QĀ' ABŪ ṬULAYḤA WEST: AN INTERIM REPORT OF THE 1997 SEASON

by

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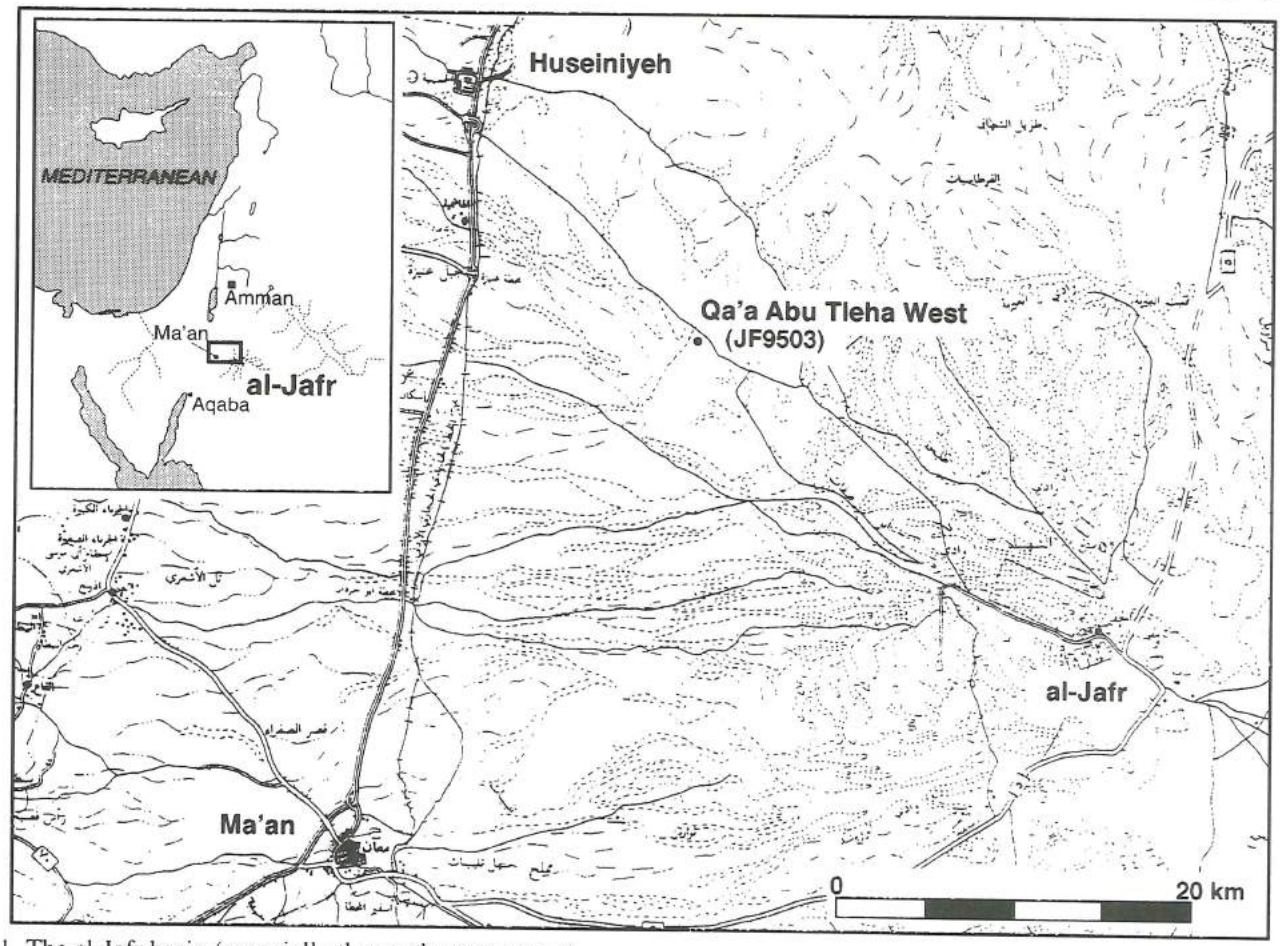
The first season of the al-Jafr Basin Prehistoric Survey and Excavation Project JBSEP was carried out from September 1 to October 10, 1997. This season's work was focused on the excavation of Qā' Abū Ṭulayḥa West – a large manufacturing site of tabular scrapers that was found for the first time beyond the limits of the Negev/ Sinai region. This report outlines the result of the excavation and briefly refers to the points at issue at the present stage.

Site Setting

Qā' Abū Ṭulayḥa West (JBSEP Registration No. JF-9503) was found during our preliminary survey in 1995 and has been briefly introduced elsewhere (Fujii 1996). It is situated in the northwestern part of the al-Jafr basin (Fig. 1). The Desert Highway branches off just south of al-Ḥusayynīyyah, a small town some 50 km north of Ma'ān, and leads directly to al-Jafr; the site is just between these two locations. Global Positioning System (GPS) identified the location: latitude 30°27'59" N, longitude 35°56'57" E, and approximately 980m in altitude.

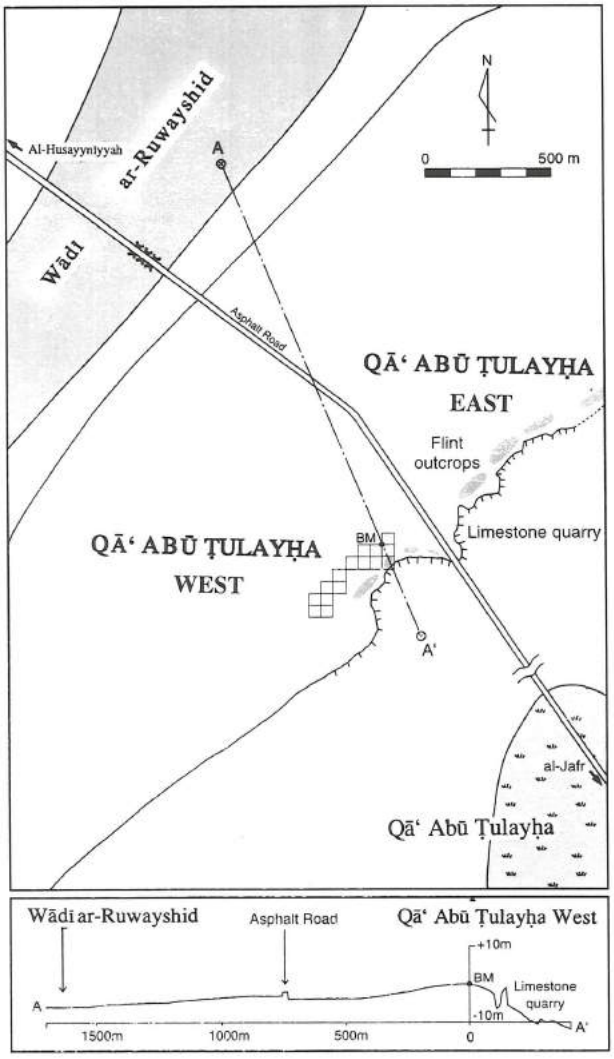
The climatic condition of this area is



1. The al-Jafr basin (especially the northwestern part).

very severe today. The annual rainfall in normal years is no more than 50 mm (Alex 1985: 360; Royal Jordanian Geographic Center 1986: 14). The shortage of rainfall, coupled with the high evaporation rate, results in a typical Irano-Turanian or Saharo-Arabian vegetational environment. Natural stands of trees are only rarely seen. Even shrubs and grasses are restricted to wadi beds and on the fringe of *qā'* (salt pan) during summer.

Topographically, the site is situated on a gentle hill between the two catchment areas: a small salt pan, Qā' Abū Ṭulayḥa, in the southeast and Wādī ar-Ruwayshid in the northwest (Fig. 2). More precisely, it is nearly on the top of the southeastern slope



2. Qā' Abū Ṭulayḥa West and East: schematic figure of the topography.

of the hill, thus facing Qā' Abū Ṭulayḥa. However, as is shown in the elevation map, the flat landscape makes it possible to view the opposite catchment area.

Geomorphologically, this area represents a typical *Hammada* - flint strewn desert (Bender 1968: 9; Cooke *et al.* 1993: 68). Flint pebbles/cobbles cover up the ground except for wadi beds, thus presenting a black distant view. They are characterized not only by heavy abrasion but also by thermal flaking and luster. The long weathering in the harsh environment and the direct exposure to the sun are probably responsible for this phenomenon.

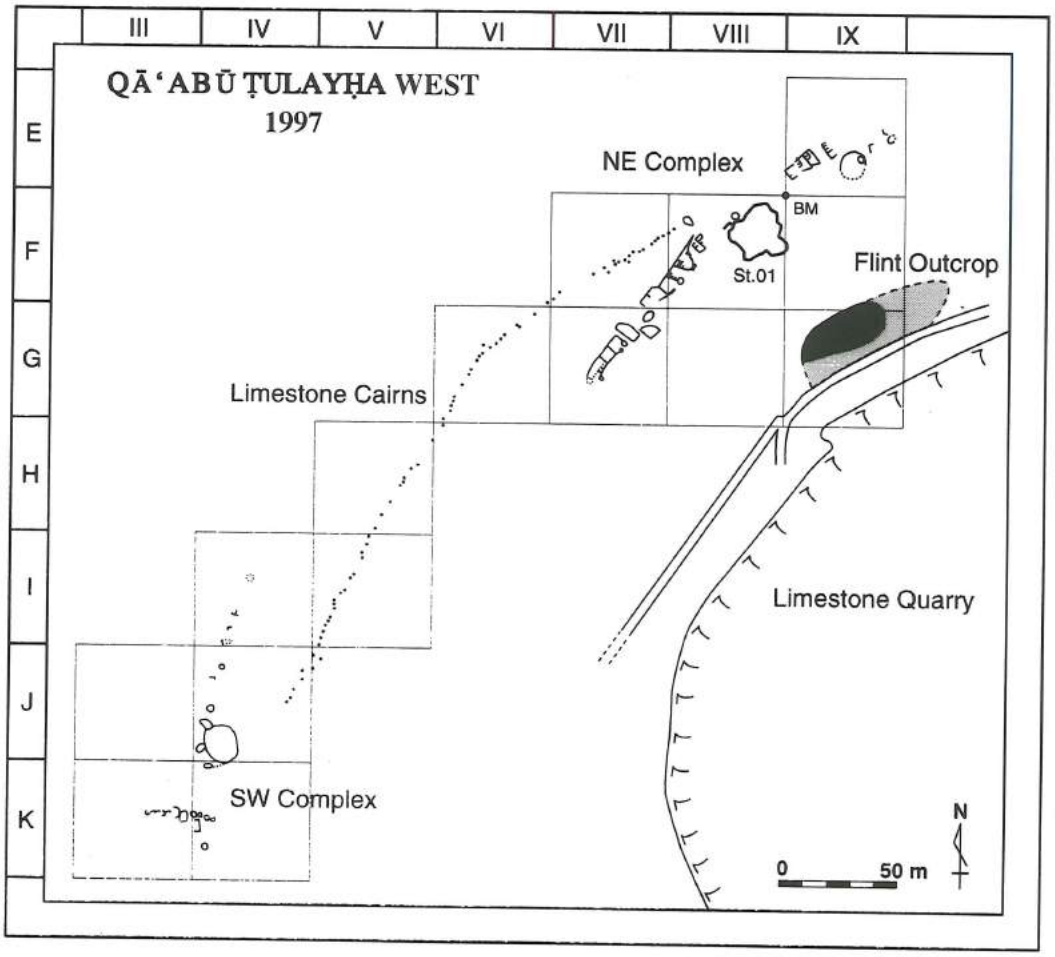
Worth noting is a line of flint outcrops that extends, though intermittently, along the southeastern slope of the hill. Evidently, it was the material source for the mass production of tabular scrapers of this site. It may also partly account for the *Hammada* landscape. Nevertheless, the *Hammada* around the site often includes small angular limestone gravel, which, when densely concentrated, leaves whitish, patchy blots on the black landscape.

Hydrologically, no perennial water source is found around the site. However, some local people told us that heavy rain in winter often causes Wādī ar-Ruwayshid to overflow leaving sporadic ponds. They also informed us that Qā' Abū Ṭulayḥa sometimes presents a marshy landscape in winter.

THE SITE

Qā' Abū Ṭulayḥa West

A large number of structural remains were recognized on the *Hammada* surface (Fig. 3). Needless to say, they do not necessarily belong to the same period. In fact, they differ much in many respects: size, plan, orientation, material, construction method, surface collection and so on. However, it is impossible at present to describe them separately in due order. The fol-



3. Qā' Abū Ṭulayḥa West: the structural complex and the flint outcrop.

lowing is thus a general observation lumping all together.

To date, the site has been divided into three units: the northeastern structural complex (hereafter NE complex), the southwestern complex (SW complex), and the flint outcrop area just between the NE complex and the limestone quarry that has been opened along the southeastern slope of the gentle hill.

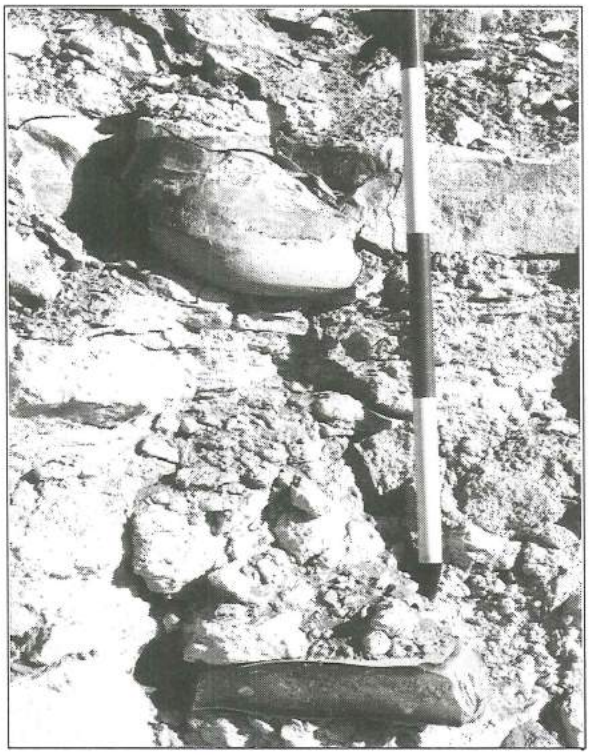
The NE complex consisted of two large, round structures and at least three multiroomed, rectangular ones. Besides, some small structures were scattered around them. In contrast, the SW complex comprised a large round structure and a number of small features, thus giving a different impression than the NE complex. The difference between the two was also discernible in the surface collection. Tabular scrapers and the debitage related to them were densely distributed in the NE complex, especially in and around the large, round structures, but very rarely in the SW complex. These contrasts may be a reflection of some functional and/or chronological difference between both complexes.

Interestingly enough, more than seventy cairns were dotted in line every 5 m in average between both complexes. They looked as if they linked both complexes. Given this, opposite to the view mentioned above, they might imply chronological contemporaneity or at least some functional connection of both complexes. However, the function of these cairns themselves is still unknown. One possible interpretation is that they were a guiding wall for livestock. Another option is that they were twig- or poleholders for drive hunting (Fujii 1996). A reliable assessment must await further investigation.

Incidentally, the exposed section in the limestone quarry revealed that a thick lime-

stone formation contained at least two layers of tabular flint nodules in the upper part (Fig. 4). These flint layers, together with the limestone formation, seemed to ascend northwards, thus resulting in a series of horizontal outcrops mentioned above.

The flint outcrop area some 50 m southeast of the NE complex was included in the southernmost outcrops of this series (Fig. 5). It yielded a great number of flint nodules often with heavy original cortex. They often showed not only platform preparations but also large and thin flaking scars on their surfaces, suggesting their use as cores of tabular scrapers. Besides, a large number of either thermally or artificially detached flakes were scattered around them. In contrast, finished products (tabular scrapers) were very rare in this outcrop area.

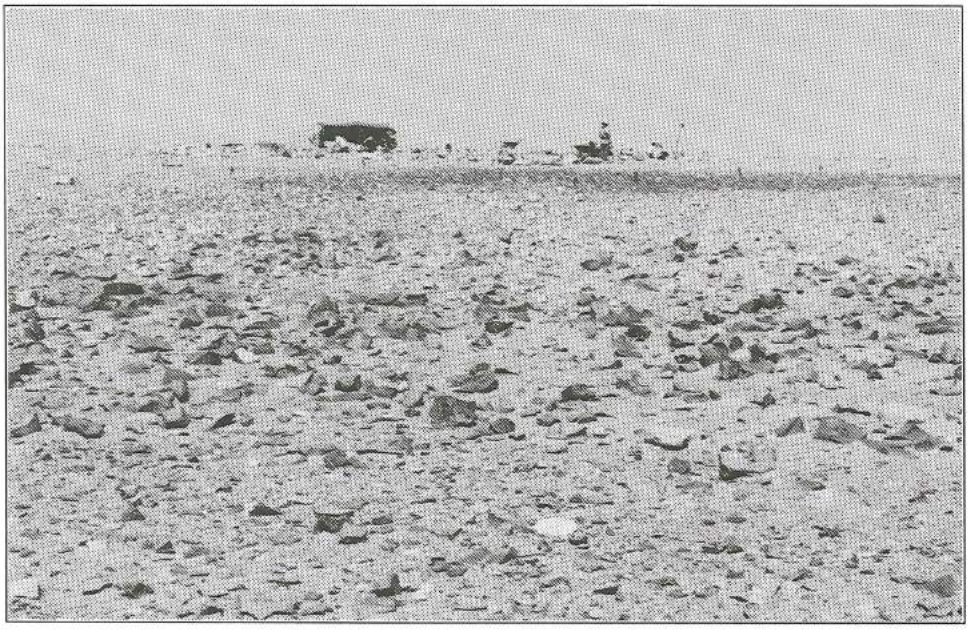


4. Qā' Abū Ṭulayḥa West: the exposed section of the limestone quarry.

All these observations imply that this area was the first stage outdoor atelier for the core preparation and the blank detachment of tabular scrapers. Tool blanks detached here were probably brought to the second stage indoor atelier (e.g., Structure 01, mentioned below) and then retouched into finished products.

Qā' Abū Ṭulayḥa East

This site (JF-9704) was located in this season beyond the al-Ḥusayynīyyah-Jafr local road (Fig. 2). Though a comparison with the western counterpart, Qā' Abū Ṭulayḥa West, might provide valuable suggestions, it is irrelevant to the main subject of this paper. Suffice it to say that Qā' Abū Ṭulayḥa East included few structures but contained a great number of tabular scrapers



5. Qā' Abū Ṭulayḥa West: fling outcrop area (front) and Structure 01 (rear).

and the debitage related to them (Fig. 6). Evidently, the mass production of tabular scrapers was made here also using the flint outcrops that extend over both sites.

Overall Picture

When both sites are put together, the total site area roughly measures 2 km long by 100 m wide. An enormous volume of cores, tool blanks, and finished products are densely distributed there. In addition, flint outcrops, though intermittently, extend more than 2 km along the southeastern slope. Obviously, Qā' Abū Ṭulayḥa West (and perhaps East also) is a large manufacture site of tabular scrapers. It is of great significance that the site is located in southeastern Jordan, because no knapping sites of tabular scrapers have been found beyond the limits of the Negev/Sinai regions. Qā'Abū Ṭulayḥa West indicates the need to revise the discussion on the trade system of tabular scrapers. Of further significance is the possibility that Qā' Abū Ṭulayḥa West is not a simple knapping site but a social complex with a variety of structural remains.

THE EXCAVATION OF STRUCTURE 01

Before starting the excavation, we covered the site diagonally with a 50 m x 50 m major grid system. Then we subdivided one square, Square F-VIII, with a 5 m x 5 m minor grid system. Structure 01, our main concern in this season, is situated in the northeastern quarter of Square F-VIII (Figs. 3 and 7). This location corresponds roughly to the center of the NE complex.

6. Qā' Abū Ṭulayḥa East: flint outcrop area (front) and limestone quarry (rear left).

Surface Collection

A systematic surface collection was made in advance of the excavation, focusing on Square F-VIII and its northern and eastern surroundings. A total of 144 minor squares was thus surface-surveyed.

The collection included at least three kinds of assemblages: 1) a heavily abraded and patinated, seemingly Paleolithic, blade-oriented assemblage, using rather fine-textured, smaller flint nodules; 2) a much less abraded and patinated, seemingly Paleobedouin-like, flake-oriented one using coarse-textured, smaller flint pebbles; 3) a slightly abraded and patinated, flake-oriented assemblage using fine-textured, often cortical, larger flint nodules.

Of the three, the former two were much less frequent. Further, the distribution of the artifacts of both assemblages correlated rarely with the location of Structure 01. Both observations indicated that these artifacts were basically irrelevant to the structure, thus making it possible to exclude them from the primary registration. In contrast, the last assemblage was highly relevant. It included hundreds of tabular scrapers and the debitage related to them. Further, there was a close correlation between

7. Structure 01: general view from east to west.

their distribution and the location of Structure 01. This enabled us to consider them to be not far from the original context. Accordingly, all findings belonging to the last assemblage were registered as artifacts from Layer 0 of each minor square and incorporated with the subject of the examination.

Stratigraphy

The stratigraphy of Structure 01 is summarized as follows (Fig. 8):

Layer 0: surface collection layer mentioned above.

Layer 1: surface layer in the strict sense. Buff to light brown, sandy or silty soil layer including a large number of small, abraded flint pebbles. Usually 1-2 cm thick, but more than 10 cm in drifts such as both sides of the stone walls.

Layer 2a: buff and solid soil layer with a thickness of about 2-5 cm, but the solidity and thickness vary depending on the spot.

Layer 2b: buff to light brown soil layer about 5-10 cm thick. Fairly compact, but sometimes loose depending on the spot.

Layer 3: reddish brown, sandy soil layer about 10-30 cm thick.

Layer 4: reddish brown and very compact soil layer often including angular limestone gravel. The thickness is still unknown due to the initial stage of a deep trench.

The archaeological implications of each layer, from the lower to the upper, were as follows. First, Layer 4 did not relate to Structure 01, although the upper surface of this layer represented the original ground level to Structure 02 mentioned below. Next, Layer 3 was the fill for Structure 02, but the upper surface of this layer corresponded roughly to the original ground level of Structure 01. Layer 2b and Layer 2a were the fill for Structure 01. However, some hearths were dug from them, especially from the upper surface of Layer 2b. This suggests that these two layers included secondary floor levels. Lastly, Layer 1 was the thin surface layer; and Layer 0 was a fictitious layer, not carrying a true sediment and representing the surface collection.

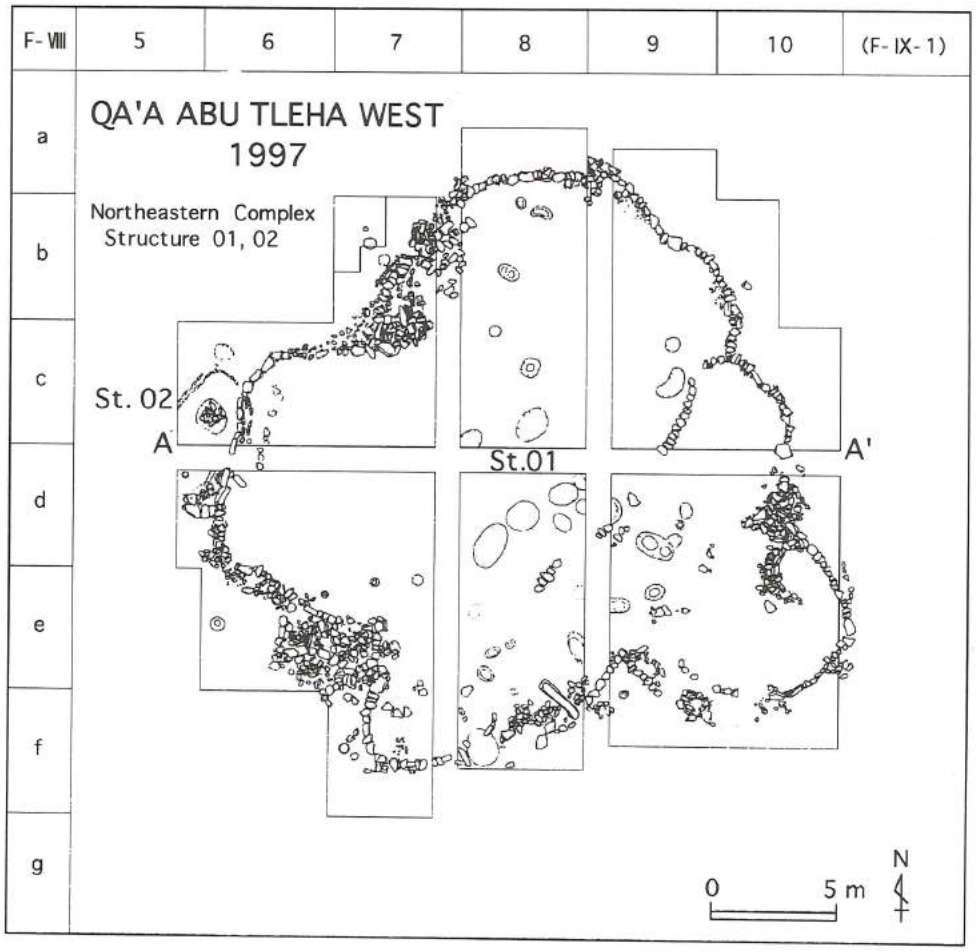
Construction Material

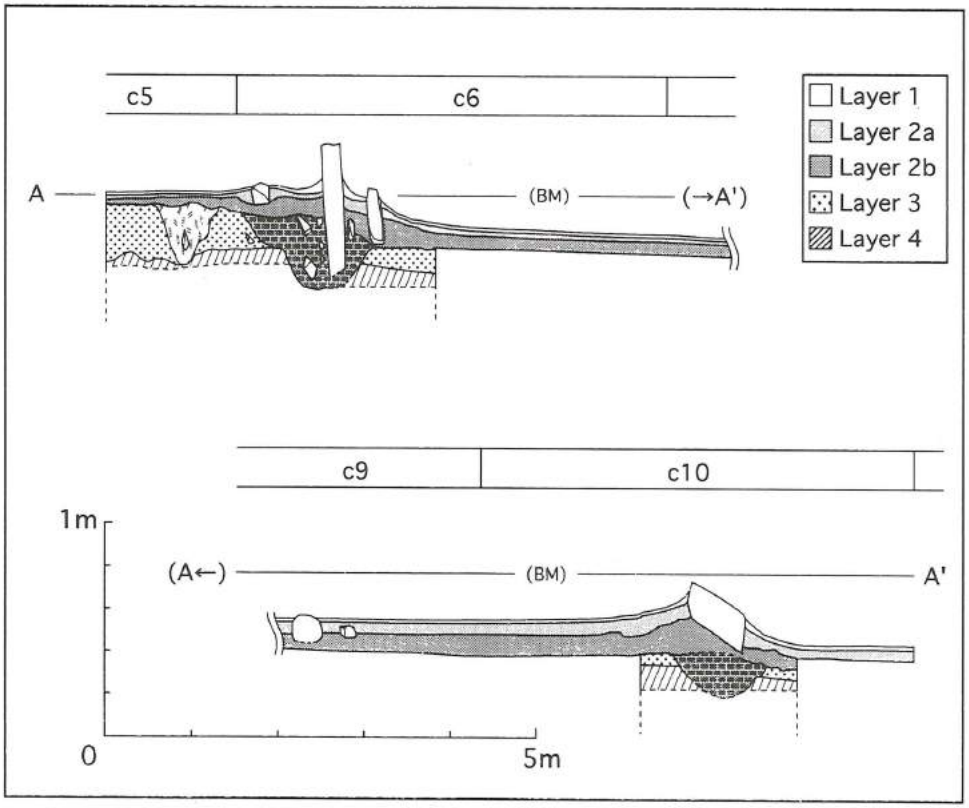
Round or angular limestone cobbles/boulders were used as the main material for construction. They were probably collected and/or quarried in the former exposure below the slope and brought uphill. Noteworthy was the use, though much less frequent, of flint masses; even discarded cores were reused for the wall construction. Interestingly, they were concentrated in the southeastern wall of the structure, suggesting that they were brought from the nearest flint outcrop some 50 m southeast of the structure.

Construction Method

The east-west section suggests that a foundation ditch about 1-1.5 m wide and 30-50 cm deep was dug in advance before piling up stones for walls. Next, limestone gravel and soil were filled up into the ditch in order to strengthen the foundation. Then a single row of larger limestone or flint cobbles/boulders was put horizontally, but sometimes in an upright position, as foundation stones. Lastly, smaller wall stones were piled up, but the original height of the wall was difficult to assess due to the collapse. Nevertheless, the volume of fallen stones scattered around the foundation gave the impression that it was about 1 m high. Given this, the wall might have been something like a windbreak under a tent-like simple structure (e.g., Cribb 1991: 102-6; Bienkowski and Chlebik 1991: Fig. 17).

Of special interest was the westernmost wall. Here the foundation ditch of Structure





8. Structure 01 and 02: general plan and east-west section.

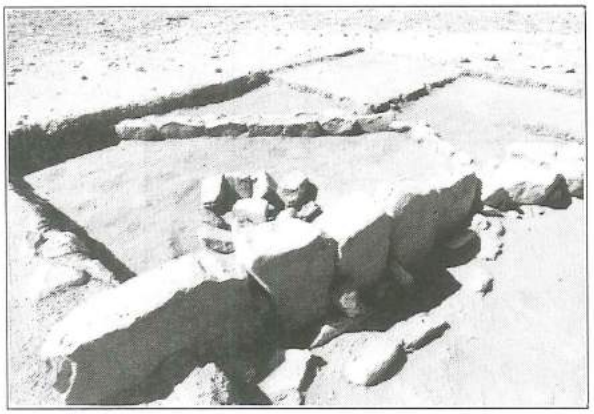
01 came across the previous foundation stones of Structure 02. Instead of removing them, Structure 01 utilized them as a kind of inner recess wall to hold larger limestone boulders in an upright position (Fig. 9).

The floor had no special treatment. However, a rough cleaning of the original ground was possibly made, since some pits outside the structure contained a large amount of small, abraded flint pebbles and sandy soil. The shallow pit shown in the east-west section, for example, was filled up with such rubbish.

In summary, Structure 01 was a ground type structure with stone-built, low walls piled up in a foundation ditch.

General Plan and Small Features

The surface observation in 1995 had estimated Structure 01 to be roughly round in general plan (Fujii 1996). However, the excavation unveiled a rather different picture; it turned out to be a composite structure that consisted of five or six smaller units either semi-circular or roughly rectangular (see Fig. 8). These units were joined with each other around the courtyard, thus representing a flower-like general plan with a diameter of about 25 m. The size and the total plan of this structure reminded us of the large, composite structure found at Ademe (or al-'Uẓayma) – a Chalcolithic site near Tulaylāt al-Ghassūl (Stekelis 1935; Worschech 1991: 60-62).



9. Structure 01 (the westernmost unit) and Structure 02.

Incidentally, the westernmost unit seemed to be different from the others in general plan. Also noteworthy was the concentration of larger limestone boulders in this unit. These imply that this unit was of special significance. However, one should give careful consideration to the fact that this unit utilized the previous foundation wall of Structure 02 in order to uphold the upright foundation stones. This might have resulted in the straightening of the wall of this unit. The slight curving of the wall outside the previous structure may support this view.

As for small features inside the structure, a discontinuous inner wall was found in the southeastern quarter. The function of this inner wall is still unknown. However, the discontinuity and the rare occurrence of fallen stones suggest that this was not a wall in the strict sense but a simple partition or a foundation for posts. Besides, a small, bin-like feature was annexed to the southeastern unit of the structure. Though it yielded one hearth and some tabular scrapers, nothing can be said about the function.

Also difficult to interpret are the concentrations of limestone cobbles/boulders that were found at both ends of the westernmost structural unit. In view of the volume and the density, it is unlikely that both concentrations represent the natural state of fallen stones. This is also supported by another line of evidence: 1) a pit-like depression was recognized at the base; 2) flat limestone cobbles seemed to have been paved at the base. A possible interpretation is that both concentrations were a kind of depot or dustbin for the remaining material of the construction.

Lastly, no postholes were found throughout the structure despite careful excavation.

Hearths

A total of 33 hearths was found in and around Structure 01. Except for a few hearths found outside, most of them oc-

curred in the eastern half, especially in the southeastern quarter, of the structure.

The hearths were rather uniform in general plan: roughly round to oval. However, they varied to some extent in size. Smaller ones measured about 50 cm in diameter and about 5-10 cm in depth; larger ones, roughly 1-2 m in diameter but relatively shallow (about 10-15 cm deep). In general, they had no special bottom treatment, but a few were equipped with a pavement made of tabular limestone pebbles. No remarkable differences in the fill were discerned among them. It usually consisted of light grayish ash, a small amount of charcoal, some volume of isolated limestone gravel, and/or slightly burned, sandy soil. Noticeably, the fill rarely contained flint artifacts, suggesting that no heat treatment was applied to the production of tabular scrapers.

The point at issue is the stratigraphical placing of each hearth. Some were dug from the upper surface of Layer 3, the original floor level of the structure; others from the upper levels, mostly from the upper or middle surface of Layer 2b. It follows that the structure included at least two or three habitational phases. C14 samples from each hearth will hopefully provide some dating evidence.

Chipped Stone Artifacts

Structure 01 yielded some thousands of flint artifacts (Fig. 10). Since the examination is still underway, only some general points will be made below.

Material: The material for the chipped stone artifacts was rather uniform: buff to dark brown flint with fairly fine texture. Light buff to dark brown, thick original cortex was often recognized on their dorsal surfaces.

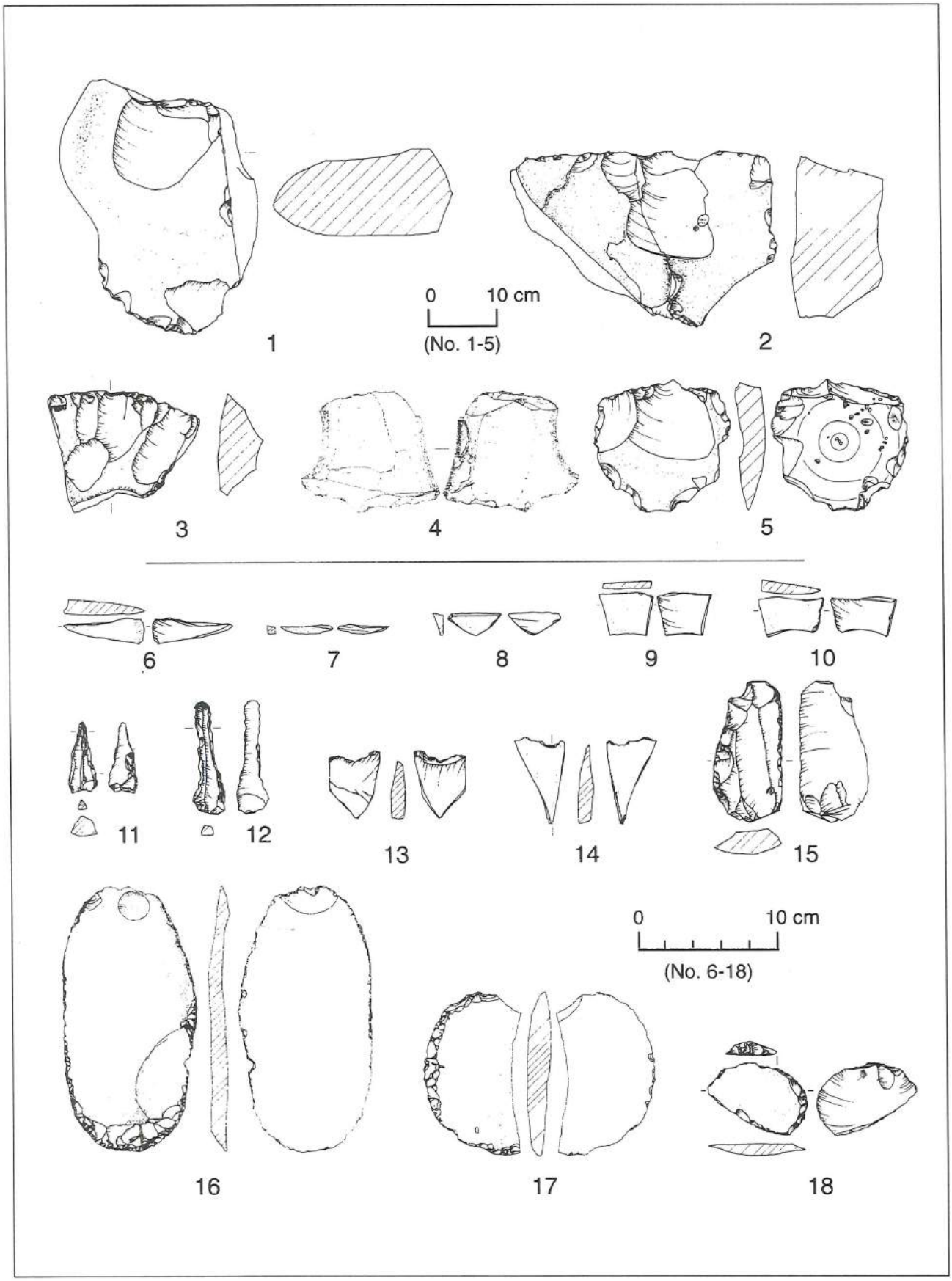
Inventory: To date, no remarkable differences have been confirmed among layers. Tabular scrapers and the debitage related to them had an absolute majority in the flint collection of each layer. Other tool classes were extremely scarce. Also infrequent were cores, even including the ones that were reused for the wall construction. These frequencies contrasted well with those in the flint outcrop area mentioned above, probably suggesting that Structure 01 was the second stage atelier for retouching tool blanks into tabular scrapers.

Cores: To date, four types of core material have been recognized: 1) tabular flint nodules, 2) cubic to amorphous ones, 3) robust flakes either thermally or artificially detached, 4) small- to medium-sized flint pebbles. Of the four, the former two were in majority and the third came next; the last one was infrequent. Typologically, cores included various types: single (Fig. 10: 2, 3), opposed (Fig. 10: 4), 90 degree opposed (Fig. 10: 1, 5), change of orientation, and other miscellaneous ones. Overall, the frequency descended in due order. As for the platform preparation, the plain or cortical type was predominant. Faceted and other types were less frequent. It seemed that these frequencies accorded roughly with those of the platforms left on tabular scrapers, although a firm conclusion must await further examination.

Incidentally, cores were often wasted. A single or at most a few discontinuous flaking scar(s) were left on their cortical surfaces (Fig. 10: 1, 2, 4). The rich occurrence of flint outcrops probably made it possible to waste raw material. The consistent preference of cortical blanks may also have been responsible for the waste.

Debitage: Unmodified flakes and blades were the most frequent in debitage classes with the former being predominant. They were mostly long and/or wide and often covered with original cortex, probably suggesting their use as tool blanks of tabular scrapers.

Of special interest was the characteristic debitage (Fig. 10: 6-10): provisionally called *tabular scraper trimming elements* (hereafter *TSTE*). Though no refitting has



10. Chipped stone artifacts from Structure 01.

been so far successful, it is evident that *TSTE* originated in the trimming process of tabular scrapers, for the following reasons: 1) it occurred in hundreds, thus corresponding roughly with the frequency of tabular scrapers; 2) the back edges of tabular scrapers were often snapped (Fig. 10: 17, 18), implying the origin of *TSTE*; 3) the retention of a thick layer of original cortex characterized both tabular scrapers and *TSTE*, thus linking both in relation to raw material; 4) *TSTE* included not only lunate/triangle (Fig. 10: 6-8) but also trapeze/polygonal (Fig. 10: 9-10) morphologies, reflecting a wide variety of trimming technique on tabular scrapers.

Larger and usually non-geometric *TSTE* were probably derived from the rough shaping of tool blanks; and smaller, often geometric ones, from the fine adjustment to enable a tight grip. Given this, the discontinuous back edges often observed on tabular scrapers do not necessarily indicate accidental breakage. They are perhaps rather the result of intentional trimmings, although the trimmings include unsuccessful blows, which might look like breakage.

Though many references have been made to the typology, the function, and the distribution of tabular scrapers, little is known about the technology (Rosen 1983, 1997: 71-75). This may be due to the paucity of information on debitage left in quarry sites. In this respect, *TSTE* could provide a clue to a better understanding of tabular scraper production strategy.

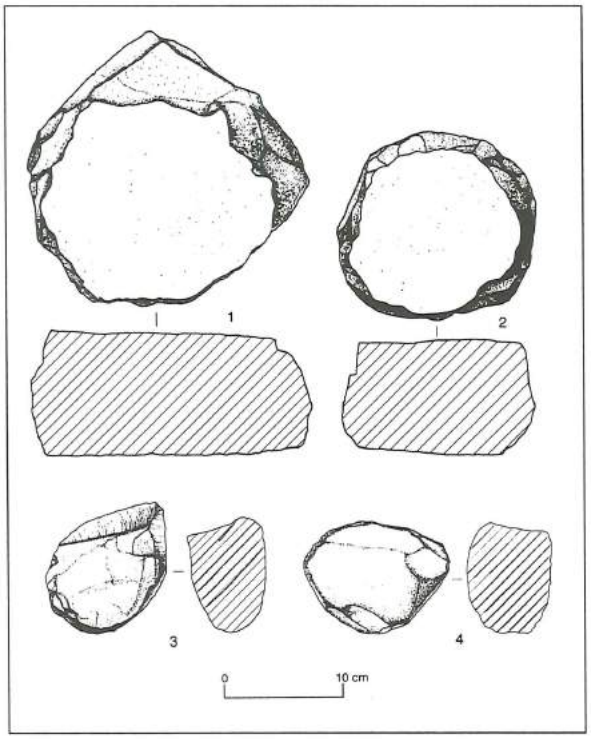
Tool classes: Hundreds of tabular scrapers occurred in Structure 01. This tool class was the overwhelming majority, making up almost 100 % of tool class samples. Both bulbar thinning (e.g., Fig. 10: 16) and grinding of cortical surface were often recognized, but the incision was totally absent.

Typologically, the tabular scrapers were divided into three types: endscrapers (Fig. 10: 16), sidescrapers (Fig. 10: 17-18), and the composite of both. However, the division was often arbitrary, because tool blanks trimmed into a wide but short morphology often caused confusion in type identification. For example, the working edge of a sidescraper was often made on the distal end, not on the side (lateral edge), of such tool blanks (e.g., Fig. 10: 17). The opposite was also true; that of an endscraper was often made on the lateral edges, not on the distal ends, of the tool blanks. This disagreement between the morphology of working edges and their positioning often perplexed us. (The typology here is based on the former.) Technologically, as mentioned above, the high frequency of trimming on the back edges was noted.

Other tool classes were quite rare. The collection included only a few retouched blades (Fig. 10: 15) and borers/perforators (Fig. 10: 11-12). Of interest was a few notches on *TSTE*, although they may simply represent accidental edge damage (Fig. 10: 13-14). Except for the last ones, these ordinary tools were commonly non-cortical and relatively small-a marked contrast with tabular scrapers. It seems that smaller cores (type 4 mentioned above) were a major supplier of tool blanks for these ordinary tool classes. Given this, the prehistoric flint knappers of this site may have used at least two different core reduction strategies: one for tabular scrapers and the other, though much less frequent, for ordinary tool classes.

Groundstone Artifacts

Groundstone artifacts were quite rare. No querns and pestles occurred; only two limestone anvils (Fig. 11: 1-2) and some basalt/limestone hammerstones (Fig. 11: 3-4) were separately recovered. Unfortunately, neither tabular scrapers nor *TSTE* were worked on these groundstones. However, it is most likely that they were used for the production of tabular scrapers, especially for the trimming and retouching processes. The slight striation and/or concavity at the ends of hammerstones may serve as evidence for



11. Groundstone artifacts from Structure 01.

this view. Nevertheless, the upper surfaces of the anvils were too smooth to be working surfaces that had been repeatedly in contact with hard and sharp edges of tabular scrapers. Possibly, they might have been used for grinding the cortical surfaces of tabular scrapers. The frequency of such products may support this hypothesis. Anyway, both hypotheses need to be tested by micro-wear analysis.

Incidentally, the material sources of these groundstone artifacts are rather easy to estimate. Limestone cobbles were evidently obtained from the former exposure below the hill. As for basalt cobbles, the nearest outcrop so far confirmed is situated some 10 km northwest of the site.

Pottery Sherds

Only a few pottery sherds occurred in Structure 01. They were chaff-tempered, coarse to fine wares with reddish surfaces and black cores. My first impression was that they were similar to samples of the Early Bronze age. However, they were too fragmented and isolated to be a reliable indicator for a chronological assessment.

One should rather take notice of the archaeological implications of the scarcity itself. One possible interpretation is that the structure was exclusively used for tabular scraper production and that domestic activities were performed in other places within the site. This might be plausible from the viewpoint of intra-site spatial organization. Nevertheless, this hypothesis is hardly tenable considering the substantial absence of pottery sherds throughout the site. An alternative is that this structure was used during a short stay of flint knappers who were poorly equipped with hard wares. This view seems more plausible at the moment. Given this, Qā' Abū Ṭulayḥa West (and East also) might represent a cultural horizon not yet fully confirmed in the Levant – Pre-Pottery Chalcolithic or Pre-Pottery Early Bronze Age among pastoralists.

THE EXCAVATION OF STRUCTURE 02

Structure 02 had been buried under the *Hammada* surface (squares c5, c6, and d5), and was found during the excavation of the westernmost unit of Structure 01. Stratigraphically, Structure 02 is earlier than Structure 01. Thus it provides evidence of another aspect of Qā' Abū Ṭulayḥa West.

Stratigraphy and General Plan

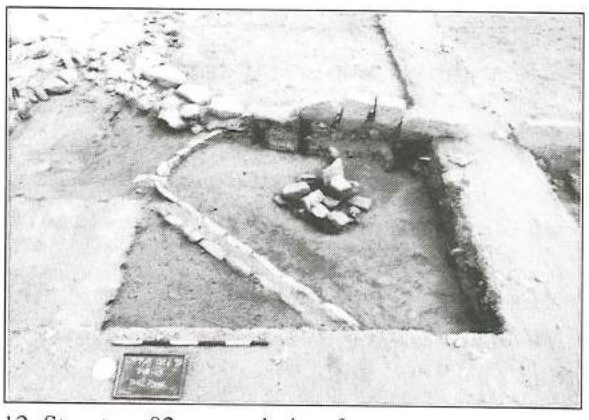
The ground level of Structure 02 coincided roughly with the upper surface of Layer 4. On the other hand, that of Structure 01 corresponded with the upper surface of Layer 3, which represented the fill to Structure 02. Further, as mentioned earlier, the eastern foundation wall of Structure 02 was reused to hold the upright stones of the westernmost unit of Structure 01. Thus stratigraphically, Structure 02 is earlier than Structure 01, although further investigation is necessary to assess how big the chronological hiatus was between the two.

Typologically, Structure 02 was quite different from Structure 01. It was a small, single-roomed structure (ca. 5 m x 3 m) with roughly rectangular general plan (Fig. 12). Further, the area of this structure was less than one twentieth of that of Structure 01. It is however to be noted that the gap both in plan and in area is considerably narrowed when compared with each unit of Structure 01.

Construction Material and Method

With respect to the material itself, Structure 02 was similar to Structure 01; it mostly used limestone but sometimes flint material. However, there were a few critical differences between the two structures. First, Structure 02 included no cubic flint masses and exclusively used tabular flint nodules. Second, it used no flint cores. Third, it used both limestone and flint material trimmed in advance to a standard size (ca. 30 cm wide, 30 cm long, and 10 cm thick). In summary, the construction material of Structure 02 was uniform both in size and in morphology. This was another contrast to Structure 01 that randomly used limestone and flint cobbles/boulders, irregular both in size and in morphology.

As for the construction method, the first stage of Structure 02 was similar to that of Structure 01. A foundation ditch, though narrower and shallower in this case, was dug in advance following the expected general plan. However, the second stage was much different from that of Structure 01. Two rows of foundation stones were put in an upright position along both sides of the foundation ditch – a long tradition in the inland Levant since the Neolithic. (Nevertheless, the foundation stones often changed into a single row especially when the material ran short. That may also be true for the northern part of Structure 02.) Then limestone gravel and soil were filled up between the two rows of upright stones in order to hold their standing positions. Since the height of the upright stones was slightly larger than the depth of the foundation ditch, their upper ends stood out on the ground level.



12. Structure 02: general view from west to east.

Noteworthy was the scarcity of loose stones around the foundation ditch. This suggests that the structure had no substantial stone wall on the foundation. Possibly, wooden posts for a tent-like simple structure might have been set between the two rows of the materials of which the upper ends slightly stood out on the ground.

Small Features

Small features were very rare in Structure 02; only one small hearth occurred on the southern part of the floor. This hearth was different in some respects from the hearths of Structure 01. First, it was very small in diameter (ca. 30 cm) but relatively large in depth (ca. 20 cm deep). Second, the fill consisted of black ash and a number of larger bits of charcoal. Third, it contained some amount of animal bones. All these contrasted well with the traits of the hearths of Structure 01. However, what these differences represent is still obscure. A possible interpretation is that this hearth was exclusively used for cooking. Given this, it is another contrast to Structure 01 where heating seemed to be the primary function of the hearths.

Incidentally, the figure of the general plan shows a pile of limestone cobbles in the northern part of the floor (see Fig. 8).

Actually, this represents a vestige of a pit dug from the upper level (perhaps Layer 3 or 2b). It may be included in a line of rubbish pits related to Structure 01.

Artifacts

The scarcity of artifacts characterized Structure 02, although the damage of the southern half may be partly responsible for that. No pottery sherds occurred. Further, the flint collection consisted of some flakes/blades only; neither tabular scrapers nor points/ arrowheads were included. The total absence of distinctive artifacts makes it difficult to assess the chronology of this structure.

FAUNAL AND FLORAL EVIDENCE

Both faunal and floral evidence was very poor despite the application of 2 mm mesh dry sieving to the ash fill of hearths and some floor sediments.

Only a small amount of animal bones was recovered. The identification is now underway, but no significant results can be expected due to the small size of the samples and their poor state of conservation. The extreme scarcity of animal bones puzzled us, because we had supposed a pastoral and/or hunting subsistence strategy for the prehistoric inhabitants of this site.

It is unlikely that the intra-site spatial organization was responsible for the paucity, since animal bones were quite rare not only in Structure 01 but also throughout the site. The post-deposi-tional history (i.e., extreme aridity, direct exposure to the sun due to the poor sedimentation, and marked difference of temperature both in a day and in a year) possibly caused the fragmentation of samples. Further, the strong wind in the al-Jafr basin might have dispersed them completely.

Also scarce was floral evidence; only a small amount of charcoals was retrieved from the fill of hearths. Their size, morphology, and texture reminded us of perennial shrubs growing in wadi beds around the site. The prehistoric inhabitants possibly used the same fuel as that used by modern local Bedouins.

Interestingly enough, there was a marked difference in size of charred twigs between Structure 01 and 02. Samples from the former were much smaller than those from the latter. Climatic desiccation and/or overexploitation may have been responsible for the difference.

Besides, no charred seeds were retrieved. Their absence may be a reflection that most of the hearths, especially those in Structure 01, were exclusively used for heating. One may also suppose that seed foods were floured in advance to carry over a long distance. This is plausible in light of the surrounding environment unsuitable for agriculture. However, more reliable assessment must await the water-flotation using the stock of the fill of the hearths.

Discussions

Since the excavation is still in progress, only a few general points will be made here focusing on the chronology and the site function. To conclude, the function of tabular scrapers will be briefly discussed.

Chronology

It is difficult at present to make a chronological assessment of Structure 02, because it yielded no distinctive indicators. The total absence of pottery sherds and tabular scrapers may suggest a pre-Chalcolithic character of the structure. Nevertheless, the lack of points/arrowheads casts doubt on this view. In sum, the comparison of artifacts has been so far fruitless. Also ineffective is the comparison of structural remains. Though a number of parallels have been found in the arid regions (e.g., Wādī al-Jilāt), they seem to range from the middle PPNB to the Late Neolithic (Garrard *et al.* 1994: 75-85) or even in a later period (e.g., Waechter *et al.* 1938: Plan I). Thus the comparison of structural remains cannot be a determinant.

What can be definitely said at present is: 1) no tabular scrapers were found in Structure 02, indicating a critical difference from the cultural horizon of Structure 01; 2) a thick sediment (ca. 10-30 cm deep) intervened between the original ground level of Structure 02 and that of Structure 01, possibly implying a considerable temporal gap between the two. In light of the above evidence, the dating it to the Neolithic (and perhaps to the late Neolithic) seems plausible. However, this is nothing but a hypothesis. A reliable assessment must await further excavation and the C14 dating now in progress.

In contrast, the rich occurrence of tabular scrapers makes it possible to place Structure 01 to the cultural horizon from the Chalcolithic to the Early Bronze Age. However, to be more specific is difficult at the moment, since 1) no reliable seriation has been established about tabular scrapers, 2) more sensitive indicators (e.g., pottery sherds) are virtually absent. At most, the absence of incised tabular scrapers may indicate a Chalcolithic date of this structure. However, as Rosen claims (Rosen 1997: 75), one should rather consider the presence/absence of incised tabular scrapers as a regional difference, and not as a reliable indicator for chronology. Also so far ineffective is the comparison of structural remains. Though the similarity between Structure 01 and that of Ademe is suggestive, a single example is far from determinative. The C14 dating now in progress will hopefully provide a clue to further specification.

Site Function

Qā' Abū Ṭulayḥa West (and perhaps East also) is evidently a large manufacturing site of tabular scrapers. This is supported by a line of evidence: 1) the rich occurrence of both finished products and the debitage related to them (cortical cores, large and cortical tool blanks, and TSTE); 2) the occurrence, though rare, of anvils and hammerstones; 3) the site location adjacent to flint outcrops. In addition, the complete absence of artifacts related to domestic activities may also serve as evidence.

The mass production of tabular scrapers at Qā' Abū Ṭulayḥa West (and East) might account for some outliers that do not fit the logarithmic fall-off model of the frequency with the western Negev as starting point (Rosen 1983). The relatively high frequency at Jāwā (Betts 1991: 140-148), for example, could be related to the north-south transhumance (including the al-Jafr) of early pastoralists. The same can be said about some Early Bronze Age sites in the southern Jordan Valley - Tall Umm Ḥammād (Helms 1987: 49-81; Betts 1992: 122-31) and Tall Iktanū (McCartney 1996: 143-144), for example. The comparatively frequent occurrence of tabular scrapers at these sites might partly reflect the trade with early pastoralists who possibly made the transhumance between the Jordan valley and its eastern hinterland. However, one should refrain from further speculation. What can be said with certainty at present is that the discovery of Qā' Abū Ṭulayḥa West, as Rosen forecasted (Rosen 1983: 84), leads us to the revision of the fall-off model with a single starting point.

Besides, a number of questions are still to be addressed: for example, where did the flint knappers perform domestic activities during their stay at this factory? Were the rectangular structures beside Structure 01 used for these activities? Did they stay there all the year round or only during a specific season(s)? Did they specialize in flint knapping and trading, or did they periodically go there as sheep pastoralists? Were the flint outcrops exclusively used for a specific group or shared by a wide range of groups? What kind of trade network was constructed around this factory? All these should be inquired in future excavations.

Tabular Scrapers

It is no exaggeration to say that the un-

derstanding of Qā' Abū Ṭulayḥa West depends on the interpretation of the function of tabular scrapers. However, this issue is still in much controversy. Views so far advanced vary from cutting and butchering (McConaughy 1979: 304), reeds scraping (Unger-Hamilton 1991), wool shearing (Henry 1995: 372-73; Bennett *et al.* 1989), to a ritual function including sacrifice butchering (McConaughy 1979: 304, 1980: 53-58; Rosen 1997: 74-75). Also diversified are the bases of these interpretations. Some are based on microwear analysis (e.g., silica gloss) and others on field experiments and/or the general typology/technology of the samples (e.g., the marked preference of cortical surface). The material of these studies also varies from samples used in urban societies (e.g., Bāb adh-Dhrā', Tall al-Ḥasa, or Jāwā) to those used in the arid periphery (e.g., south Jordan, Negev, or Sinai).

However, as Rosen suggests (Rosen 1997: 74-75), it does not seem practical to presuppose a single function for tabular scrapers. One should take into consideration that their function could have fluctuated depending on users, situations, and/or periods. This may be true all the more because tabular scrapers were very widely distributed both in area and in period.

What is needed at present seems to be a dynamic review of the function(s). Therefore, the question concerning function needs to be revised as follows. What was the original function intended at the stage of production? How did it change (or not change) among neighboring users (i.e., pastoralists)? How did it fluctuate among distant users (i.e., inhabitants in urban societies)? What kind of special use was added on occasions due to daily contexts? All these questions must be separately addressed to clarify the overall picture of the functions of tabular scrapers.

However, a critical difficulty arises here because of the substantial lack of information on the starting point (the original function intended at the stage of production). Though some quarry sites have been known in the western Negev and Sinai (Rosen 1983: 80), the sizes of the samples so far collected seem to be too small to allow a comprehensive discussion.

In this respect, Qā' Abū Ṭulayḥa West provides a good place to make a fresh start. Though much leaves to be said due to the early stage of investigation, the following two points seem to be helpful in reconsidering the issue from the viewpoint of production sites. First, tabular scrapers were produced on a massive scale and discarded quite casually, indicating that they were put to practical use at least among manufacturers and neighboring users. Second, the persistent trimmings to enable a tight grip cha-racterize them, also serving as evidence of their practical use. An experiment at the site proved that, because of the careful trimming, most of the samples fitted palm and fingers of a user (e.g., Fig. 10: 17).

Given this, one should perhaps focus attention for the moment on what kind of practical use tabular scrapers had. However, it is not clear how to proceed from there. A suggestion may be that butchering and/or wool shearing is the most plausible hypothesis, since the mass production at the site makes it difficult to imagine other minor functions. Nevertheless, as mentioned above, this does not necessarily rule out other possibilities. It is often the case that utility goods for some groups change into (or at least are added a character of) something ritual among distant users for whom it is difficult to obtain them.

Anyway, the interpretation of the function of tabular scrapers is the key to clarifying the archaeological implications of Qā' Abū Ṭulayḥa West. Microwear analysis and fatty acid analysis now in progress will hopefully enable us to throw new light on the issue.

Concluding Remarks

The first season of Qā' Abū Ṭulayḥa

West partly unveiled the potential of the so far poorly explored al-Jafr basin. This site (represented by Structure 01 in this case) seems to provide reliable evidence for tabular scraper production strategy. It also indicates the need to revise the discussion on the trade system - a key issue to trace the dynamics of the later prehistory of the Levant. Furthermore, the site (represented by Structure 02) may provide evidence of the earlier exploitation of the basin perhaps by pre-Chalcolithic populations.

It should also be noted that about ten prehistoric sites have been found during our short surveys in 1995 and 1997. Seemingly, they include a wide range of sites from the Middle Paleolithic to the Early Bronze Age. Among others, most noticeable is the site of JF-9702 that contained numerous tabular scrapers but little debitage. This may suggest the possibility that manufacturers and their neighboring users co-existed even within the al-Jafr basin. This also hints at the unexpected diversity of the basin.

Qā' Abū Ṭulayḥa West and the al-Jafr basin thus turned out to be worth investigating. The first season of our project only gave us a glimpse of the archaeological implications. The work of the next season will hopefully enable us to make further progress.

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