more accessible from modern roads. The unprecedentedly large scale coupled with the fairly good preservation can make this cairn field rather important for the study of Bronze Age burial customs in this region as well as in wider areas.

Flint sources and Knapping sites

The area north of the cairn field (Area 27AL) is densely covered with river pebbles/cobbles (Areas 27V and 27AG). Such areas stretch over hundreds of meters on both the eastern and western sides of Wadi Beilune (Fig. 12). This was unexpected as the area is located on top of the Bishri Plateau,

which is tens of meters above the Euphrates river. The area was visited by the geologist team in the Bishri mission. They noted that the deposit of pebbles is at least ten meters thick, and suggested that it was probably created by the Euphrates in ancient times. The area is also archaeologically significant as it yielded a number of flint cobbles, some of which measure 10–20 cm. Such flint cobbles must have been important raw materials for chipped stone tools in the past. In fact, many chipped stones collected in the survey area retain a cortex of rolled cobbles; however, such cobbles are rarely available in wadi bottoms because Tertiary gypsum beds form the Bishri Plateau. Thus, this gravel area was possibly exploited as a local source for flint.

We found five locations where split cobbles and flakes were strewn over an area 5–10 m in diameter (Areas 27W, AD, AE, AF, and AM). As these locations contain more split cobbles than flakes or cores, we initially suspected that they may have been created naturally. In fact, Areas 27W and 27AD are located near a stream at the foot of gravel hills, and Areas 27 AE and 27 AM are situated on the wadi terrace at the foot of the hill (Fig. 13). However, we encountered a similar distribution of split cobbles with flakes and cores on top of the gravel hill (27AF). This spot also contained a hammerstone that was lying next to a split flint cobble (Fig. 14). In addition, most flakes from these locations and their surrounding areas have a cortex on their side and/or striking platform. The high proportion of cortical flakes in debitage is also observable in the assemblage from Tell Ghanem al-‘Ali and lithic scatters that appear to represent Bronze Age temporary sites (e.g., 20A).

Another example of temporary occupation was discovered at Area 24AA (Fig. 15), which is adjacent to the linear concentration of shaft tombs in Area 24Z, to the south of Tell Mugla as-Saghir. This area is ca. 4 km to the west of the cobble deposits at Wadi Beilune. In Area 24AA, chipped stones are densely distributed over a stretch of 30 × 20 m. We collected 167 pieces from a 1 × 1 m square at the center of the area where the stones were concentrated. The sample includes 11 cores and 135 cortical flakes (over 80% of the total) that are made of flint cobbles (Fig. 16). Because such a large amount of flint cobbles is not available in nearby wadi bottoms, they were probably extracted from the sources at Wadi Beilune.

Land Use prior to the Bronze Age

In addition to the Bronze Age sites, Middle Paleolithic artifacts were also frequently collected (Fig. 17). Although no clear concentration of these finds was discovered, they suggest that this area has a long history of settlement. We encountered Mousterian artifacts more often in the areas close to the pebble/cobble deposits near Wadi Beilune, and some of the collected lithics retain a cortex of rolled cobble. This suggests that the flint sources at Wadi Beilune already existed by the Middle Paleolithic period and could have been used in the subsequent periods.

4.3. Wadi Kharar

In the survey of the southern part of Wadi Kharar, we collected some blades that date to the Pre-Pottery Neolithic B period (Areas 16AV and 16AU) as well as some Mousterian artifacts (Area 16AR) from the survey paths. However, no clear evidence of occupational sites was discovered in this part of the wadi.

In the last season, we found more substantial traces of Paleolithic occupations in the lower part of the wadi, particularly at the spot where a spring is located (Areas 16M–Q). Apparently, Paleolithic inhabitants were attracted to water sources such as the spring and the Euphrates river. In order to obtain greater insight into the land-use patterns of these Paleolithic hunter-gatherers, we revisited some sites for the systematic collection of surface finds. We selected some sites near the spring and its downstream area (Areas 16 I–K, 16M–Q, 16R) in order to collect surface finds from a 10 × 10 m square. During this work, two additional sites (Areas 16AR and AT’) were discovered. While Area 16AR appears to contain lithics from several different time periods (including the Middle Paleolithic), Area AT’ contained a clear concentration of lithics over a stretch of 16 × 13 m. The collection of

surface finds from a 3 × 3 m square comprised 311 pieces, including a wide range of debitage and some retouched tools. Owing to the recovery of geometric microliths, it may be possible to date this site to the Middle Epipaleolithic (Fig. 18).

4.4. Wadi Jezla West

We also returned to Wadi Jezla West in order to conduct systematic sampling of the surface finds from Areas 23H and 23J. Area 23H is a small mound on the western terrace of the wadi, while Area 23J is an area inside the large Islamic stone building (ca. 150 × 100 m) on the plateau. In the last season, we found Bronze Age pottery shards and lithics in both the areas. To perform a more controlled recovery of artifacts, we collected surface finds from two 10 × 10 m squares at Area 23H and from a 3 × 3 m square at Area 23J. In addition, we prepared a detailed record on the distribution of Bronze Age tombs that are spread over this area (Ohnuma and al-Khabour 2008a: 136).

Further upstream from the wadi, we collected Epipaleolithic artifacts from the western terrace. Area 23AB is located 8.5 m above the wadi bottom, while Area 23AR is 2.5 m higher than the former terrace. Although the lithic scatter is sparse, the recovery of geometric microliths and a microburin shows that Epipaleolithic occupation is not restricted to Wadi Kharar; rather, other areas were also inhabited during that time.

4.5. Other areas

Abu Hamed and Tell Hammadin

In addition to Jezla, we checked the exact locations of some other Bronze Age cemeteries in the survey area (Fig. 1). One of them is Abu Hamed, an area that was excavated by the German mission (Falb et al. 2005). We also returned to the plateau near Tell Hammadin in order to revise the distribution map of Bronze Age tombs in the area. We confirmed that the scale of this burial ground, which was almost comparable to that of Abu Hamed and the cairn field near Wadi Beilune, was larger than we had expected.

Southern area in the steppe

As our survey focused on the transitional area from the lowland to the Bishri Plateau, the southern steppe on the plateau was largely unexplored. In order to test whether any sites are distributed in this steppe environment, we walked through the areas 5–6 km south of the northern end of the plateau (Areas 10O–S, 28A and 28B, and 24AD and 24AF).

Although no clear concentration of artifacts was discovered, we continued finding a sparse distribution of chipped stones from various time periods, including the Paleolithic, Neolithic, and the Bronze Age. This suggested the use of these southern areas over a long period of time. We also encountered some Bronze Age mound tombs in such isolated locations (Fig. 19). These discoveries raise questions about who was buried and for what purpose. One possibility is that the mounds served as landmarks for indicating a claim over a territory; however, further collection of data and study of comparable archaeological and ethnographic examples is necessary to examine this issue.

Concluding remarks

The second season of the survey intensively explored the northern edge of the plateau, conducted systematic sampling at Wadi Kharar and Jezla, and examined some of the southern part of the survey area. This helped us develop our database of archaeological sites in the survey area for examining prehistoric land-use patterns. Regarding the Bronze Age, our data show that a spatial unit consisting of a tell settlement with grave areas in the vicinity is common in Tell Mugla as-Saghir, Ghanem al-‘Ali, Hammadin, and Jezla, although there is some break in the distribution of tombs between the settlements. Such spatial patterns in sites indicate that the inhabitants of the sedentary settlements

in the Euphrates lowland were responsible for the creation and maintenance of the neighboring tomb areas on the plateau.

The discovery of flint sources and knapping areas near Wadi Beilune in this season also clarified another aspect of Bronze Age land use. These sources were used over a long period of time, from the Middle Paleolithic to the Bronze Age. This long-term use suggests that the plateau was not only used as a cemetery but was also used for performing other activities, including the acquisition of raw material for flint tools. We also found a number of chipped stones that appear to date to the Bronze Age in various locations on the plateau. This may indicate that the production and use of chipped stones were practiced on the plateau. However, the nature of the activities that were performed by using these tools is still unclear.

In the areas near flint sources at Wadi Beilune, we mostly found Middle Paleolithic and Bronze Age lithics. These findings may reflect long-term patterns in the exploitation of flint sources. For example, the occasional finds of Neolithic artifacts are usually made of flint that is available further south in the El Kowm basin. However, this may also be a result of our inability to identify Neolithic lithic technology that used flint cobbles in this region. To solve this problem, it would be useful to find and excavate Neolithic occupations in this area and collect samples from dated deposits. One possible location is Tell Mugla as-Saghir, from where a Neolithic arrowhead was recovered.

Further research is necessary to shed greater light on prehistoric land use in the middle Euphrates. We plan to continue analyzing the collected finds in order to determine the dates of discovered sites and to examine a wide range of issues, including the nature of occupations, functions of sites, technology of tool production, and burial customs.

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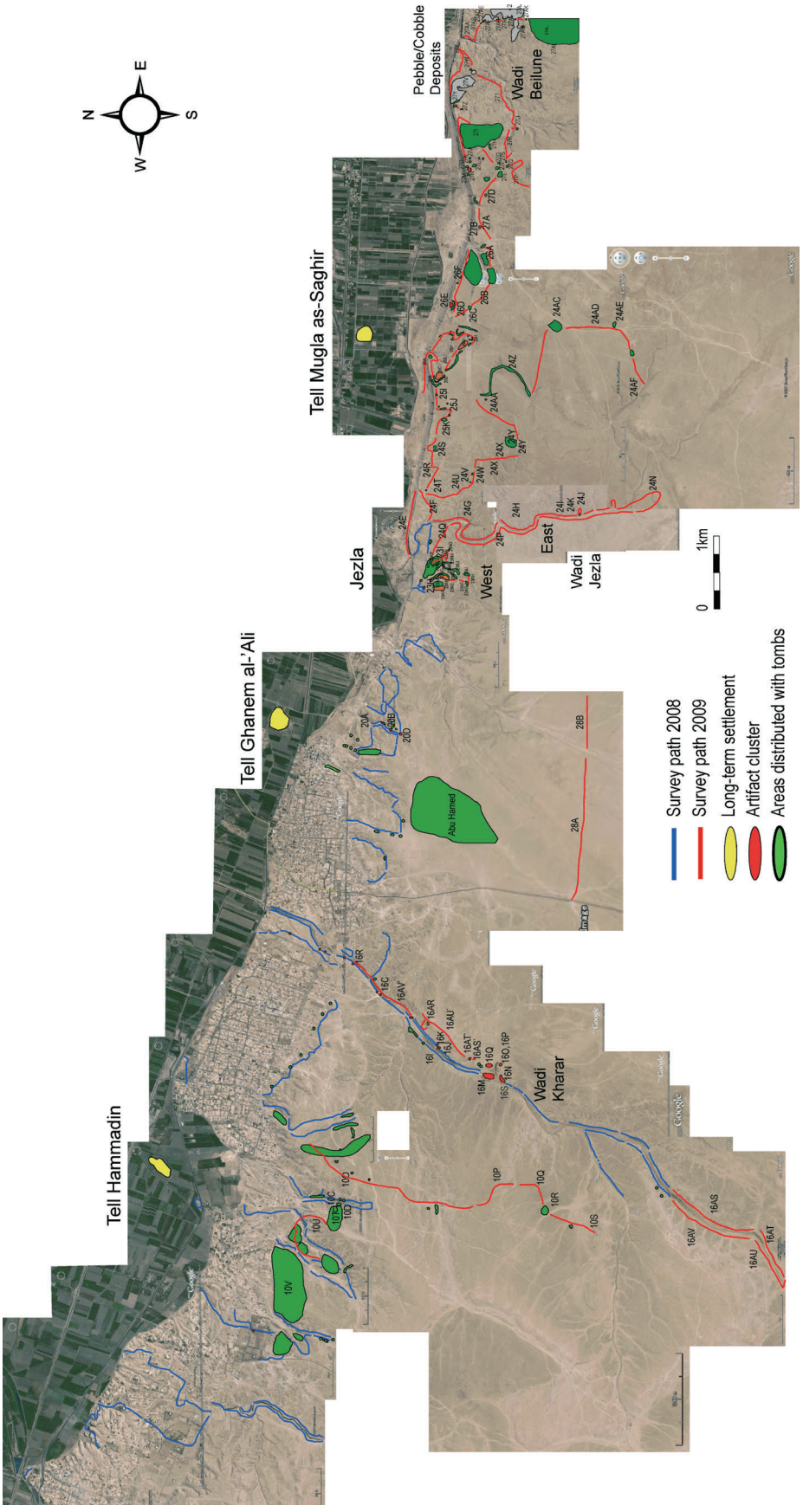

Fig. 1 Satellite image of the survey area, showing the survey paths and discovered sites.

Fig. 2 Tell Mugla as-Saghir, looking south. The tell is densely covered with modern graves. The survey of the plateau behind the tell discovered the dense distribution of Bronze Age tombs.

Fig. 3 Rectangular stone foundations exposed on the surface at Tell Mugla as-Saghir.

Fig. 4 Area 24I in Wadi Jezla East. Middle Palaeolithic artifacts were recovered on the slope of the eastern bank of the wadi.

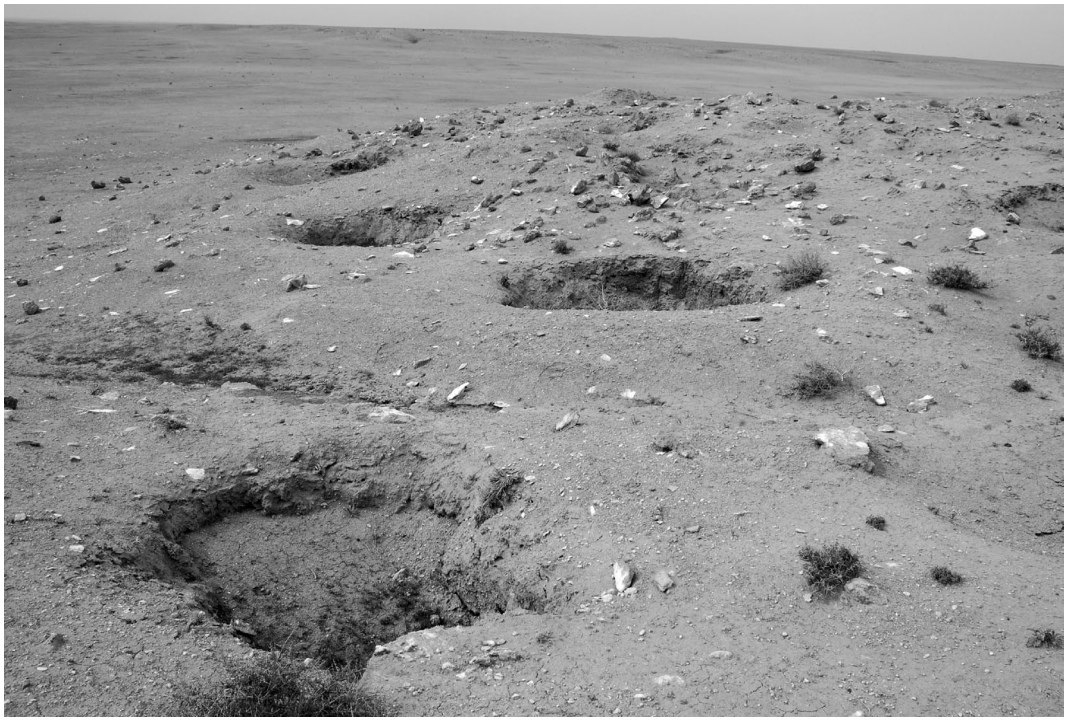

Fig. 5 Cluster of shaft tombs on the plateau above Tell Mugla as-Saghir, looking west. Early Bronze Age pottery sherds were scattered besides the graves.

Fig. 6 Pottery sherds collected on the surface near shaft tombs in Area 24Z.

Fig. 7 Rectangular depression at the northern edge of the plateau, looking west. The eastern and southern slopes are densely distributed with shaft tombs (Area 26E).

Fig. 8 Mound tombs in Areas 26A and 26F on the western side of the wadi.

Fig. 9 Overview of the cairn field (Area 27AL) near Wadi Beilune, looking south.

Fig. 10 A series of intact cairns, linearly distributed over ca. 60 m in length, looking north (Area 27AL).

Fig. 11 Fragments of Euphrates Fine Ware and Black Euphrates Fine Ware, collected besides the looted cairns in Area 27AL.

Fig. 12 Pebble/cobble deposits at the lower part of Wadi Beilune (Area 27 V), looking northwest.

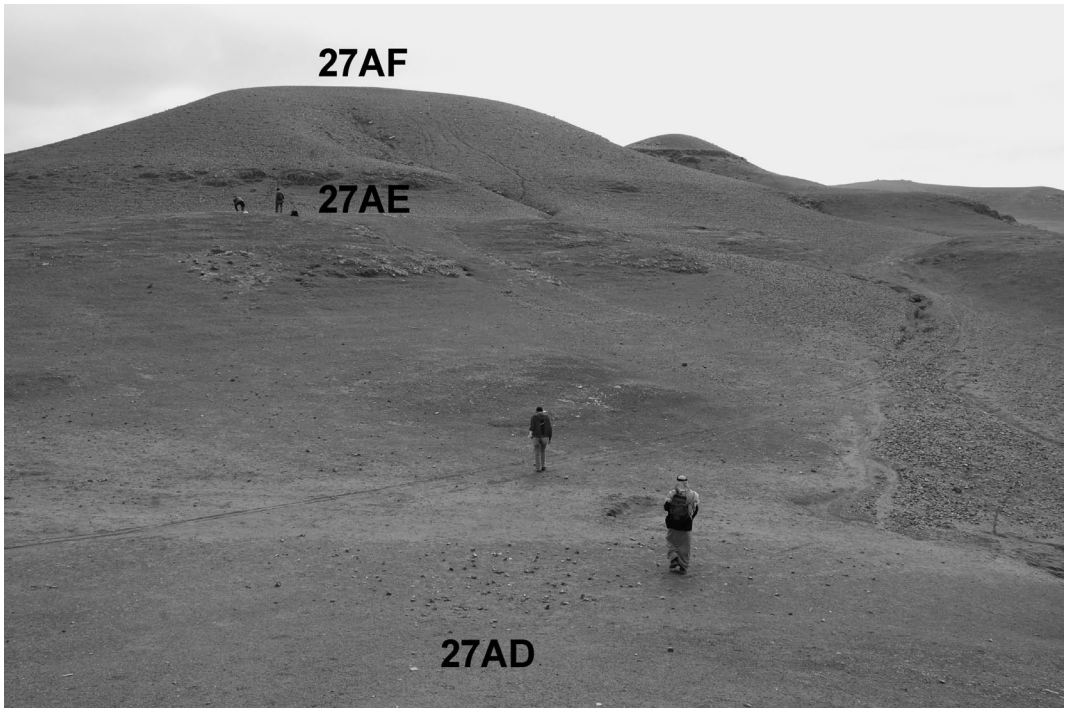

Fig. 13 Flint knapping areas near the cobble deposits (27AD, AE, and AF), looking south.

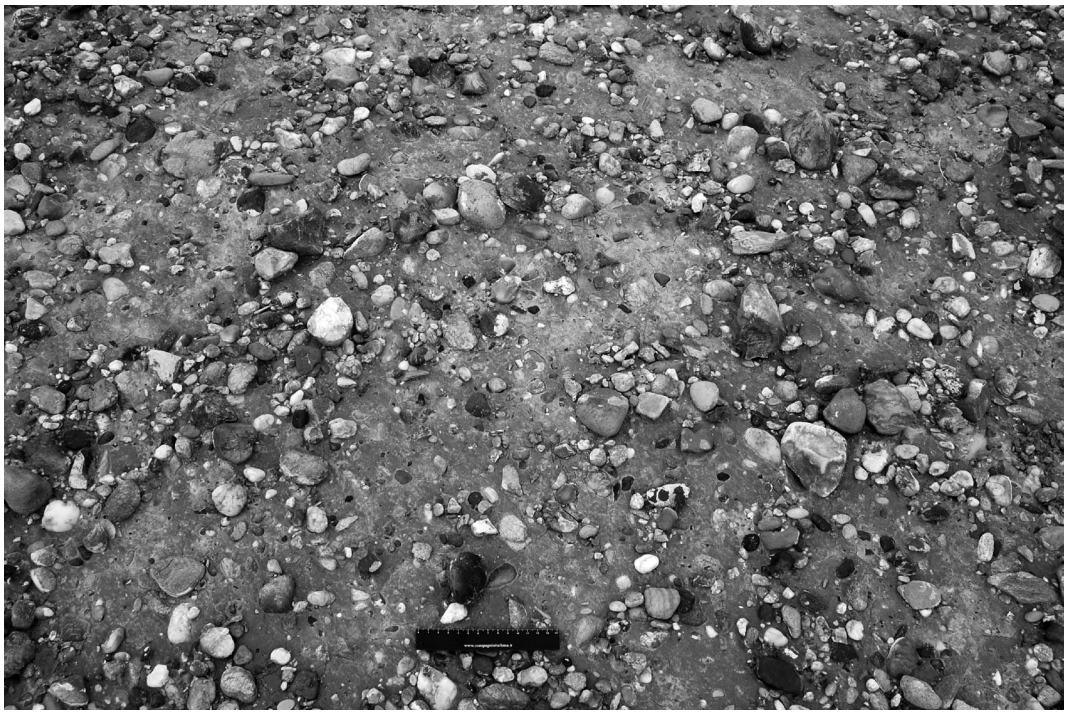

Fig. 14 Close view of the knapping area (27AF), where a number of split cobbles, cores, and flakes were distributed. The scale in the middle is 15 cm.

Fig. 15 Concentration of chipped stones (24AA) besides the Bronze Age shaft tombs (24Z), looking east. The lithic cluster is located at the foot of the gentle slope (ca. 4.5 m in height).

Fig. 16 Cores and a possible hammerstone collected from a 1 × 1 m square in Area 24AA.

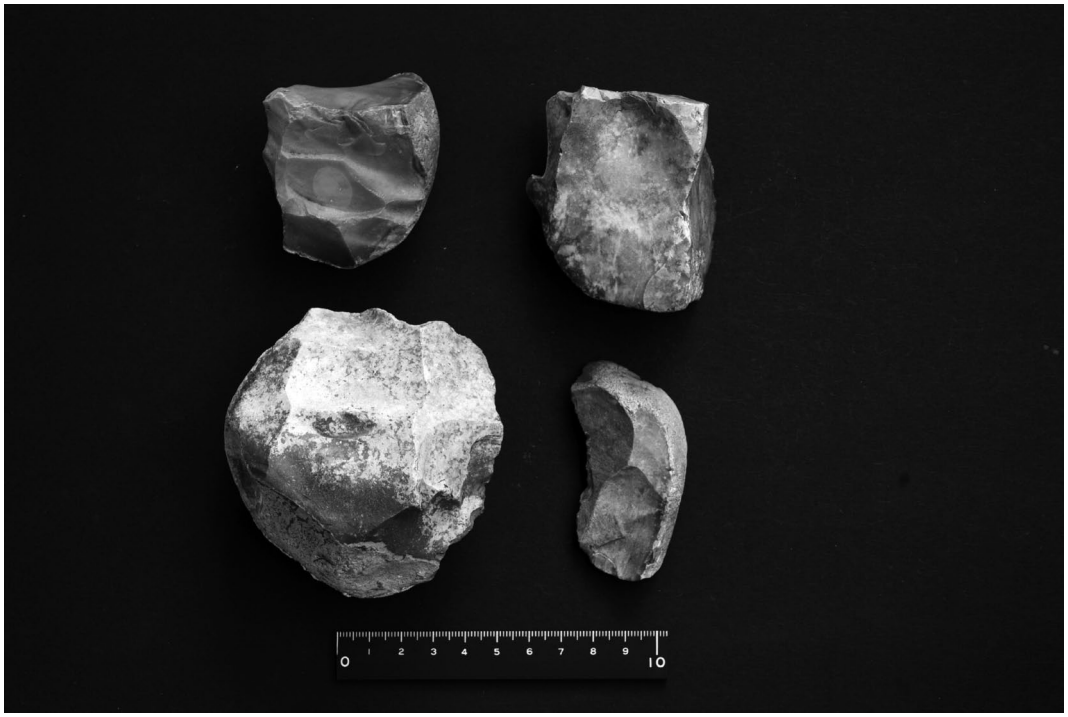

Fig. 17 Cores and a core-edge flake collected in Area 27AJ. The lower two pieces are diagnostic of the Middle Palaeolithic period. The both retain cortex of rolled cobbles.

Fig. 18 Epipalaeolithic chipped stones from 16AT'. The site is located at the edge of the plateau near the spring on Wadi Kharar.

Fig. 19 Southern area in the steppe (Area 10S, ca. 5 km south to the northern end of the Bishri Plateau). At the centre is an isolated Bronze Age mound tomb.

5. Geological and Geographical Field Survey in the Eighth Working Season

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Introduction

In this working season, we concentrated the sample collections (1) for ^{14}C dating, (2) for pollen analyses and (3) for chemical analyses. Samples for ^{14}C dating and pollen analyses were collected mainly from the Square-2 trench at Tell Ghanem al-Ali and from the upstream of the Wadi el-Kharar, and samples for chemical analyses were from the asphalt deposit in the depth of the Bishri Mountains. Possibility of boring for collecting the sediment samples to a depth of 5 meters was also examined.

Collection of Charcoal Samples for ^{14}C Dating

At the site:

By the latest excavation of the Square-2 trench at Tell Ghanem al-Ali site conducted by archaeologists in March 2009, several dark-coloured layers consist of charcoal and fired carbonaceous soil were clearly recognized. For laboratory study on radiocarbon dating of these layers, we have collected systematically more than thirty samples that consist mainly of charcoal and fired carbonaceous soil additionally, from the uppermost to the deepest sediment layers excavated so far (Fig. 1).

At the lowest terrace of the Euphrates:

In order to elucidate the age of formation of the base sediment on which Tell Ghanem al-Ali site is situated, we have already conducted the survey of terraces formed by the Euphrates during the

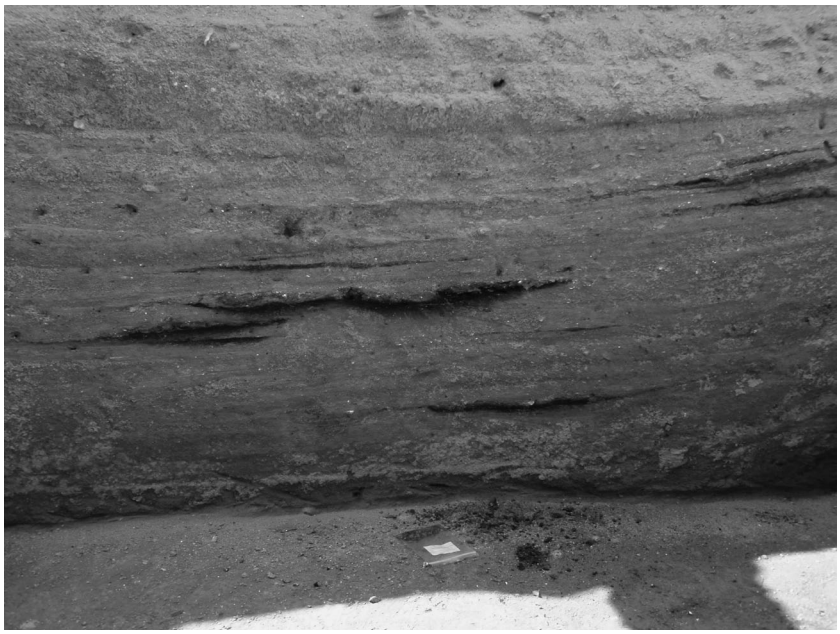

Fig. 1 Western side wall of the 4th level, Square-2 trench. Dark-coloured layers are charcoal and fired carbonaceous soil intercalated in the brownish-coloured silt/sand layers. Width of the picture is ca. 1.5 m.

previous surveys. This time, we have collected a few sediment samples from the outcrops of the lowest terraces exposed along Euphrates. The samples are used for laboratory study on radiocarbon dating as well as for pollen analysis to elucidate the period and palaeo-environment during the lowest terrace formation.

Collection of Sediment Samples for Pollen Analyses

We investigated the geology and topography around Palaeolithic period sites. The sites are located around the spring, 16 M-Q (Kadowaki et al., 2008), upstream of the Wadi el-Kharar. In and around Tell Ghanem al-Ali, the ^{14}C ages of the sediments are younger than 5,000 y. B. P. (Nakamura et al., in prep.). It is important to examine the Palaeolithic sites to reconstruct the long environmental history in this area. The age of the stone tools of the sites is Late Palaeolithic to the first half of the Epipalaeolithic period, i.e., ca. 20,000 y. B. P.

We encountered the modern wells of which walls show good geologic sections near the spring (Figs. 2 and 3). The wells are on the hilly area along the Wadi el-Kharar (Fig. 4). Gypsum beds are cropped out in the wadi and hilly area, and most of surface of the gypsum beds are covered by younger sandy sediments (Fig. 5) of presumably late Pleistocene and Holocene.

Contrast of the water permeability between gypsum and younger, loose sandy sediments probably

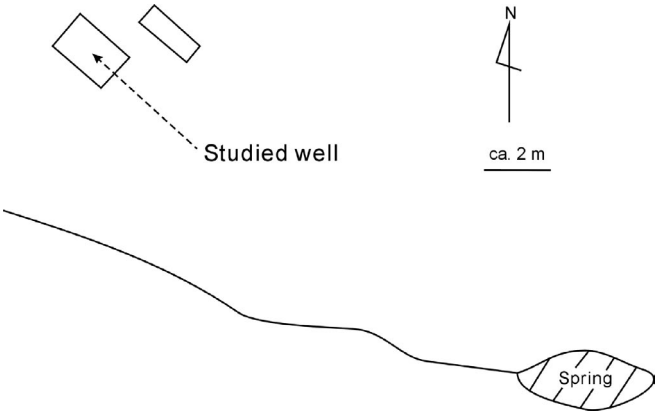

Fig. 2 Rough sketch map of modern wells and spring.

Fig. 3 Walls of studied well.

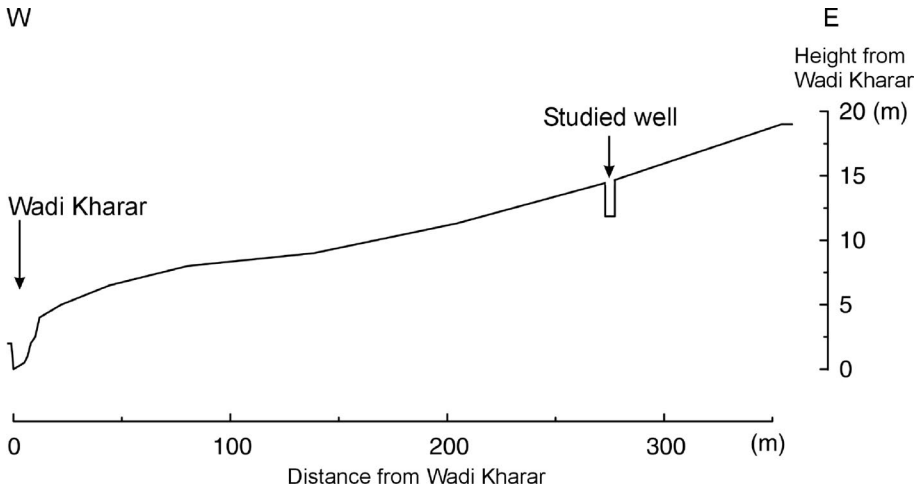

Fig. 4 Topographic profile from Wadi Kharar to studied well.

Fig. 5 Gypsum beds (stratified rocks) and younger sandy sediments (massive brown part).

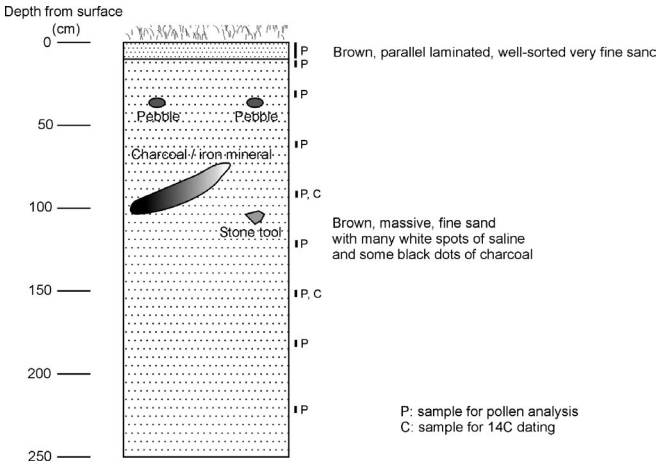

Fig. 6 Geologic profile of northwestern wall of the well.

Fig. 7 Sandy sediments of wall of the well (sickle 30 cm long).

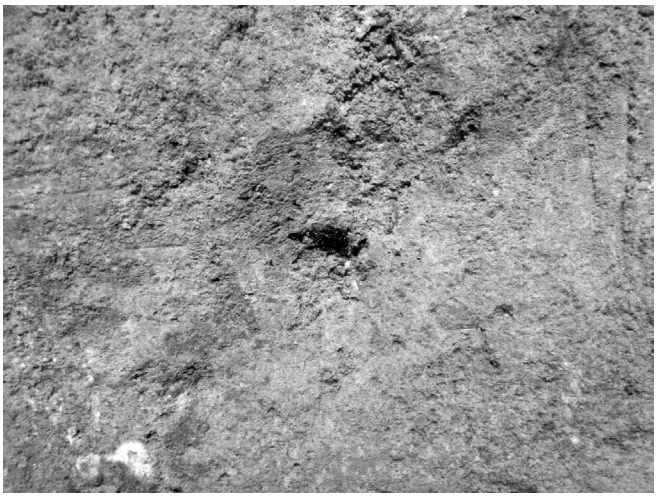

Fig. 8 Stone tool (ca. 3 cm width) in the wall (105 cm depth).

controls groundwater level. Top horizon of the gypsum beds could stop water sinking down, making the spring which Palaeolithic men utilized.

Southern well (140 × 200 cm wide, 260 cm depth) was investigated. The geologic profile of northwestern wall of the well is shown in Fig. 6. The sediments are sandy (Fig. 7), and consist of two parts. The upper part (0–10 cm depth) is likely to be modern sediments, and the lower part is older sediments. A stone tool was found in the lower part (Fig. 8). We took nine samples for pollen and other microfossil analysis. Two charcoal samples for ^{14}C dating are also taken (Fig. 6).

Collection of Natural Asphalt Samples for Chemical Analyses

Two blocks of asphalt (bitumen) were found with archaeological materials in Tell Ghanem al-Ali. The asphalt has been used as a waterproofing agent and/or adhesive material of archaeological pottery. It is interesting to know where these asphalts were collected and transported from.

One of the possible methods to discriminate the asphalt from various places is to compare its organic compound. Asphalt contains various organic compounds with straight chain and cyclic chain. The

isotope ratios of $^{13}C/^{12}C$ of the compound also differ from sample to sample. These are effective methods to discriminate the asphalt.

We collected the natural asphalt samples from two areas in the area. The one place is asphalt mine in the Bishri Mountains. This mine situates far from Euphrates, but produces asphalt with good quality. We sampled three asphalt (T09030901~3) from natural stream bed (Fig. 9). We also surveyed work faces of the asphalt mine in detail as shown in Fig. 10. The asphalt constitutes three layers. The top layer is about 1 m thickness and the 2nd layer has a thickness about 3 m. The 3rd layer is the thickest and the bottom of the layer is not clear. Muddy sandstone or mudstone cover these three asphalt layers. The mudstone may worked as a cap rock. We sampled asphalt at the mining outcrop from top to bottom layers (T09030904~07).

The other sampling place is in 3rd terrace at Zor Shammar, 5 km west of Tell Ghanem al-Ali. The asphalt formation is small and has about 50 cm thickness. The asphalt had permeated into gravel bed. One asphalt sample (T09030908) was collected from there. These naturally occurring asphalts and two asphalt samples from Tell Ghanem al-Ali will be examined their organic compound, elemental compositions and isotopic ratio at Nagoya University, as soon as the samples will be posted.

Fig. 9 Natural asphalt outcrop in the stream bed.

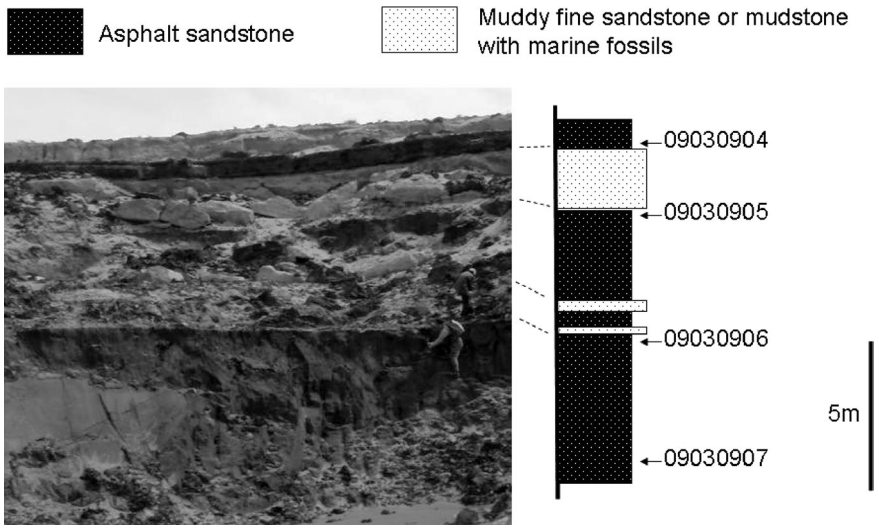

Fig. 10 Work faces of the asphalt mine and its columnar section.

Reference

Kadowaki, S., S. Kume and Y. Nishiaki
2008 Prehistoric Survey around the Site of Ghanem Al-Ali: 5th Research in the Bishri Region (in Japanese), *Newsletter* No. 11 of the Research Project Formation of Tribal Communities in the Bishri Mountains, Middle Euphrates, pp. 3–6.