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NEO-LITHICS 2/04

The Newsletter of Southwest Asian Neolithic Research

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Technical University Berlin <moritzkinzel@web.de>

Referring to an old proverb –"a picture says more than a thousand words"–, this article should be seen as a comment to the following reconstruction drawings of PPNB architecture from Ba'ja, Basta, and Shkârat Msaied.

The PPNB architecture of southern Jordan, especially in the Greater Petra Area, is said to be "well known" from sites like Basta, 'Ain Jammam, es-Sifiya, al-Basît, Ba'ja and Ghwair. But how well do we really know these well preserved structures? We see only parts of very complex buildings, where no outline of a house is really clear, with the possible exception of the main building in Basta, Area B (Nissen *et al.* 1991; Kinzel 2003). In settlements like Ba'ja, one cannot isolate a single ground plan of a house. What belongs to a house? To reconstruct the full size and volume of a house unit in that context one cannot simply project a ground plan to the vertical dimension. This holds true irrespective of the question of whether or not the PPNB houses were multi-storeyed buildings. In detail, the results from Ba'ja and Basta allow different interpretations of the same situation. Fig. 1 gives an example: a commonly used wall between two "rooms" featuring a support for a ceiling or roof and a wall opening.

The following possible interpretations are the first key to understand the character of PPNB architecture:

1) Wall sharing: One-storey buildings, using the roofs as an activity area, but no second storey. The supposed support of a ceiling is perhaps just a result of different building events, adding a new wall on a higher level on top of the lower parts of the wall. An example is Old Basta village.

2) Split level: A building unit uses different levels. A house can use more than one terrace level. Fig. 4 presents an example from the modern village of Rajif. This seems to be the "normal case" in most of the LPPNB sites of southern Jordan.

3) Two- or multi-storeyed houses: The findings connected with the site topography, the architectural preservation, and the room fills, especially in Baja, can be interpreted as complex multi-storeyed building structures.

Combining these interpretations, we get a tool to characterize the architecture of different sites. In Basta the wall sharing feature is predominant, with a split-level shaping and a few extreme variations of 3) above. The "normal case" in Ba'ja is the multi-storeyed building with varieties of 2) and, to a lesser degree, of 1). This means that all three different types can occur in one set-

tlement, but in every site another feature is the "normal case" (Fig. 1 – All drawings by the author).

A second key to the understanding of these structures is to look at the room sequences. Passageways connect the compartments, sometimes also on different levels (*cf.* 2), split level). By identifying connected rooms as sequences we are able to identify parts of the building structure that were transformed in form and function as a result of rising floor levels (Fig. 2).

In Ba'ja Area C there are different room sequences (RS). RS I: the rooms in C32 and C22 are on different levels connected with doorways following the relief of the slope down the hill. RS II: the rooms of C21 and C20 are more complex. C20 shows an area transformed by floor raising and refilling. A room connected to the others with doorways was filled, and on top of the new plastered floor level a staircase was added connecting different levels independent of the site's topography. If we bring all room sequences and their interrelations together, we will get a better comprehension of the passageway system of the settlements (Fig. 3).

The next question in reconstructing PPNB architecture is what did the whole thing look like? For comparisons with PPNB architecture in general, the traditional architecture of the semi-arid regions along the 30° latitude around the world is a treasury of knowledge (Adam 1981). A more specific source of explanation and comparison is the recent traditional village architecture of southern Jordan (*cf. e.g.*, Haberkorn 2000). These villages show a wide range of local varieties that characterize this rural architecture. In modern Rajif, for example, it is possible to find features 1) and 2) as outlined above. Thus, there is a striking example of a split-level house that at the same time represents the wall sharing type. Small passageways connect the different levels of the building complex (Fig. 4). There is reason to believe that
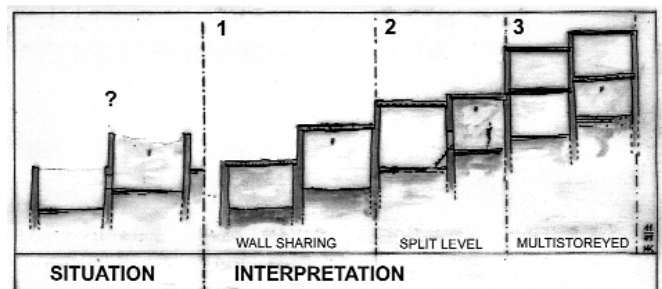

Fig. 1 Possible interpretations of PPNB architecture.

the buildings of Rajif have the same wall and roof construction as in Neolithic Ba'ja and Basta (Fig. 5). Also, in Rajif we find a clear example of the complexity of building events. Near the mosque three houses stand next to each other in a line. Originally, each building had a separate entrance and one or two windows. The entrances were oriented to the alley. Later the house in the middle was transformed into a courtyard. The entrances of the other two buildings were then blocked and new doorways oriented to the courtyard were added. These changes resulted in a completely different context of these buildings within the settlement system. Before the middle house was changed into a courtyard, the three buildings were part of different units. Later, two separate areas with their own entrance gates came into being (Fig. 6). With this example in mind, it becomes obvious how complicated it is to reconstruct Neolithic architecture and possible building events. Nevertheless, we may use the study of local traditional architecture as the third key for the understanding of PPNB architecture. But we have to be aware of the danger to transfer recent traditional architecture indiscriminately to LPPNB architecture.
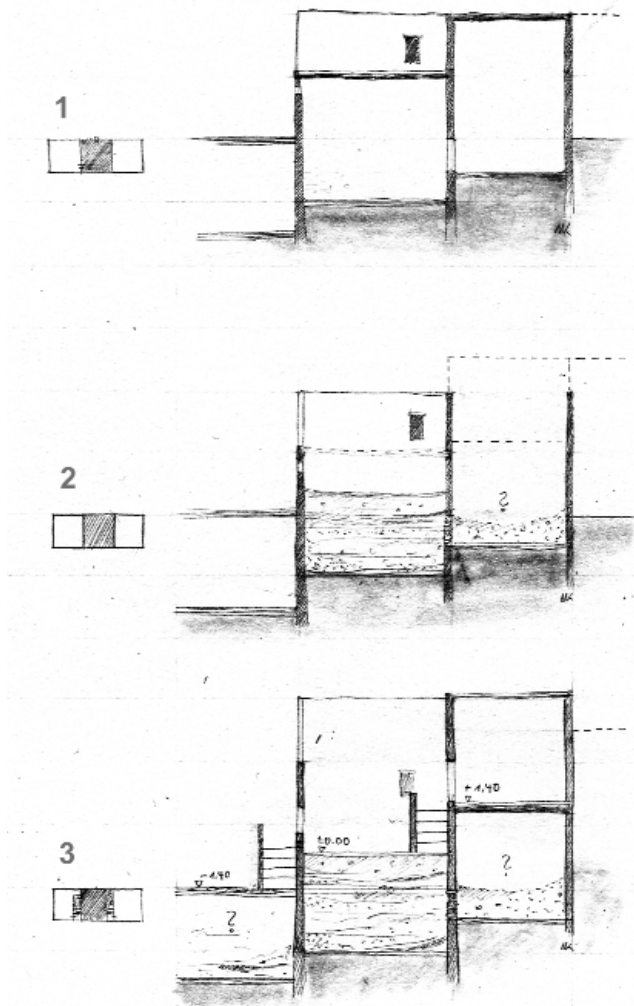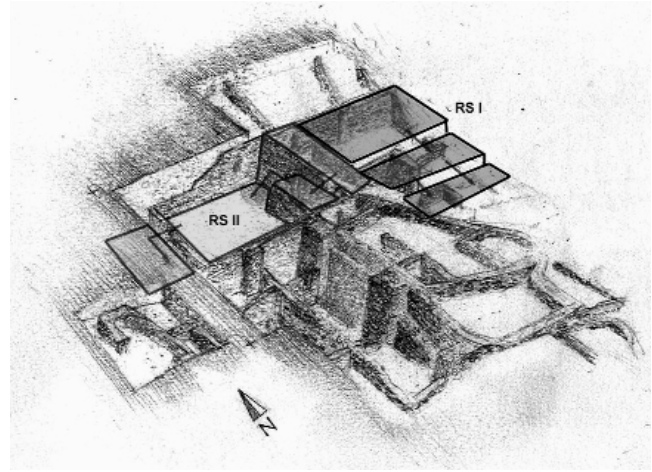

Fig. 3 Ba'ja: Room sequences in Area C: understanding the passageway system of the settlement.
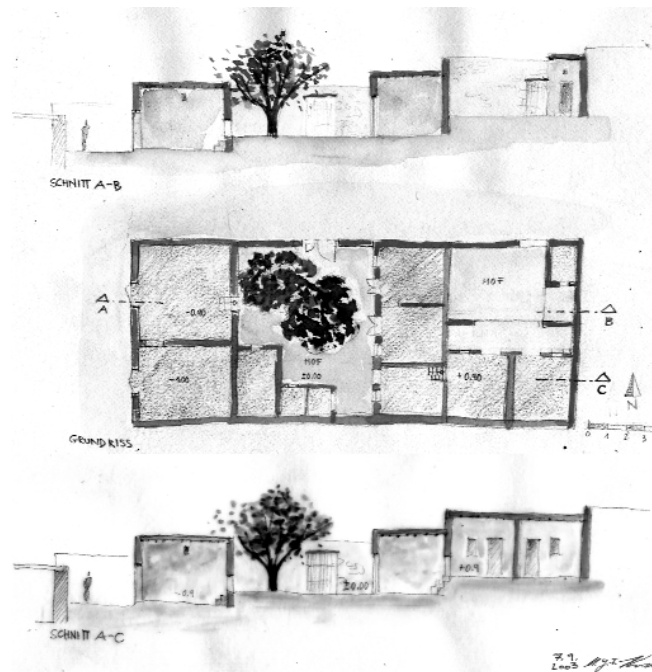
Fig. 4 Rajif, a traditional village in southern Jordan: An example of a split-level house (*cf.* Fig. 1).

Fig. 2 Ba'ja: C20 / C21, rising floor levels. 1-3 shows the transformation of Area C (*cf.* Fig. 3, RS II).
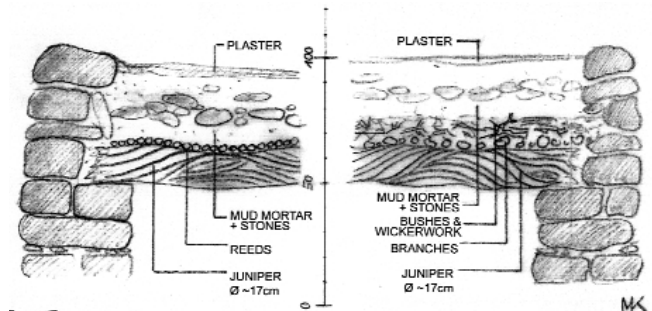

Fig. 5 Rajif: Two roof constructions. Left: similar to the roof construction of Ba'ja. Right: like the roof construction of Shkârat Msaied (*cf.* Fig. 7).

Hitherto it looked as if recent traditional architecture of the Greater Petra Area is based on the rectangular architecture of the Late Pre Pottery Neolithic B, but the results of the 2004 campaigns of the Carsten Niebuhr Institute in Shkârat Msaied add new aspects to this discussion (Jensen *et al.*, in prep.). In Shkârat Msaied there is evidence of solid and substantial, circular stone architecture. The cross-section profile in unit K shows the characteristic roof construction of the region (Hermansen and Bille Petersen, in prep.). Fig. 7 is a reconstruction of this feature. Analysing and interpreting the room fill of unit K, we may assume solid walls were erected using local sandstone and limestone to a height of at least 1.80 m. The beams of the flat roof, about 18 cm in diameter, rested on a scaffold of wooden posts that were placed in wall channels in the interior wall face. Branches and brush were placed across the beams, covered by thick layers of mud and mortar embedded with cobble-sized stones. Finally, on top of the roof construction we may assume some layers of lime plaster. Compared to the roof construction of the LPPNB architecture, this MPPNB construction seems to be the beginning of later traditional building technology. The findings of Shkârat Msaied indicate that as early as in MPPNB people started to experiment with the flat roof construction and its

use for daily life. This includes the conversion of rooms, space, and the ground plans from circular structures to more rectangular ones (Fig. 8). Therefore, MPPNB sites like Shkârat Msaied are the fourth key to an understanding of the history of PPNB architecture and its principles.

As seen from the results in Shkârat Msaied, Ba'ja, Basta and other sites, most information about PPNB architecture can be found in the room fills. With respect to the preservation of PPNB remains two major phases can be distinguished. First, the filling of the small-room architecture during the occupation of the settlement and, second, the processes after the settlements were abandoned (Gebel and Bienert 1997; Gebel 2004). At Ba'ja in particular, the filled room interiors demonstrate that the material stems both from the structure's own debris and its surroundings and rapidly filled the room interiors (Ch. Hannß, pers. comm.). Two interpretations are possible: either parts of the building structure were intentionally filled during the LPPNB occupation in order to create a new building on top of the old walls, or the filling material belonged to a second storey that had existed on top of a basement that was preserved. Although unresolved so far, the results from room fills in Ba'ja give an idea of the roof and ceiling construction. In principle, the construction is the same as in MPPNB Shkârat Msaied and modern Rajif as described above. Thus the stratigraphy or the room fill can be used as the fifth key.

The problem of reconstructing PPNB architecture is even more complex. A broader understanding requires an investigation into the functions of different areas and the role of burials in the overall settlement system. Using all five "keys" it still seems possible to give an idea how PPNB architecture could have looked (Figs. 9 and 10). It must be added that the PPNB architecture of the Greater Petra Area is marked by a mountain setting that requires a solid and sustainable way of house building. Each site shows local characteristics and independent developments, sometimes to extreme variations compared to the "normal case". It should be clear by now that it would be misleading to concentrate on the phenomena of one site only. In order to get a better understanding of PPNB architecture in general, we must compare one site with the knowledge of the phenomena of all others. I hope to present the results of my studies on the reconstruction of PPNB architecture in more detail later.
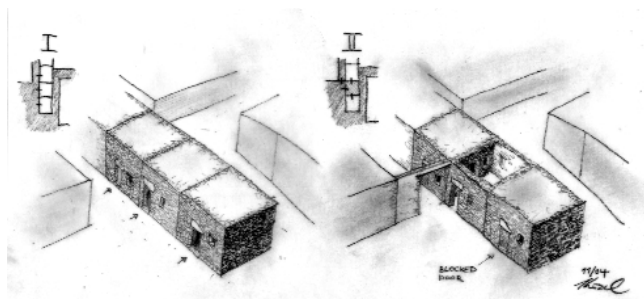
Fig. 6 Rajif: Transformation of ground plans and the settlement system, possibly the result of changes in the social structure of the village.
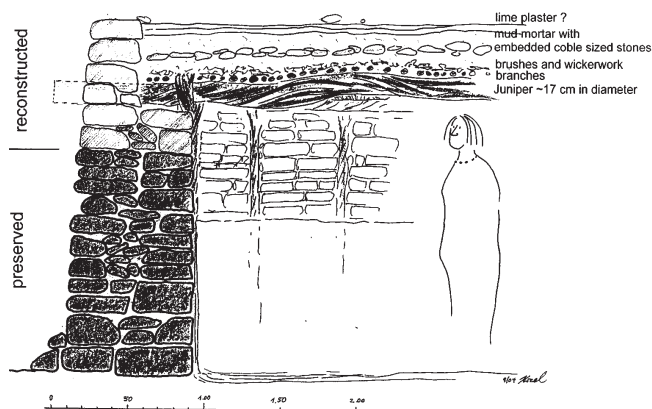

Fig. 7 Shkârat Msaied: Reconstruction of Unit K, cross section.

Fig. 8 Shkârat Msaied: Reconstruction of the MPPNB settlement depicting the solid, circular stone architecture with flat roof construction (*cf.* Fig. 7) and walls up to more than 1,80 m.

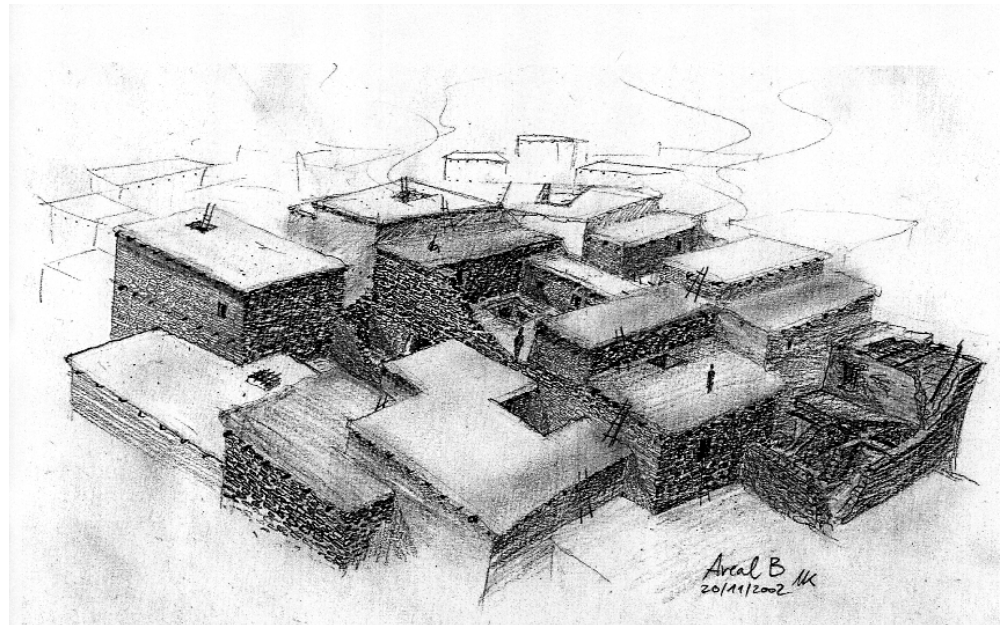Fig. 9 Ba'ja: Reconstruction of the LPPNB settlement.

Fig. 10 Basta:
Reconstruction of
Area B.

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