QĀ' ABŪ ṬULAYḤA WEST: AN INTERIM REPORT OF THE 1998 SEASON

by

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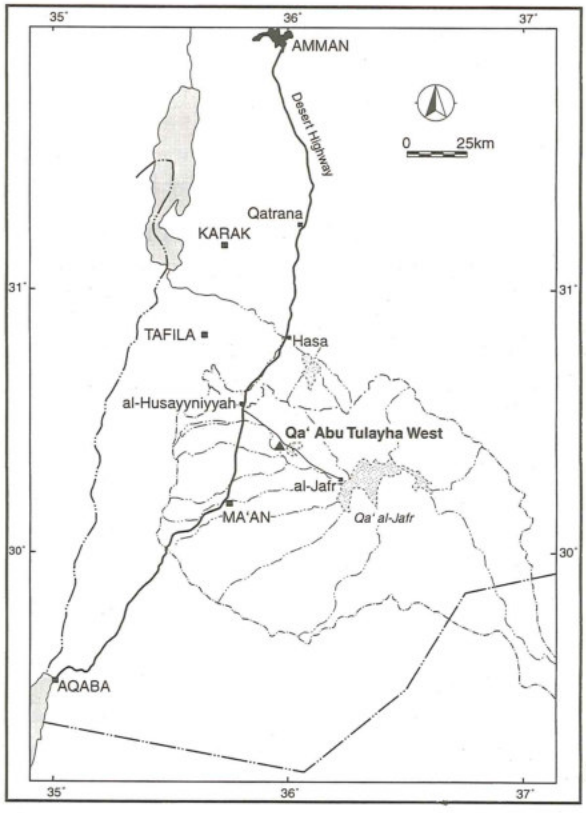
Introduction

The second season at Qā' Abū Ṭulayḥa West - a tabular scraper mega-factory that was located in the northwestern area of the al-Jafr basin, southern Jordan (Fig. 1) - was carried out from 25 August through 10 October in 1998. The main purpose of this season was to excavate Structure 03 - another workshop of tabular scrapers. A supplementary survey of other loci was also conducted in order to explore the total picture of this site.

This season's investigation revealed some interesting aspects of this site. First, it was found that the site included at least two phases of tabular scraper production represented by Structure 03 and Structure 01 respectively, thus possibly opening the way to the seriation of this enigmatic but informative stone implement. Second, the occurrence of refitted tabular scrapers and the equipment related to them (i.e., hammerstones, punch blades, anvils) made it possible to reconstruct, though still incompletely, the *chaîne opératoire* of the tabular scraper production. Third, the site turned out to include workshops not only of tabular scrapers but also of Canaanean blades – the two off-site chipped stone industries for the Early Bronze Age urban societies roughly north of Arad and west of the Jordan valley. Fourth, there occurred the possibility that the site included a cemetery or sanctuary area separated from the workshop area.

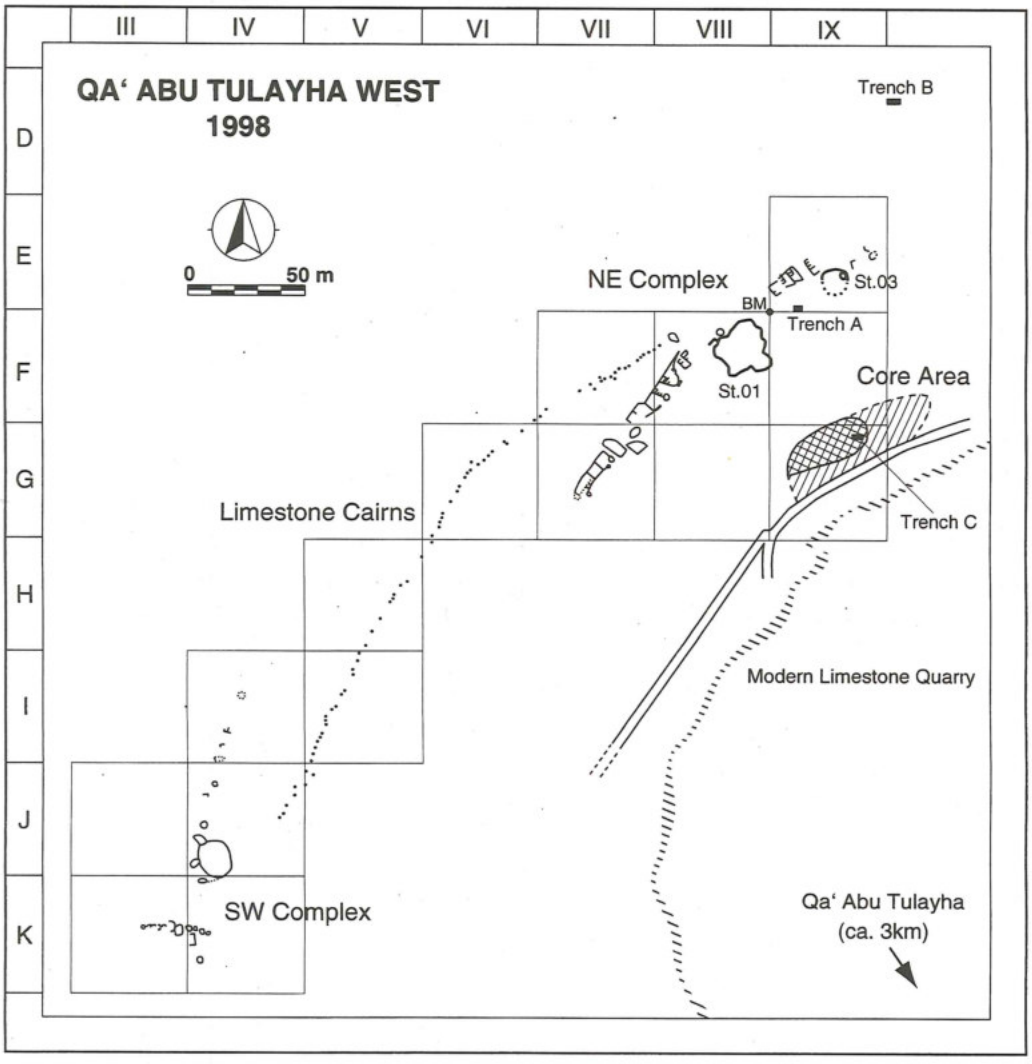


1. Drainage of the al-Jafr basin (based on JICA 1990) and the location of Qā' Abū Ṭulayḥa West.

The following is a brief summary of this season's investigation. In addition, some discussions will be made at the end, focusing on the dating and the intra-site structure of Qā' Abū Ṭulayḥa West.

EXCAVATION OF STRUTURE 03

Structure 03 is included in the major Square E-IX (Fig. 2), which represents the northeastern end of the Northeastern Structural Complex (hereafter NE Complex). It is situated about 30 m northeast of Structure 01 - another workshop of tabular scrapers that was excavated in the last season. The original floor level of Structure 03, as that of Structure 01, corresponded to the upper surface of Layer 3 (reddish-brown, aeolian sand layer), thus indicating the rough synchronism of both structures (for the stratigraphy, see Fujii 1998: 128).



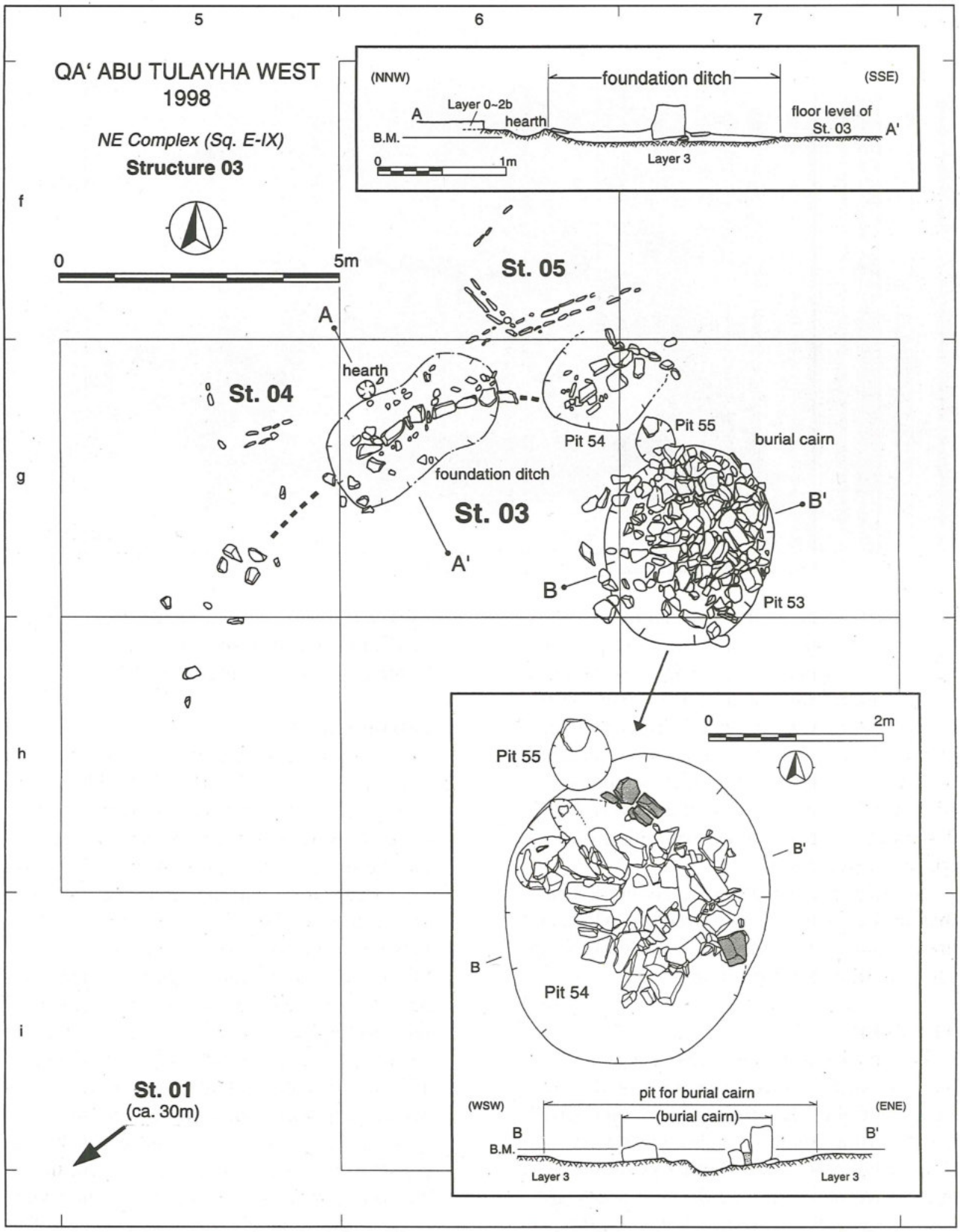
2. Site range of Qā' Abū Ṭulayḥa West.

The Wall

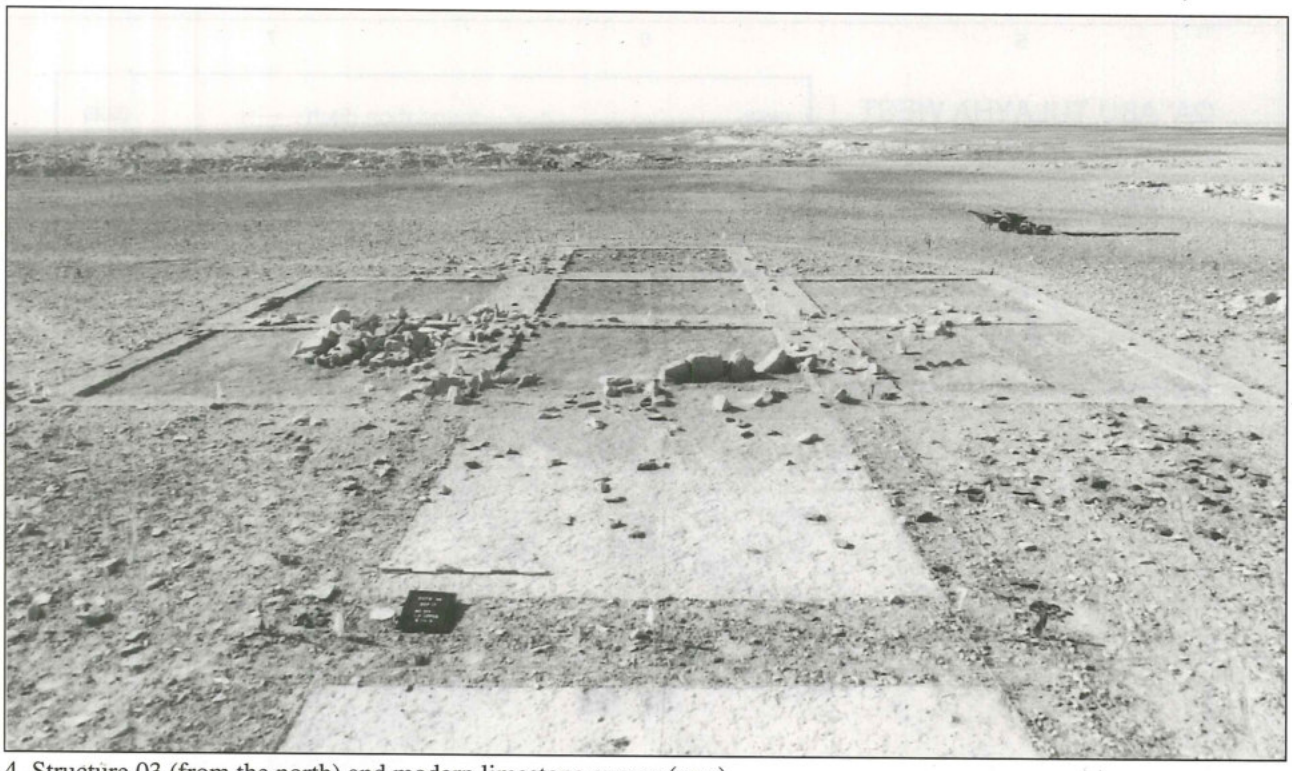
A line of upright limestone boulders was found in the northwestern quarter of minor Square g-6 (Figs. 3 and 4) (for the grid system, see Fujii 1998: 127). It was about 3 m long and slightly in-curved southwards. The section A-A' crossing this wall revealed that: 1) these limestone boulders, as those in Structure 01, stood upright on a foundation ditch; 2) limestone rubble was often driven under the bottom of these boulders in order to support them upright; 3) the foundation ditch, semi-rectangular in general plan, was about 3 m long, 1.5 m wide and10 cm deep with a roughly flat bottom; 4) it was filled out with compact soil including limestone rubble and small abraded flint pebbles; 5) it was partly paved by either limestone or flint slabs.

In the southwest of this upright stone wall, some sporadic limestone cobbles were found *in situ* (Sq. g-5 and h-5). Though heavily damaged by a later disturbance, they seemed to represent an extension of the central, upright stone wall. However, the construction method of this wall was much different from that of the central wall; specifically, the construction material was not based on a foundation ditch but put directly on the then ground surface in a horizontal position.

Also heavily damaged was the eastern extension of the central wall (Sq. g-6 and g-7). The original wall of Structure 03 was completely erased by a later pit (Pit 54), in which a number of limestone cobbles and boulders were thrown. Possibly, these stones



3. Structure 03 and the surrounding structures.



4. Structure 03 (from the north) and modern limestone quarry (rear).

originated in the wall of Structure 03. Further to the southeast, the wall was erased again by a larger pit (Pit 53), on which a stone concentration was built. This stone concentration was about 2.5 m in diameter and consisted of more than one hundred limestone cobbles and boulders and some flint nodules. As mentioned below in detail, it seemed to be a burial cairn with a hollow space in its center.

No substantial wall was recognized further in the south. Thus, Structure 03 measured about 10 m wide and 5 m deep, being semi-circular in general plan.

The Floor

No special treatment was recognized on the floor of Structure 03 except for the possibility of the cleaning of sand and small abraded flint pebbles on the ground surface (Fujii 1998: 130-131). Neither postholes nor inner partitions were found. Only one hearth was unearthed just north of the foundation ditch. This small hearth, about 30 cm in diameter and 10 cm in depth, yielded loose, ashy soil. However, neither artifacts nor faunal/floral evidence was retrieved despite the 2 mm mesh dry sieving of the fill.

Burial Cairn

As mentioned above, the southeastern wall of Structure 03 was ended with a large, oval, shallow pit (Pit 53), on which a stone concentration was built. Evidently, this pit cut the original wall of Structure 03. It follows that the pit and the stone concentration are dated to be later than Structure 03. It is, however, noteworthy that the lower part of this stone concentration included some boulders that seemed to represent an extension of the central wall (see Fig. 3, below right). If so, the above dating becomes questionable. This complicated situation puzzled us, but my present interpretation is as follows:

1) the original wall of Structure 03 was constructed in the first place; 2) then, the pit was dug partly destroying the original wall; 3) next, the stone concentration was built on this pit; 4) after that, the wall was partly reconstructed sharing the wall line with the

lower part of the stone concentration. Given this, one may suppose that the inhabitants of Structure 03 constructed the stone concentration during their residence and continued to live thereafter.

The next question is the function of this stone concentration. In this regard, one should note that it included a hollow, but partly paved, central floor about 1 m in diameter (Fig. 5). This floor was surrounded by a number of long boulders arranged roughly in a circle. Interestingly, some of them, especially those in the northern and western part, were inclined toward the center, probably suggesting that they originally stood in an upright position. This means that the stone concentration had a small, hollow space in its lower part.

These observations remind us of burial cairns in the Early Bronze Age sites of the Negev and the Sinai (Haiman 1992; 1993). Their size, morphology, structure, and relative position to a mother structure – all fit well with the stone concentration at Structure 03. It is therefore likely that our example is of the same character (i.e., burial cairn). Incidentally, neither burial bones nor burial gifts were recovered despite the 2mm-mesh dry sieving of the fill. However, the case is often true for the burial cairns, especially those in cairn fields, in the Negev and the Sinai. Another example occurs at al-Adeimeh in the lower Jordan valley (Stekelis 1935; Gilead 1968; Webley 1969).

5. Burial cairn in Structure 03(from the west).

Accordingly, the absence of human bones and burial gifts does not necessarily impede the identification as a burial cairn; rather, it might reinforce the interpretation.

We are now ready to reconsider the function of the similar stone concentrations that were found but left intact during the excavation of Structure 01 in the last season (Fujii 1998: 128-130). Their size, morphology, and relative position to the mother structure lead us to the same conclusion; they are probably burial cairns. The same may be true for Pit 54 of Structure 03 where several limestone boulders, though heavily disturbed, seemed to form a central hollow space.

Summary of Structure 03

Although the heavy damage by a later disturbance makes it difficult to reconstruct the total plan of Structure 03, the following two views can be made. One view is that this is a small, semi-circular, single-unit structure with an upright stone wall in the center and its short extension in both directions. If one follows this interpretation, one may suppose that Structure 03 corresponds to one unit of the neighboring workshop, Structure 01, wich is a large, amorphous, multi-unit structure (Fujii 1998: Fig. 8). One may further assume that Structure 03 is comparable with the westernmost unit of Structure 01, because: 1) both consist of an upright stone wall in the center and its simplified extension in both directions; 2) the ends of the wall are often accompanied by a burial cairn.

Another view is that Structure 03 represents a disturbed picture of a larger, multi-unit structure like Structure 01. This view is based on the assumption that the neighboring inhabitants - especially, those of Structure 01 - diverted the construction material of Structure 03 to their own construction. In this regard, one may note that the southern and western walls of Structure 03 were most heavily damaged, because Structure 01 is situated to the southwest of Struc-

ture 03. Also suggestive is the surface observation which was carried out in advance of the excavation. It confirmed that a number of loose stones (i.e., stones out of the original context) were scattered around Structure 03 roughly drawing a circle (about 15 m in diameter).

Nothing conclusive can be said at the present stage, but the latter view seems to be more plausible. The poor character of the eastern wall of Structure 01 (Fujii 1998: Fig. 8) might reflect the easy diversion of the construction material from the neighboring, discarded structure - Structure 03.

Surrounding Structures

Two rectangular structures, Structure 04 and 05, were found just north of Structure 03 and partly excavated. It might be that both structures had originally constituted one long, mutli-roomed, rectangular structure. A good example occurs in the southwest of Structure 01 (see Fig. 2). Stratigraphically, these two structures belonged to Layer 2b or 2a, thus indicating a later date than Structure 03.

Both structures were too disturbed to deserve an individual description. However, their construction method is worthy of a brief comment. The wall consisted of usually two-rowed, upright flint slabs put in a narrow foundation ditch. The same method was seen at Structure 02, which was excavated in the last season and tentatively dated to the Late Neolithic (Fujii 1998: 134-136). These examples, coupled with the Pre-Pottery Neolithic varieties in the al-Azraq basin (e.g., Waechter and Seton-Williams 1938: 3-4; Garrard *et al.* 1994: 75-85), suggest the deep-rooted conservatism in the arid peripheries. In this sense, it is roughly round, multi-unit structures with one-rowed stone wall (e.g., Structure 01 and 03) that are rather heterogeneous to the local tradition of the *inland* Levant (Fujii *et al.* 1987: 37). One may assume the close interaction between the al-Jafr, the Negev and the Sinai. This assumption may be supported by another line of evidence (e.g., the similarity in burial custom and lithic production).

Findings at Structure 03

In contrast to Structure 01, the findings at Structure 03 was very poor in quantity and variety. It consisted exclusively of chipped stone artifacts, although some heavy-duty tools and a groundstone artifact are included as a minor component. Neither pottery shards nor faunal/floral evidence were recovered.

The Chipped Stone Artifacts

A total of 146 chipped stone artifacts were found within the context of Structure 03 (Table 1 and Figs. 6 and 7). As was in the excavation of Structure 01, the surface findings were the most numerous; the number of findings decreased as the excavation approached the original floor level. Thus, more than half of the findings were not *in situ*. However, the homogeneity both in raw material (light to dark brown, fine-textured, Eocene flint) and in techno-typology (tabular scrapers and the debitage related to them) allowed us to handle all the samples as a set.

Cores: Except for one miscellaneous sample and one core fragment, this category consisted only of flake cores. Technologically, some 75 % of these flake cores was of the single platform type, and the remaining 25% was of the 90° opposed type. Typologically, they consisted mostly of small, non-cortical cores. They were probably the source of smaller flakes (Fig. 6: 2, 3). In contrast, tabular scraper cores were quite rare (Fig. 6: 1), being inconsistent with the frequency of tabular scrapers in tool classes. This discrepancy, as mentioned in the last report (Fujii 1998: 131), indicates that Structure 03 (and Structure 01) were the second stage indoor atelier for finishing tabular scrapers. In contrast to the final process, the core preparation and blank detachment processes were probably executed in the

Table 1. Inventory of chipped stone artifacts at Structure 03 (excluding heavy duty tools - anvils and hammerstones).

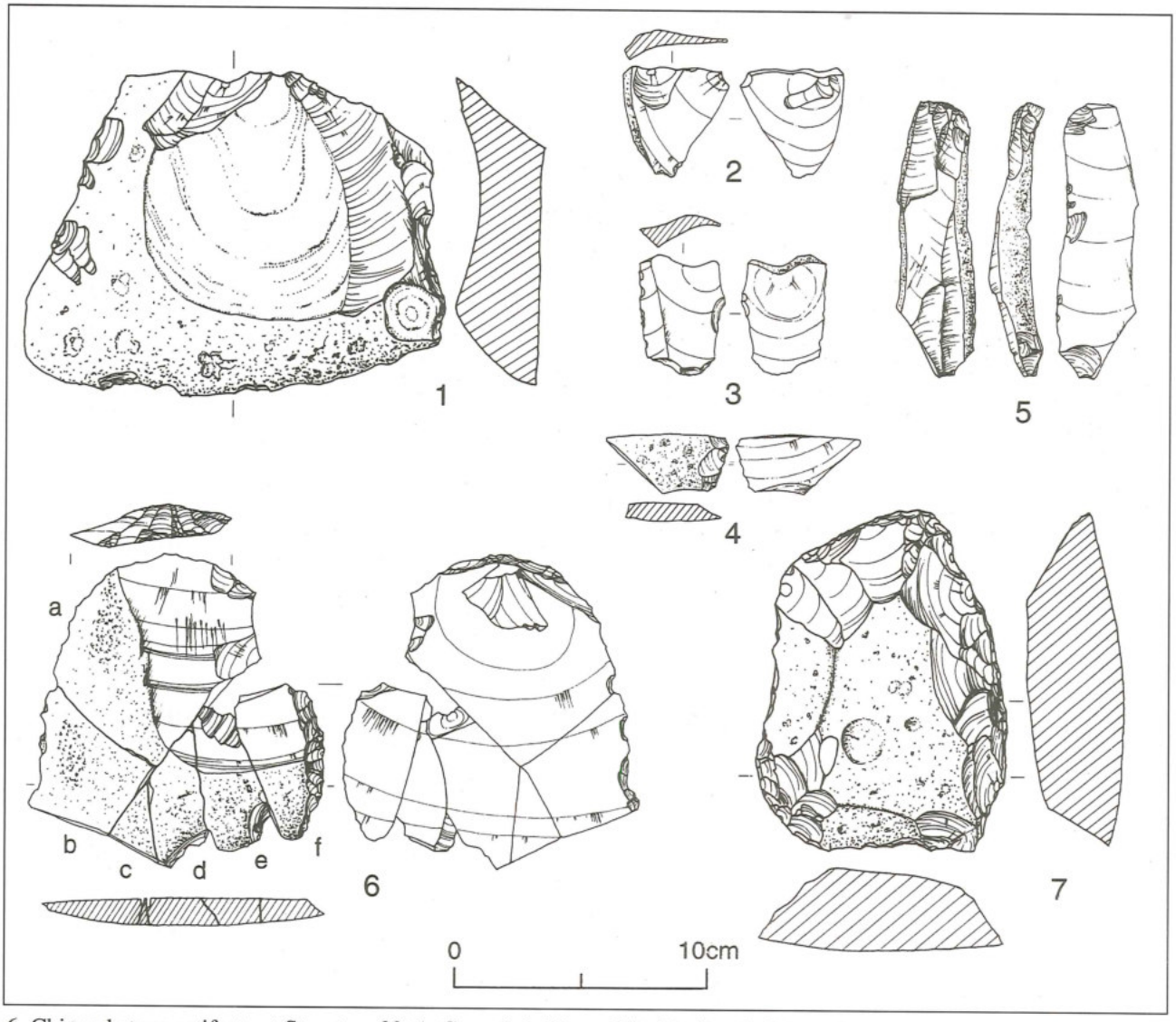
Category	Class	*Sub-class*	N	*N*	%[1)]	%	%[2)]
Cores	flake cores		8		72.7		5.5
		single platform		6		75.0	
		90 degree opposed		2		25.0	
	tabular scraper core		1		9.1		0.7
	varia		1		9.1		0.7
	core fragment		1		9.1		0.7
		(sub-total)	11		100.0		7.5
Debitage	unmodified flakes		55		75.3		37.7
		non-cortical flakes*		32		58.2	
		sub-cortical flakes		5		9.1	
		cortical flakes		18		32.7	
	thermal flakes		2		2.7		1.4
	TSTE		14		19.2		9.6
	unmodified blade		1		1.4		0.7
		cortical blades		1		100.0	
	chip/chunk		1		1.4		0.7
		(sub-total)	73		100.0		50.0
Tools	tabluar scrapers		30		48.4		20.5
		fan		2		6.7	
		round		6		20.0	
		semi-circular		4		13.3	
		oval		2		6.7	
		rectangular		2		6.7	
		varia		14		46.7	
	massive scrapers		3		4.8		2.1
	notches/denticulates		2		3.2		1.4
	retouched/used flakes		14		22.6		9.6
	punch blades/flakes		11		17.7		7.5
	varia		2		3.2		1.4
		(sub-total)	62		100.0		42.5
		grand total	146		—		100.0

%[1)] : percentage in the category.

%[2)] : percentage in the collection.

* Flakes are subdivided into the three types depending on the extent of cortical surface:

non-cortical (less than 10 % cortexed), cortical (more than 50 % cortexed), and sub-cortical (between the two).

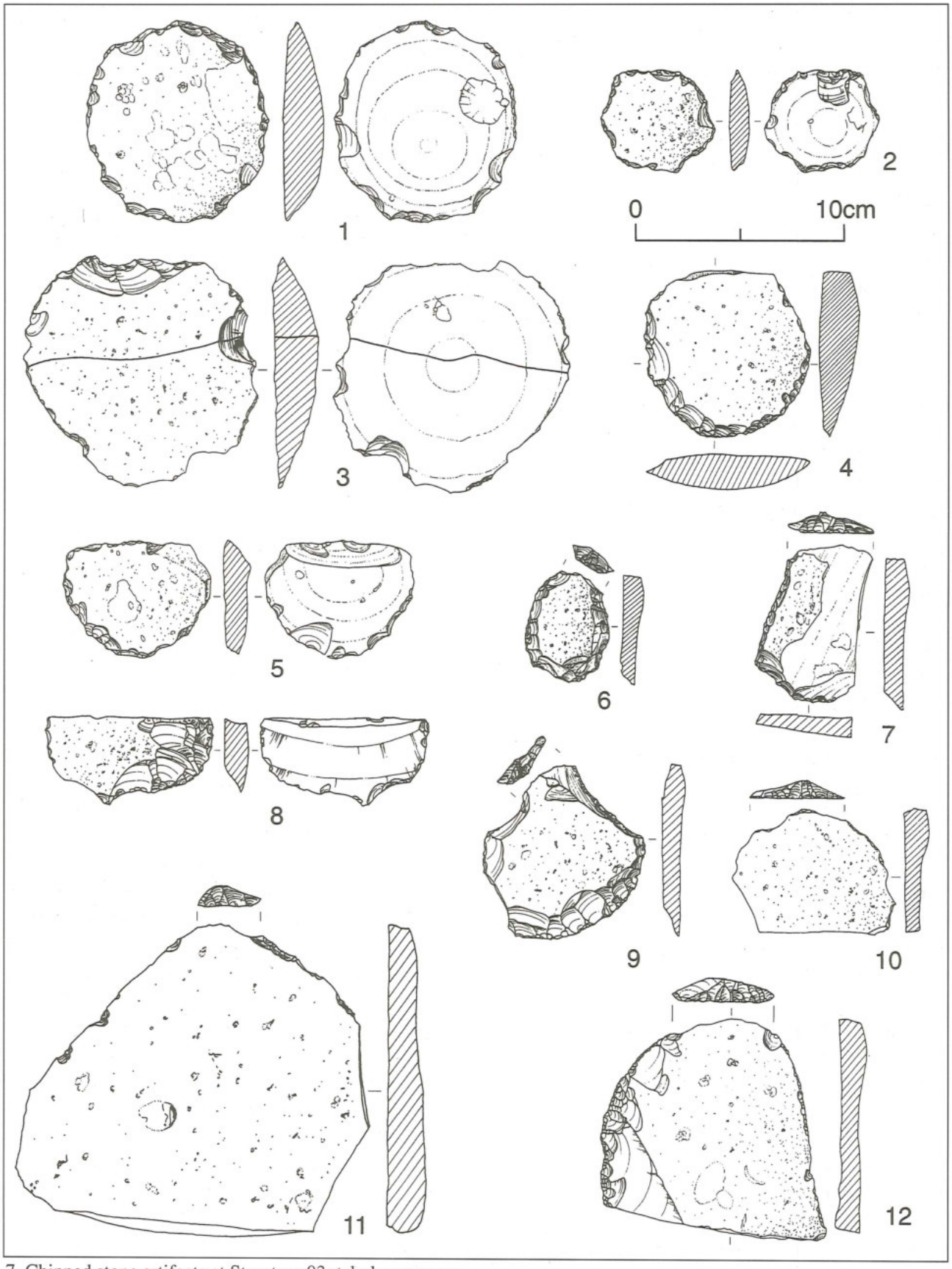


6. Chipped stone artifacts at Structure 03: 1. Core; 2-3. Unmodified (winged) flakes; 4. Retouched/used flake on TSTE; 5. Punch blade; 6. Refitted tabular scraper; 7. Massive scraper.

core area south of the two structures.

Debitage: The inventory table illustrates that the chipped stone industry of Structure 03 is an extremely flake-oriented one; the ratio of flakes to blades is about 57: 1. The former included robust, cortical, either artificially - or thermally - detached flakes as a major component. Not only their frequency but also their morphology (i.e. the robustness and the cortical surface) indicated that they were mostly the tool blanks for tabular scrapers. Also frequent was small, cortical, often geometric debitage - *TSTE* : *Tabular Scraper Trimming Elements* (Fig. 6: 6-b, c, d; Fujii 1998 : 131-132) . Owing to the find of a refitted example (Fig. 6: 6), it is now clarified that the *TSTE* originated in the blank splitting process of tabular scrapers.

In addition, smaller, non-cortical flakes occurred in a large number. Their frequency may be a reflection that smaller, non-cortical flake cores were most predominant in the core classes. Interestingly, the striking platform of these smaller flakes often showed a winding profile. Evidently, the flint knappers did not use a ridge left on a flaking surface as a guiding line of percussion wave; instead, they struck the middle point between two ridges left by a former flaking. One may assume that this technique was ap-



7. Chipped stone artifacts at Structure 03: tabular scrapers.

plied in order to obtain wider and thinner flakes without a central ridge like Levallois flakes (e.g., Henry 1998). Interestingly, a similar technique is often recognized in tabular scrapers (e.g., Fig. 6: 6), thus linking both genres of lithic production. Further, this technique reminded us of Canaanean blades, which are often, though not always, characterized by trapezoidal section (e.g., Rosen 1997: 46-49). These three industries– winged flakes, tabular scrapers, and Canaanean blades - are possibly related with one another in their fundamental technology.

In contrast to flakes, blades are a small minority of debitage classes. However, their occurrence, though infrequently, gives rise to a question about what their corresponding cores were. A plausible explanation will be given below in the description of tool classes.

Tools: Tabular scrapers were highly predominant, being about 56% in tool classes. Typologically, they are divided into several types: fan-shaped, round (Fig. 7: 1-3), semicircular (Fig. 7: 4, 5, 8), oval (Fig. 7: 6), and rectangular type (Fig. 7: 7). The classification here is principally based on Rosen (1997: 71-79). Among them, round or semicircular type is the most frequent, and often made on thermal flakes. In contrast, the fan-shaped one (i.e., classic fanscrapers) is much less frequent, possibly suggesting a post-Chalcolithic date of this industry. The other types are also small in number except for varia – a catch-all class including miscellaneous types (Fig. 7: 9-12). Their frequency may be a reflection that punch technique, which applied to the blank splitting process of tabular scrapers, often resulted in the production of amorphous secondary blanks.

Overall, the tabular scrapers at Structure 03 are characterized as follows: 1) they are often smaller and less finely-retouched than those at Structure 01; 2) they often use thermal flakes, suggesting that some heat treatment of raw material was conducted in the core area (however, no direct evidence has yet been obtained); 3) edge-trimming is often recognized, corresponding to the frequency of cortical, geometric debitage - *TSTE*; 4) platform facetting is often seen at a bulbar end, but the orientation is always obverse (i.e., from a cortical, dorsal surface to a bulblar one). In this sense, the facetting does not necessarily represent a platform preparation; rather, it was possibly a retouch for making a reversed endscraper (the similar classification occurred in Gophna and Friedmann 1993: 158). It may serve as evidence of this view that such fine facetting is rarely found on the platforms of tabular scraper cores.

Incidentally, some tabular scrapers and *TSTE* were refitted (Fig. 6: 6). This example illustrates that a robust flake was split into several fragments, some of which were retouched into tabular scrapers and the others left unmodified as geometric debitage (i.e., *TSTE*). This unique sample, coupled with the occurrence of punch blades, hammerstones, and anvils, clearly indicates that the punch technique was applied to the blank splitting process of tabular scrapers. This refitting, though still isolated, will make a breakthrough to tracing the *chaîne opératoire* of the tabular scraper production (Fujii 1999b).

In addition, retouched/used flakes either on robust flakes or on *TSTE* (Fig. 6: 4) occurred in a high frequency, numbering about 30 % of tool classes. The latter examples, coupled with the occurrence of the refitted tabular scrapers, provide a reliable clue to the technological reassessment of the similar flakes which have often been called 'tabular scraper fragments' (e.g., Oren and Gilead 1981: Fig. 12, no. 3; Beit-Arieh 1986: Fig. 21, no. 19; Gopher 1988/89: Fig. 2, no.5; Greenhut 1989: Fig. 11-15, Fig. 22, no. 6, 7; Rosen 1988: Pl. 53, no. 3, 5, 6; 1993: Fig. 1, no. 10; Henry 1995: Fig. 15.5, no. a). Also, their wide distribution probably suggests that the punch technique was used in a wide

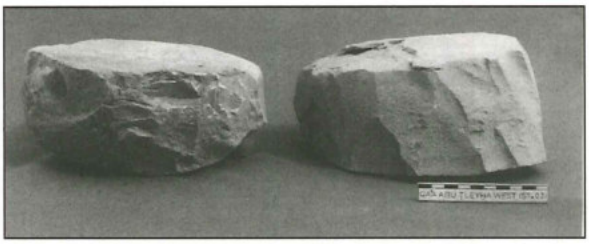
range both in period and area.

The other classes, which included massive scrapers (Fig. 6: 7), notches/denticulates, and a retouched/used blade, were all minor components, being less than 6 % of tool classes. Both the robust morphology and the cortical surfaces characterized these tools, linking them to the tabular scraper - the main product at this workshop.

Of special note was the frequent occurrence of punch blades/flakes (Fig. 6: 5). They showed heavy scaling/splintering and/or pseudo burin facets at both ends, suggesting their use as punch blades. This inference is supported by another line of evidence. First, the refitted example revealed the application of punch technique to the blank splitting process of tabular scrapers. Second, not only anvils but also hammerstones occurred within Structure 03. Third, edge trimming was often recognized in tabular scrapers. Fourth, the collection includes a large number of small, cortical, often geometric debitage (i.e., *TSTE*) that was produced in the blank-splitting process. All these argue for the above identification. It is, however, to be noted that no blade cores occurred at Structure 03. This discrepancy between blanks and their mother cores suggests that these robust blades originated in another kind of chipped stone industry; specifically, they were probably brought from other places. This question is taken up again below in the description of Structure 1001 - a Canaanean blades workshop.

Other Findings

A total of five limestone anvils were found either in or out of the original context (Figs. 8 and 9). They were homogeneous in raw material (coarse-textured limestone) and morphology (low and roughly cylindrical body with an oval working surface). Their size and weight was also standardized. They averaged 18.8 cm in width, 14.2 cm in depth, 9.2 cm in height, and 4.9 kg in weight; further, each attribute had a relatively small standard deviation. Moreover, they share the same technology; the side wall is modified by alternative retouch, whereas the upper and lower surface often remain intact (The same is also true for the samples that were found in Structure 01 during the last season). The specific function of these anvils is almost evident. The occurrence of refitted tabular scrapers and the equipment related to them (i.e., hammerstones and punch blades), coupled with the frequency of *TSTE*, clearly indicate that these anvils were used mainly for the blank splitting (and maybe retouching process) of tabular scrapers.

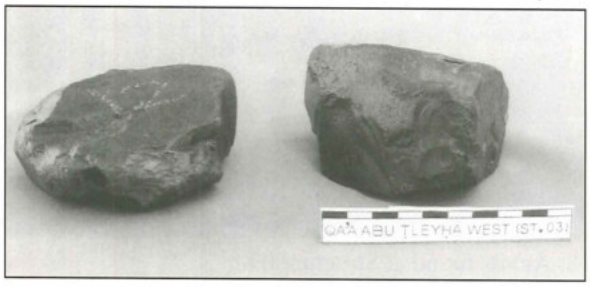


8. Anvils found at Structure 03.

9. An anvil left in the wall of Structure 03 (or the burial cairn).

Besides, two flint hammerstones were found (Fig. 10). Both are made on small, cortical, flint nodules and show heavy scaling/splintering either on corners or around peripheries. It is obvious that they were used as hammerstones. Further, their size fitted a palm, serving as another line of evidence of the above identification.

The groundstone in a strict sense consisted of only one limestone artifact. It had a roughly round, flat base and a convex sec-



10. Hammerstones found at Structure 03.

tional view. The size and morphology fell within the handstone of Wright's classification (Wright 1992: 141). However, both the absence of linear and/or curvilinear wear on the working surface and the presence of a shallow concavity at the center suggested its use as a kind of hammerstone.

INVESTIGATIONS AT OTHER LOCI

Reexamination of Structure 01

An intensive reexamination of the walls of Structure 01, which had been excavated in the last season, was carried out in order to collect further information on the construction method. As a result, it was found that the previous view (Fujii 1998: 128-130) must be partly corrected; the foundation ditch which appeared in the E-W section of Structure 01 was, in fact, restricted to the range of the upright stone wall, and the other walls were built either on a plain ground or on a pebble pavement without a foundation ditch. Therefore, it was concluded that Structure 01 and 03 shared the same construction method.

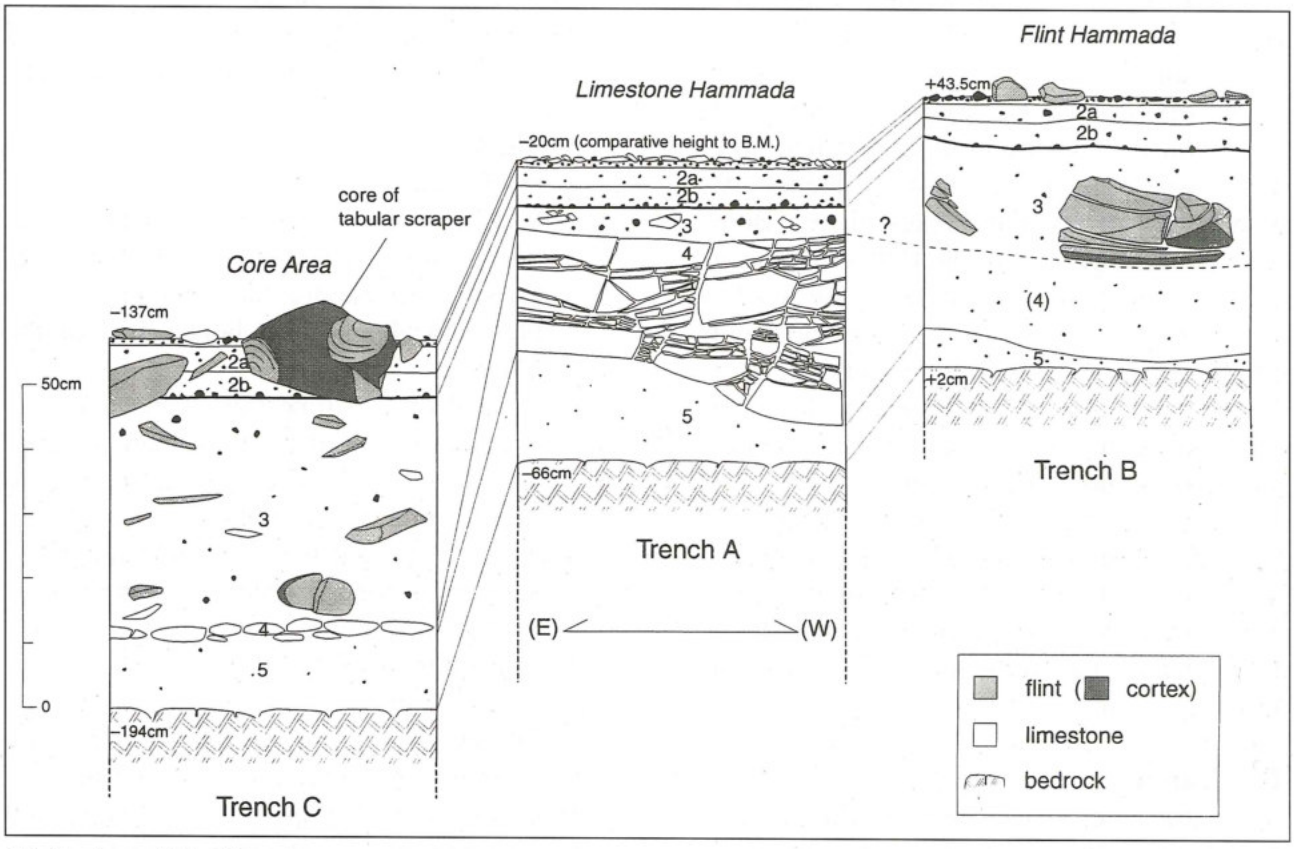
Test Trenches

In order to explore the geological and sedimentological background of Qā' Abū Ṭulayḥa West, three test trenches (Trench A to Trench C) were opened in the NE Complex (see Fig. 2). Describing in due order from north to south, Trench B (6 m EW by 1m NS) was set in the flint *hammada* north of Structure 03 (Fig. 11). Trench A (4 m EW by 1 m NS) was opened in the limestone *hammada* on which a number of structures stood. The third one, Trench C (5 m

11. Test Trench B (from the SE): Layer 1 through Layer 5 in due order from left to right (the right end is the limestone bedrock).

EW by 1 m NS), was opened in the core area about 70 m south of Structure 03. The following is a brief summary of the observations of these trenches (Fig. 12).

1) The limestone bedrock layer exists about 50 cm below the ground surface of each trench.
2) The stratigraphy of each trench is roughly the same in that it consists of five layers from the buff to light brown, sandy or silty surface layer (Layer 1) to the reddish-brown, compact, soil layer (Layer 5).
3) The most prominent difference between the three trenches is the contents of Layer 4. No limestone cobbles are included in Trench B on which the flint *hammada* develops. In contrast, Trench A includes a thick, compact layer of angular limestone nodules, reflecting the development of the limestone *hammada* on the ground surface. Trench C is moderate in character between the two, corresponding to the distribution of both flint nodules and limestone pebbles.
4) The three trenches shared the reddish, rather loose, eolian sand layer (Layer 3), but the thickness and the inclusion are quite different depending on the spot. Trenches B and C include angular flint nodules, whereas Trench A does not. This may also affect the present landscape around each trench.
5) The thickness and the inclusion of the upper layers (Layer 2b through Layer1) are almost the same in the three trenches except that some flint nodules and cores protrude up to these layers in Trench C.
6) Except for Layer 4 in Trenches A and C, all layers of the three trenches include small, heavily abraded flint pebble and gravel. However, their density is slightly different depending on the layer and the vertical position in each layer; they are often concentrated on the surface level of



12. Sections of Test Trenches.

each layer.

The points to be discussed here are the following two: the geological context of the core area and the land choice for the construction at this site.

As for the core area (Trench C), one should note that no substantial flint layer is recognized below the upper surface of Layer 3 - the living surface where the flint knappers executed the core preparation and blank detachment for the tabular scraper production. This phenomenon implies that the raw material for these processes were not mined here but transported from other spots (probably from the flint outcrops in the lower hill; Fujii 1998: 125-126). An alternative interpretation is that the raw material was thoroughly mined around this trench, thus resulting in the disappearance of the original flint layer. The scattered distribution of angular flint nodules and flakes in Layer 3, coupled with their inclined position, may argue for this view. However, further discussion must be restrained due to the limited excavation.

As for the second point (i.e., the land choice for the construction), one should note that Layer 3 is the thinnest in Trench A, whereas Layer 4 is the thickest there. Both phenomena suggest that the flint knappers at Qā' Abū Ṭulayḥa West avoided the sandy, loose ground and, instead, chose the solid ground with a thick limestone foundation for their construction space. Possibly, this land choice benefited the procurement of angular limestone boulders which were often used in the central wall of each structure. One may further assume that a pit, which had originally been dug for the procurement of limestone boulders, was reused as a foundation ditch to hold the unearthed boulders in an upright position.

The Cairns

As was briefly mentioned in the last report (Fujii 1998: 125), a line of limestone cairns were found extending between the NE Complex and the SW one (Figs. 2 and 13). The basic data of these cairns were collected in this season. They are summarized as follows:

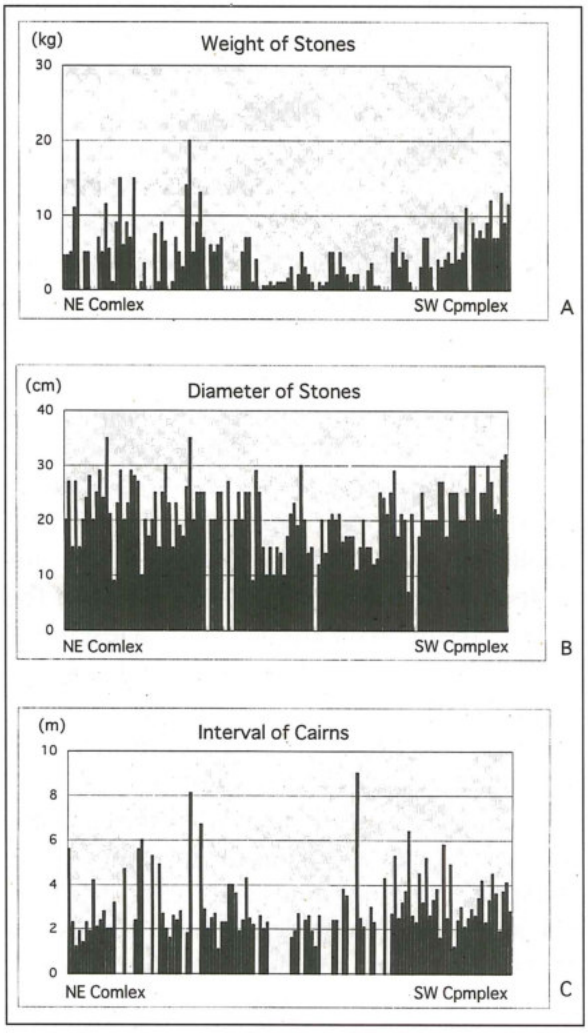
13. Cairns (towards the NE Complex).

1) The line of cairns consists of a total of 95 individual cairns.
2) It extends about 300 m long between the two complexes, but stops about 4.5 m before the nearest structure of the NE Complex and about 27 m before that of the SW one.
3) A total of 123 limestone cobbles and/or boulders are used for these cairns, ranging from 1 to 7 pieces per cairn with the average of 1.3 piece per cairn.
4) The weight and the maximum length of these limestone cobble/boulders average 5.4 kg and 21.2 cm respectively.
5) The interval of these cairns varies from 1.1 m to 8m with the average of 3.1 m.

Interestingly, there is a negative correlation, though roughly, between the distance from the nearer complex on one hand and the size and weight of the construction material of each cairn on the other hand (Fig.

14: A, B).

Specifically, the more a cairn leaves from a complex, the less the size and weight of the construction material become. This probably suggests that the construction material of each cairn was transported from both complexes. In contrast but related to this, there is a positive correlation between the distance from the nearer complex and the interval of each cairn (Fig. 14: C). The more a cairn leaves from a complex, the more the interval of each cairn becomes. This also indicates that the construction material of each cairn depended on both complexes. Probably, the increase of carrying distance was supplemented not only by the reduction of the volume of carried stones but also by the enlargement of the interval of each cairn.



14. Correlation between the weight/size/interval of each cairn and the distance from the structural complexes.

All these observations may suggest that the cairns were built by reusing the construction material of both complexes. This probably means that they are dated to be later than both complexes, although no evidence has been found to determine the time lag. Incidentally, the function of these cairns is still obscure. One possible explanation will be given below in the description of the SW Complex.

Some Observations of the SW Complex

A preliminary surface survey was carried out in the SW Complex. As briefly referred to in the last report (Fujii 1998: 125), this complex was quite different from the NE one in the contents of the structures; it consisted mainly of small, round features, which were often arranged in a line. Also noticeable was the poor occurrence of artifacts. Tabular scrapers – a landmark of the lithic production at Qā' Abū Ṭulayḥa West – were rarely found there. To date, the surface collection comprises a small number of flakes and Canaanean blades.

It is therefore possible that the SW Complex represents a cemetery for the neighboring settlement (i.e., the NE Complex). A good example occurs in the Early Bronze Age cairn fields in the Negev (Haiman 1992), although no elongated freestanding walls - a characteristic of the cairn fields in the Negev - have been identified at Qā' Abū Ṭulayḥa West. However, a line of limestone cairns mentioned above might represent its deformation in the al-Jafr basin. Given these, one may assume that Qā' Abū Ṭulayḥa West includes not only flint workshops but also their cemetery or sanctuary area within the site range.

Surface Collection at Struture 1001

A small (about 2 m by 3 m), oval structure, which had been left unnoticed behind

the dump of a modern limestone quarry, was found on a small terrace below the hill. It was situated some 150 m south of Structure 01. Though only surface-surveyed, the collection at this structure is worth of a special comment.

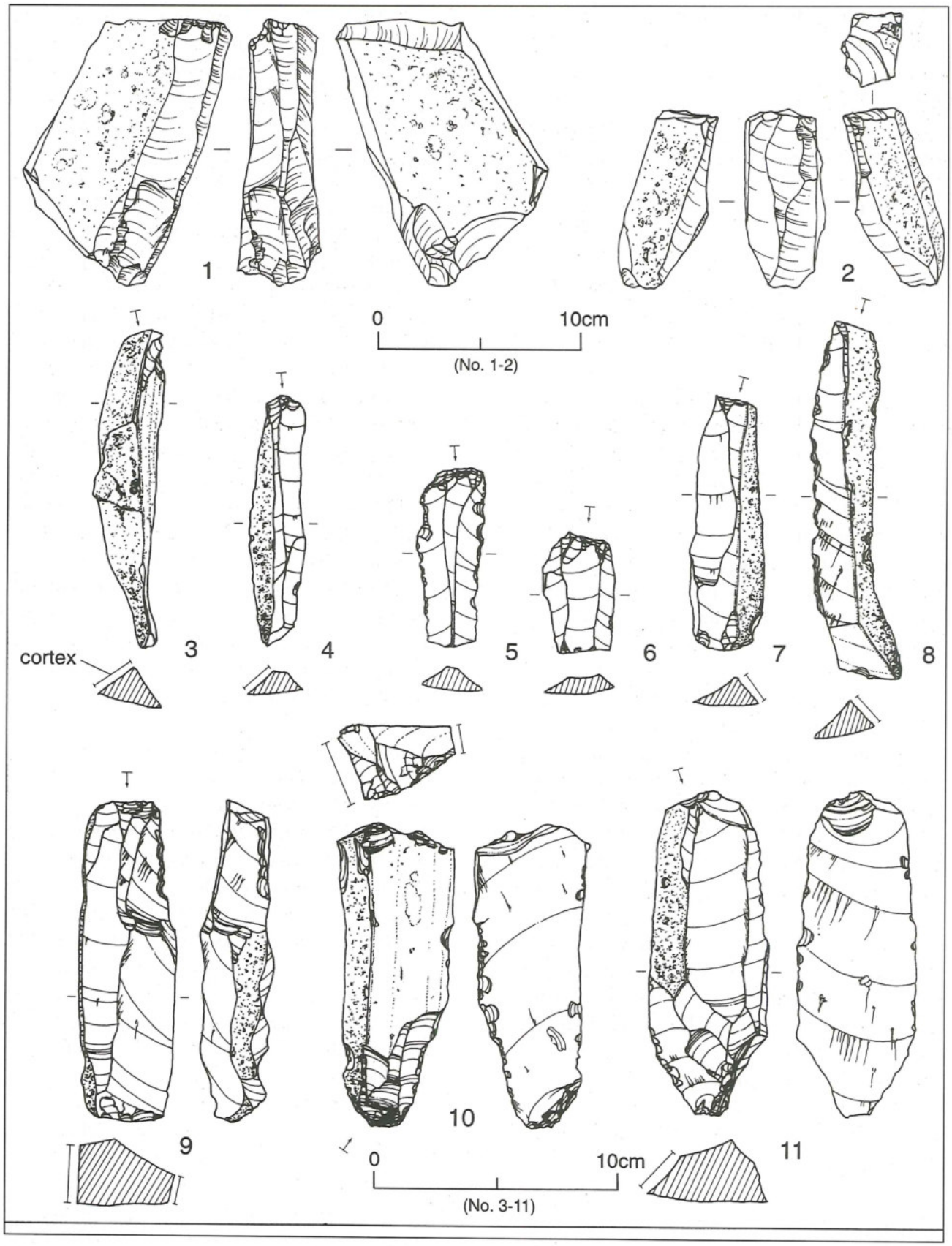
Surprisingly, the collection consisted exclusively of Canaanean blades and the debitage related to them (Fig. 15); few tabular scrapers were included. The examination, though still preliminary, showed that the Canaanean blades in our collection were quite different from those in the Early Bronze Age sites beyond the Jordan valley. First, the cores were made of local, cortical, tabular flints, thus being of a tabular, not prismatic, morphology (Fig. 15: 1, 2). Second and relevant to the first, the blades detached from these cores were generally robust and often retained the original cortex on their dorsal surfaces. Interestingly, blades with left lateral cortex (Fig. 15: 3, 4) are roughly as many as those with right lateral cortex (Fig. 15: 7, 8). In contrast to their frequencies, two-ridged (i.e. trapezoidal in section), non-cortical blades - Canaanean blades in a strict sense - are much less frequent (Fig. 15: 5, 6). These observations, coupled with the examination of cores related to these blades, suggested the following reduction strategy:

1) the procurement of tabular flint from the surrounding outcrops;
2) the rough shaping of the raw material, leaving the original cortex on the two flat surfaces intact;
3) the preparation of a striking platform by a knapping and grinding technique;
4) the preparation of a flaking surface by the detachment of primary elements (i.e., robust blades with either left or right lateral cortex) from both lateral edges of a long flaking surface;
5) the detachment of strictly-sensed Canaanean blades (i.e. non-cortical, two-ridged, long blades) from the moderately protruded flaking surface;
6) the rejuvenation of the flaking surface (i.e., the recovery of the moderate protrusion on the surface) by the detachment, again, of robust blades with either right or left lateral cortex;
7) or another rejuvenation for removing hinge-fractured surfaces (Fig. 15: 9);
8) the resumption of the detachment of Canaanean blades in a strict sense from the flaking surface that recovered the moderate protrusion and/or the flatness without hinge-fractures;
9) the processes from 6) through 8) are repeated up to the exhaustion of the tabular core (Fig. 15: 2).

This *chaîne opèratoire* may account for the phenomenon that robust, cortical blades was a major component in the collection. It is also understood in this context that robust blades with left lateral cortex (and a left-inclined platform) balance roughly with those of the opposite character. On the other hand, strictly-sensed Canaanean blades - main products of this *chaîne opèratoire* - were probably transported to other places for some use or trading, thus resulting in their infrequency.

This unique chaîne opèratoire induces us to give these blades a new designation - the Jafr blades, for example. More importantly, they provide a clue to the chronological reassessment of the seemingly Upper Palaeolithic, robust and cortical blade industries which have been often found in the al-Jafr basin (Huckriede and Wiesemann 1968: 82-85; Quintero and Wilke 1998: 118-120). An attribute analysis now in progress will hopefully provide further clue to this critical issue (Fujii 1999c).

Incidentally, some of the robust blades showed pseudo-burin facets or heavy scaling/splintering on both ends (Fig. 15: 10, 11), suggesting their use as punch blades. In this respect, one should remember the occurrence of similar examples at Structure 03 – a tabular scraper workshop. The occurrence of (al-Jafr type of) Canaanean blades at both structures implies the rough syn-



15. Surface collection at Structure 1001- a Canaanean blade workshop.

chronism and the close contact between the two industries.

Discussions

Owing to the two seasons' investigations, a general picture of Qā' Abū Ṭulayḥa West has gradually become clear. The following is a tentative overview of this site, focusing on the dating and the intra-site structure.

The Dating of Qā' Abū Ṭulayḥa West

The rich occurrence of tabular scrapers made it possible to date Structrure 01, the main target of the 1997 season, to the cultural horizon from the Chalcolithic to the Early Bronze Age (Fujii 1998: 137). The same is true for Structure 03; the tabular scraper-oriented lithic industry at this structure enables us to place it to the same range. Further, the concomitant occurrence of (the al-Jafr type of) Canaanean blades as punch blades provides a breakthrough to narrowing down the dating. Structure 03 (and probably Structure 01) can be dated to the Early Bronze Age. The concomitance of burial cairn(s) in both structures may serve as another line of evidence of this dating, although burial cairns are not necessarily restricted to the Early Bronze Age (e.g. Haiman 1992). Structure 1001, a workshop for (the al-Jafr type of) Canaanean blades, is also dated to the Early Bronze Age. The same may be true for SW Complex, because a few (al-Jafr type of) Canaanean blades were found there. Thus overall, Qā' Abū Ṭulayḥa West can be dated to the Early Bronze Age, although the multi-roomed, rectangular structures, which are situated along the workshops of tabular scrapers, seem to be of a later date.

Then, the next question is what stage of the Early Bronze Age Qā' Abū Ṭulayḥa West belongs to. If one follows the general consensus that tabular scrapers disappear with the end of EB III (Rosen 1989: 203; 1997: 75), one may conclude that the site belongs to some stage between EB I through EB III. However, more precise assignment is still difficult because of the total absence of more sensitive indicators such as pottery shards. The author's present impression, which is based on the overall comparison with the Early Bronze Age sites in the Negev and Sinai (Beit-Arieh 1981, 1986; but see also Sebbane *et al.* 1993), is that the placement to EB II-III seems to be the most plausible. Support for this assignment may also be found in the demographics of the southern Levant (Broshi and Gophna 1984; Joffee 1993), and especially of southwestern Jordan (Steele 1990). It seems that the rise of urban society in the southern Levant during EB II-III provided a market for the mass-production of tabular scrapers and (the al-Jafr type of) Canaanean blades. This might have revitalized the arid peripheries such as the Negev, Sinai, and the al-Jafr as specialized suppliers of flint products.

However, this is a tentative assessment; further investigation and comparative studies are needed for the final conclusion. C14 dating now in progress will provide another line of clue to this issue.

The Intra-Site Structure

A wide variety of activities have so far been confirmed at Qā' Abū Ṭulayḥa West. First, the raw material for tabular scrapers was mined and/or collected in the flint outcrops below the gentle hill. Second, the core preparation and the blank detachment took place in the core areas just between the flint outcrops and the structural area. Then, robust, cortical flake blanks were brought into the second stage indoor ateliers (e.g., Structure 01 and 03), and retouched into final products.

Furthermore, the flint outcrops were also used for the production of the (al-Jafr type of) Canaanean blades as well as that of tabular scrapers. As mentioned earlier, the primary elements produced in the former industry (i.e. robust, lateral cortical blades) were often reused as punch blades in both

lithic industries. This means that they were often transported from the former workshop to the latter one, because such blades were quite heterogeneous to the lithic industry of the latter. It is, however, unlikely that these two industries were run by the same group, firstly because both are quite different in techno-typology, secondly because the structures related to both industries are different in typology and location within the site. It seems that both groups separately coexisted within the site, probably sharing the same flint outcrop. In this regard, one may suppose the difference in seasonality between the two groups.

Besides these flint industries, Qā' Abū Ṭulayḥa West showed another aspect; the SW Complex probably represents a cemetery or sanctuary area for the neighboring settlement (i.e. the NE Complex). It is, however, still unknown which of the two flint industries was concerned with this non-domestic area. The occurrence of (al-Jafr type of) Canaanean blades in a small feature of the SW Complex might suggest that the (al-Jafr type of) Canaanean blade knappers were concerned with this cemetery or sanctuary area, but a line of cairn linked it to the NE Complex – the tabular scraper workshop area. Further discussion must await the next season's work.

Concluding Remarks

The excavation at Qā' Abū Ṭulayḥa West had originally aimed at a comparative study of the prehistoric adaptations in the arid peripheries of the southern Levant. Thus the main subject had been the study of the nomadic adaptations proper to the steppic environments. In fact, the site turned out to be a mega-factory not only of tabular scrapers but also of (the al-Jafr type of) Canaanean blades – the two off-site chipped stone industries for the Early Bronze Age urban society roughly north of Arad and west of the Jordan valley. Thus, the site indicated a close contact with the western and/or northern regions under the Mediterranean climatic regime. However, this may not be worthy of surprise, because the pastoral nomadism necessarily depends on the urban and farming societies. On the other hand, the close cultural interchange among arid peripheries – more presicely, the interrelation between the al-Jafr and the Negev and Sinai – also began to be traced in terms of burial custom and lithic industry.

The al-Jafr basin, despite the barren appearance, seems to provide a reliable clue to understanding the dynamism of the prehistoric inland Levant. The third season's excavation will hopefully further unveil the hidden dimensions of this basin so far poorly investigated.

Acknowledgements

I would like to express my gratitude to the Department of Antiquities of Jordan for their kind cooperation and to the Nissan Science Foundation for the financial support. My thanks also go to Mr Emsaytif Suleiman, representative of the Department and to the members of the staff (Chizu Kanenaga, Nazeh Fino, and Yoichi Hayasaka).

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