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A Note on the Building Methods Employed in the Construction of the Nabataean Roman Temple at Khirbat adh-Dharīh (Wādī al-Ḥasā)[1]

Introduction

The archaeological site of Khirbat adh-Dharīh was discovered in 1818. It was visited several times during the early 20th century and in the 1930s Savignac and Glueck wrote a description of the ruins (Villeneuve 1984: 437). The region was subsequently thoroughly investigated first by American and Canadian researchers and then by a French team in the late 1980s (Al-Muheisen and Villeneuve 1988: 461; Bossut 2010). Archaeological excavations were conducted between 1983 and 2008 by a Franco-Jordanian team under the direction of Dr François Villeneuve (Paris 1, Panthéon-Sorbonne University) and Dr Zeidoun al-Muheisen (Yarmouk University).

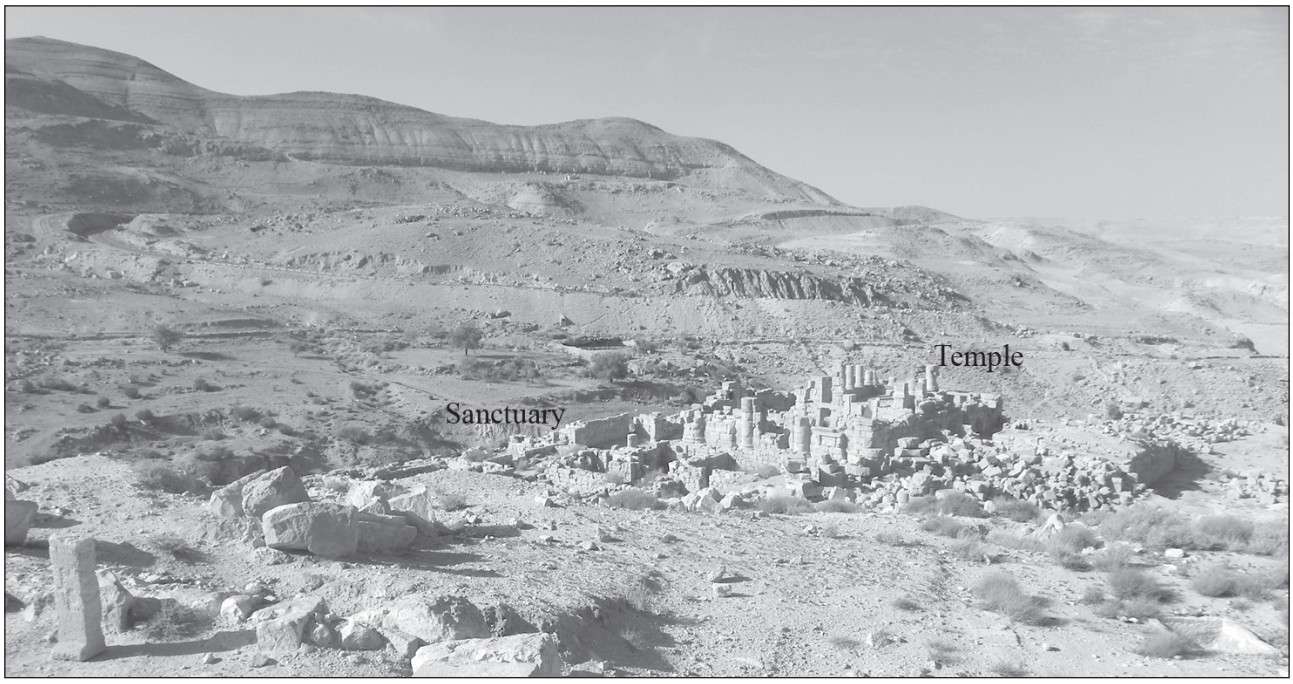
Khirbat adh-Dharīh is situated on a natural terrace, 702 m above sea level in the heart of the Nabataean kingdom, 70 km north of Petra. It was an important site in the region, strategically positioned on the road that connected Bosra and Damascus with Petra and Aila on the Red Sea. Nowadays it is easily accessible from the Kings Highway, which is just a few hundred meters away. The site extends over a area measuring approximately 500 m north/south by 200 m east/west (Al-Muheisen and Villeneuve 1994: 735)) overlooking the Wadi La'ban, a tributary river of Wādī al-Ḥasā and the Wadi Sharheh flowing below the rocky cliff to the east. Khirbat adh-Dharīh is 7 km from the site of Khirbat et-Tannur, which contains the remains of a Nabataean high-place (McKenzie *et al.* 2002: 451). These two sites can be studied together because they share the same building phases and similar art but this aspect is not within the scope of the present article.

Attached to the sanctuary of Dharih is a small rural town and a necropolis. The main occupation phase lasts from the 1st century AD until AD 360. The place of worship (built on a sanctuary of the 1st century AD) consists of two successive courtyards and a temple located at the northern extent of the second courtyard (Villeneuve 1984: 424).

The Nabataean Roman Temple

The temple is the main focus of the site. The building phases belong to the beginning of the 2nd century AD, which coincides with the Roman annexation in AD 106 (Al-Muheisen and Villeneuve 2005: 424). It is constructed of limestone and measures *ca.* 17 m × 23 m and has a north-south orientation. Nine levels of the temple are preserved and the whole building is designed in a symmetrical way.

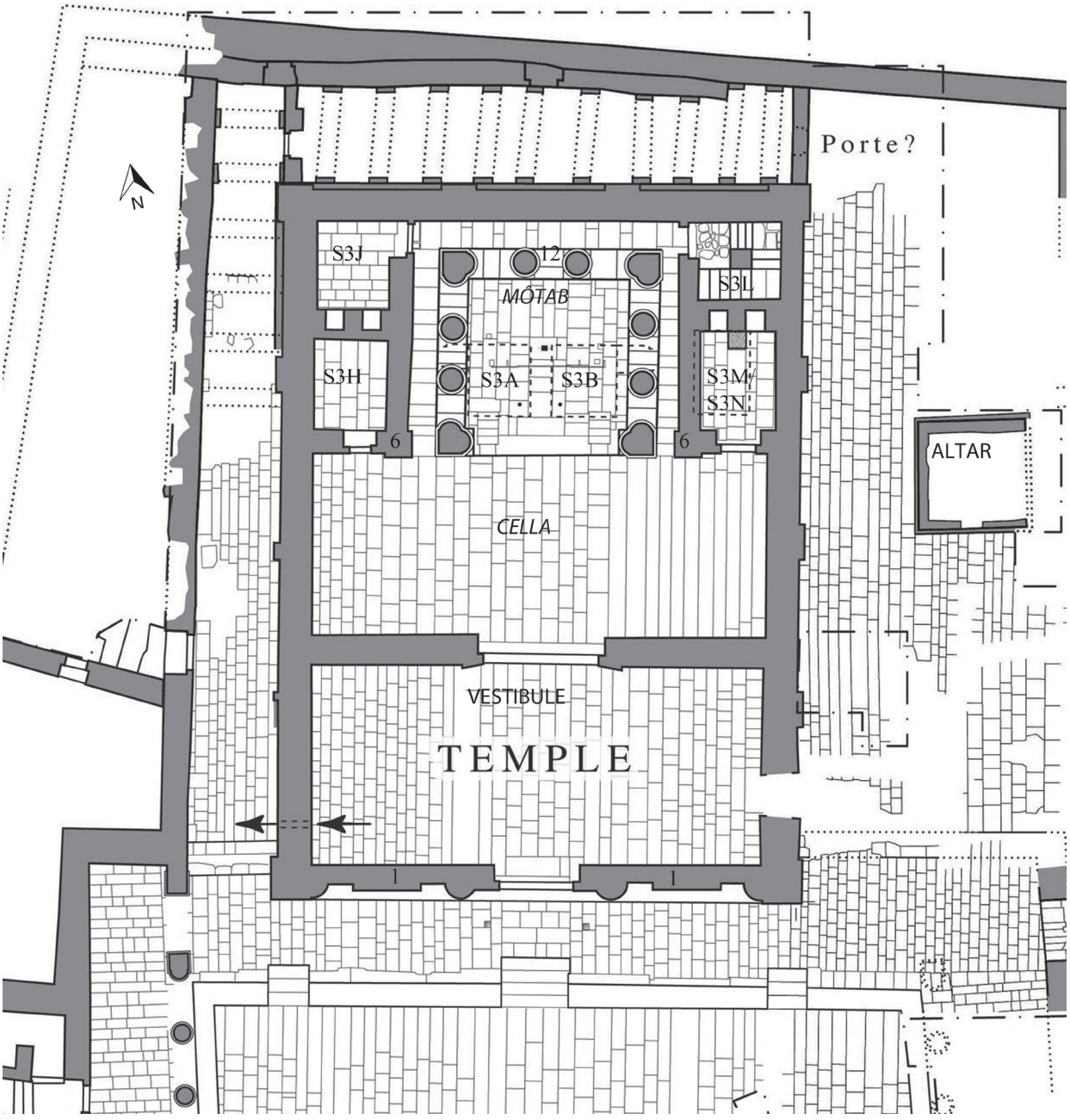
1. I would like to thank Dr. F. Villeneuve and Dr. Z. al-Muheisen for giving me the opportunity to present this overview of work that is in progress. I am very grateful for E. Bocancea (Joukowsky Institute for Archaeology and the Ancient World, Brown University) for her corrections.



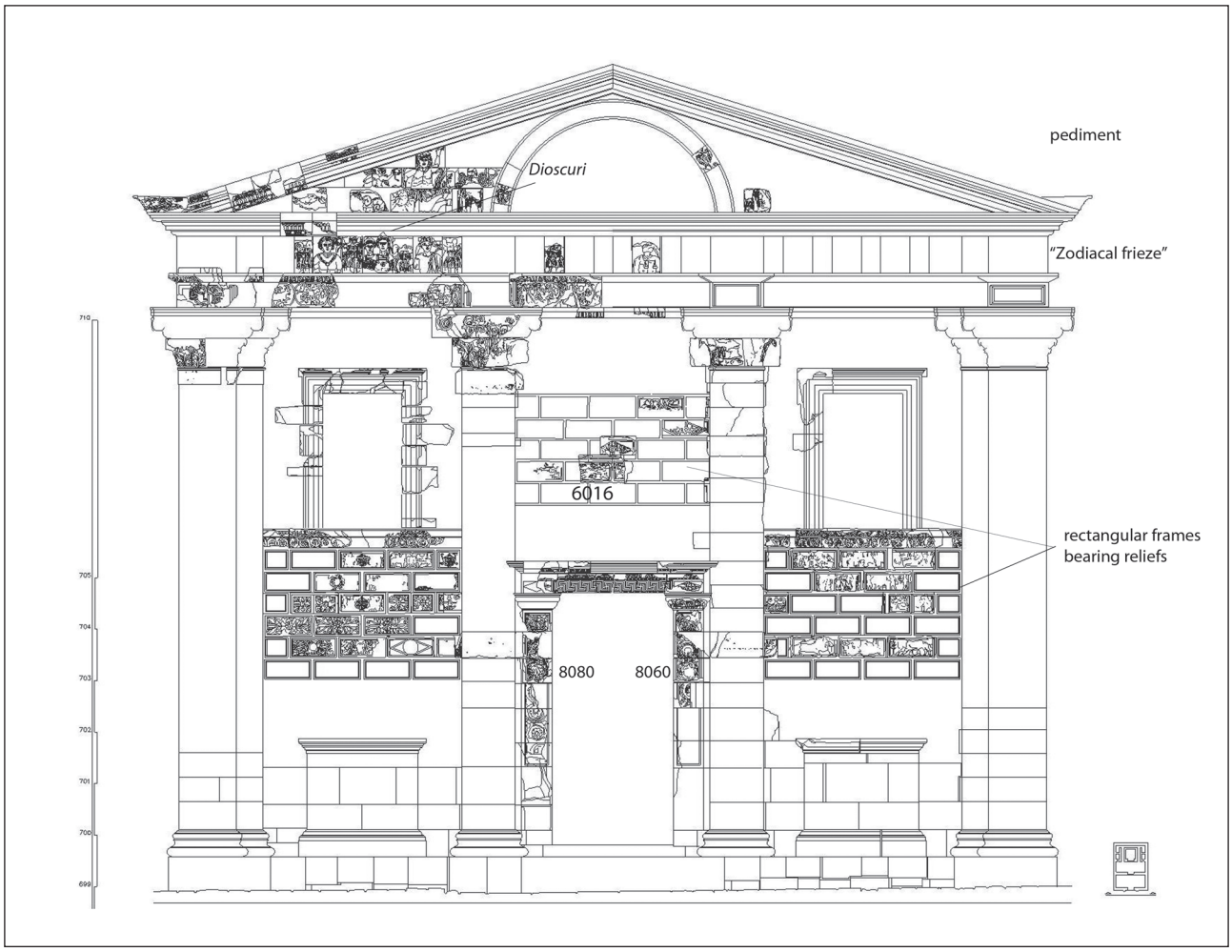
1. View of the temple (looking north) (D. Seigneuret).

A central door, carved into the monumental façade, leads to a vestibule with a *barlong* plan. To the north the place of worship has at its centre a squared podium (*môtab*) with a columned *baldaquin*, on which three *baetyls* could be placed. A narrow corridor runs around the *môtab*. Two corner rooms are located on opposite sides (S3H, S3J, S3M, S3L). In the north-east corner room was a staircase (S3L) which probably led to a terrace. Two crypts are extant under the *môtab* (S3A and S3B), perhaps originally serving a cultic purpose, and a third (S3N), located beneath the east room (S3M), housed the baetyls and other artefacts of worship. Members of the mission to Khirbat adh-Dharīh, in particular F. Villeneuve, A. Chambon, F. Larché and R. de la Noue, invested considerable energy in the reconstruction of the façade, which has enabled an accurate understanding of the construction methods used in the building of the temple, including the problems that were encountered.

The front wall (No. 1), parts S3H and S3M of the south wall (No. 6) and the north wall of the *môtab* (No. 12) were made of richly carved and decorated blocks. The façade of the temple is symmetrical with a central monumental door that is flanked by half-columns on each side (Villeneuve 2002: 189). The whole is framed by quarter-columns and corner pilasters. The spaces over the door, between the half-columns and the corners, were decorated with rectangular frames bearing reliefs, damaged in the past by iconoclasts (FIG. 3). The original position of these between the columns is confirmed by their place of discovery and by the connection of the blocks with the drums of the half-columns (Seigneuret 2015). Above a decorated architrave showed a ‘zodiacal frieze’, which alternated between busts of the zodiac signs and winged victories, a cornice and a triangular pediment with a central semi-circular *tympanon*. On the northern part of the temple, the very complicated sculpted decoration of the *môtab*’s entablature and of the lateral rooms included, 1) rectangular frames with busts and circular medallions, 2) blocks decorated with pomegranates, 3) *putti* (cupids), a very well-known theme in Nabataean art and 4) friezes decorated with bas-reliefs of winged victories, surmounted by a cornice (FIG. 4). Restoration of all the blocks in the southern part of both the west and east rooms (S3H and S3M) up to a minimum height of around 9 meters and



2. Plan of the temple (second century A.D.) (J. Humbert, IFPO and Dharīh Archaeological Project).



3. Reconstruction of the facade temple (R. de La Noue, Dharīh Archaeological Project).

in alignment with the decoration of the *môtab* appears possible.

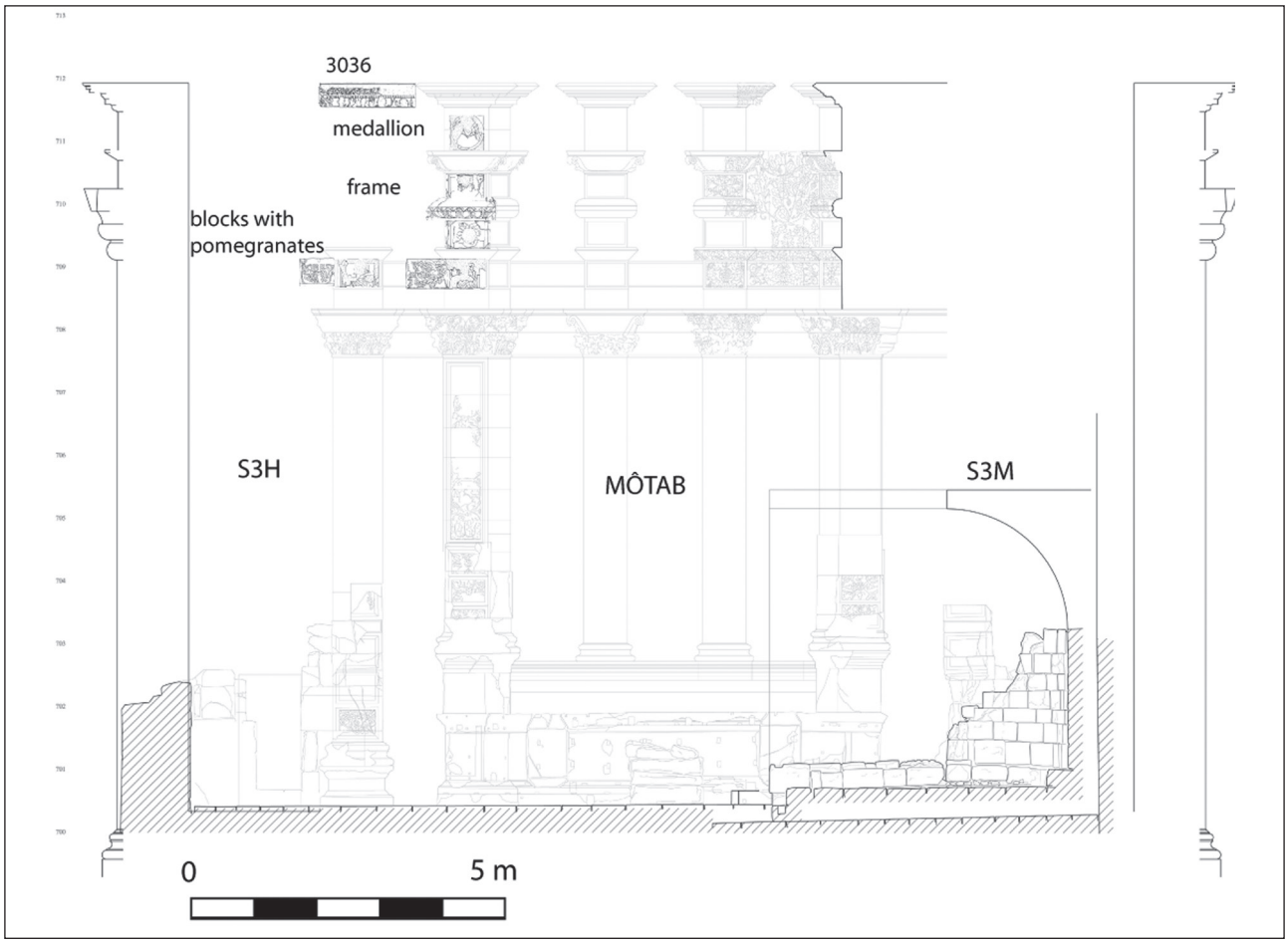
Questions about the construction arise, such as, did the craftsmen carve the decorated blocks of the temple on the ground before they were raised and installed on the coursed masonry, or did they carve them directly onto the built walls? Two joint techniques seem to have been employed at Khirbat adh-Dharīḥ, 1) stone cutting on the ground and 2) stone cutting directly on the monument.

Stone Cutting on the Ground

To produce the carved decoration found on some of the blocks (including the zodiacal frieze, the winged Victories, and the Corinthian and Nabataean capitals) the sculptors probably found it easier to work on the ground, enabling them to move around the stones as needed. Indeed, the capitals and the blocks of denticulate cornices seem to have been shaped in this way. The acanthus leaves of Corinthian capitals are bent, something impossible to achieve by carving directly onto the monument[2] (FIG. 5). By observing the reconstruction of the façade's entablature, we notice that the Dioscuri's *pileus*[3] on the frieze hides some of the egg and dart and dentil pattern of the cornice located just above it (FIGS. 3 and 6). So, initial assessment suggests that the zodiacal busts and the cornice blocks were carved on the ground. Then, in a second step, these elements were lifted and positioned on the monument. These blocks could not have been sculpted on the façade.

2. For example, the Corinthian capital (No. 3028/3156) is 1,38 m long, 1,36 m wide and 0,78 m high.

3. This block (No. 9132) is 0,59 m long, 0,22 m wide and 0,80 m high.



4. Decoration of the môtab (R. de La Noue, D. Seigneuret and Dharīh Archaeological Project).

5. Corinthian capital of the temple (Dharīh Archaeological Project).

6. Block of the Dioscuri (frieze of the facade temple) (Dharīh Archaeological Project).

Stone Cutting Directly on the Monument

In the case where we observe rectangular frames bearing reliefs between the half-columns of the façade (wall No. 1), we can suggest that the craftsmen's work was quite uncommon. In one instance four parts of different designs are noted on one of the blocks (No. 6016: 1.05 m × 0.51 m × 0.53 m) (FIG. 7), suggesting that the sculptor(s) may have planned the entire design before the construction of the temple. Special attention was given to the form of these framed blocks. Their outer faces are sculpted with an ornament inserted into a bordered frame and the joint faces are plane-dressed.

Carving directly onto the walls of built monuments is usually easily recognizable because, as with this instance, the craftsmen ignore the joints of the blocks when sculpting the decoration (Bessac 2003: 58).

The stone cutting of the rectangular frames, the pediment blocks of the façade, and the sculpted decoration of the northern part (the entablature of the 'baldaquin', and the south part of the *môtab* and of the lateral rooms) seems to have been carved directly onto the built walls.

The setting of these blocks was unfinished when they were placed on the monument: we suppose that mason's marks were made on the outer faces in order to accurately place and complete the decoration (Amy 1976: 68). The stone masons probably started their work alongside the coursed masonry located at the top of the walls. The newly carved decoration was thus protected. The only real difficulty would have been the accumulation of limestone waste at the bottom of the wall. Indeed, it was

necessary to continually remove this waste as they worked in order to optimize space and to position the wooden scaffolding, which was eventually disassembled. No trace of these scaffolds could be identified but pieces of wood used to construct them were probably reused subsequently (Darles 2010: 157).

Several teams could work on the same wall with the same tools at the same time. However, all masons would hae had to carve the blocks independently in accordance with a general schema to achieve the desired result. For example, blocks No. 8080 and No. 8060[4] (FIGS. 8 and 9) show the same pattern but are treated differently. The small laces which support the vegetal crown are straight and regular on the first block, whereas they are more irregular and awkward on the second. Moreover, the crown has a more rounded shape on the east doorjamb and the leaves are more oval. We can therefore assume that two different stone cutters carved these two blocks.

7. Block n° 6016 with four parts of different decorations (D. Seigneuret).

8. Block n° 8080 (door of the façade temple) (Dharīh Archaeological Project).

4. Replaced respectively on the sevenths coursed masonry of the west and east doorjambs of the central door of the façade temple. The block No. 8080 is 0,57 m long, 0,52 m wide and 0,47 m high; the No. 8060 is 0,68 m long, 0,86 m wide and 0,46 m high.

The same observation can be made regarding the frames of the south niche of the Baalshamin temple of Sia (South of Syria). The observations demonstrate that two craftsmen carried out the sculptural decorations on the two doorposts (Bessac 2003: 59).

Block No. 3036[5] (FIGS. 4 and 10) seems to have been cut directly onto the north wall of the *cella* by two different sculptors because the denticles are not treated in the same manner and are not the same length (they are 5 cm high on the left hand side and 3.5-4 cm high on the right hand side). The two artisans could hardly work simultaneously on the same scaffold without disturbing each other. We therefore hypothesize that they worked sequentially.

The method of carving directly onto the standing monument[6] is similar to that used by the craftsmen in Petra and Hegra who decorated the façades of monumental tombs from the top to the bottom (Bessac 2007: 89). For the temple of Dharih, this was an operation which required great expertise as the limestone became more and more difficult to cut once it was exposed to the open air (Bessac, Leriche 1992: 78). This technology has been noted in Egypt, on the walls of Graeco-Roman temples (Goyon *et al.* 2004: 471). Indeed, in Egypt, the craftsmen carved the walls starting with the upper coursed masonry and thus were working in a similar manner to that noted on the remains of the Dharih temple, that is by first delimitating the contours of the pattern, carving the details, polishing the surfaces, and erasing any visible traces of tool marks.

9. Block n° 8060 (door of the façade temple) (Dharīh Archaeological Project).

Conclusion

The construction of the temple appears to have been planned in advance employing a hierarchical workforce under the supervision of a 'master builder' responsible for enforcing the program of building. In contrast, a lack of standardisation in the friezes and other ornamented elements of the temple, suggest these were carved by several sculptors without any regulation imposed on the various «hands» by a supervisor (Gros 1983: 442).

The teams who worked on the temple of Dharih seem to have been influenced by the monuments of Petra. Although it is difficult to determine the origin of the craftsmen the treatment of figurative decoration is very characteristic of Dharih and Tannur, suggesting the intervention of local sculptors, at least in part, and it can be imagined that mixed teams worked together on both sites. The sculptors clearly took into consideration local geology and terrain and they employed solid construction techniques in building the temple. All of this implies local knowledge and architectural expertise. The ongoing study of the temple of Khirbat adh-Dharīh will continue to shed more light on its construction techniques.

5. This block is 1,55 m long, 0,51 m wide and 0,40 m high.

6. Involving the autonomy of each team.

10. Block n° 3036 (decoration of the north part temple) (Dharīh Archaeological Project).

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