

This includes a Nizzanim projectile point, ceramics representative of the Jericho IX period, and a radiocarbon date of 6,980±70 bp (ISGS-4002), all of which are associated with at least one well-preserved stone structure. The field research conducted in 1994 by Kuijt and Chesson (n.d.) at Ain Waida', located on the north side of Wadi Dhra' has documented an extensive Pottery Neolithic occupation that dates to the Oatifian period and has been radiocarbon dated to 6,170±55 bp (AA-29771).

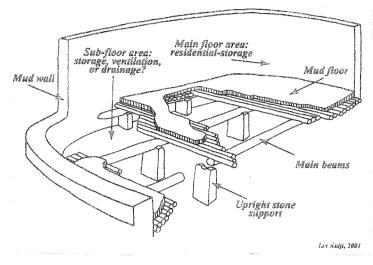


Fig. 4. Reconstruction of Structure 4, Area I, Dhra', Jordan, abandoned ca. 11,260-11,175 BP.

## **Conclusion and Discussion**

Analysis of the 2001 field season materials will provide a more detailed understanding of the spatial distribution and depositional contexts of recovered cultural materials. Ongoing analyses includes lithic technology (N. Goodale), lithic use-wear analysis (S. Smith), stratigraphy (S. Dennis), paleobotanical remains (R. Neef), archaeozoology (C. Becker), and micromorphology (T. Aspin). Field analysis of chipped stone tools has lead to the identification of 1,410 tools, and some 64,447 pieces of debitage and debris. This is 25% of the lithic material recovered in the 2001 season, and this indicates that the total number of lithics (tools and debitage) recovered this season is approximately 257,788 items (Goodale et al. n.d.). It is planned that the excavation of the PPNA occupation of Dhra' will continue in 2002-2004.

Excavations at Dhra' have reinforced our overall impression of the PPNA settlement, and provided new insights into the forager-farmer transition along the Dead Sea. First, the 2001 archaeological excavations at Dhra' highlight that while it was occupied in the Pottery Neolithic period, it is clear that it was much more intensively occupied in the PPNA period. Second, excavations in 2001 underline that there is no Natufian or Pre-Pottery Neolithic B period occupation at Dhra'. The absence of cultural materials from these other periods is important, for it will ensure no mixing from the preceding and following periods. Moreover, the new excavations have clearly demonstrated that the previously identified Early Bronze Age and/or Pottery Neolithic presence is minor and limited to the area around the Tank Trench. Third, excavations in 2001 echo previously published interpretations of the lithic technology at Dhra' (Kuijt n.d.; Kuijt and Mahasneh 1998), with the overwhelming majority of tools being el-Khiam points, and borers, both produced from single-platform pyramidal cores, in combination with heavy woodworking tools.

The 2001 archaeological excavations have also provided us with significant new information related to the occupation at Dhra'. It is now clear that the PPNA occupation at Dhra' was considerably larger than previously recognized. Furthermore, PPNA Dhra' was complex, being characterized by the construction of multiple stone and mud structures, with a density

of cultural materials that mirrors that seen at such major PPNA villages of Netiv Hagdud and Jericho. This, combined with the on-going analysis of recovered lithic materials, illustrates that the PPNA settlement at Dhra' was one of a limited number of relatively large sedentary village settlements. The field research at Dhra' will provide a unique database upon which researchers will be able to comprehend better the important social and economic transition from foraging to farming in the southern Levant at the beginning of the Holocene.

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Endnote 1. In her original field research Bennett (1980) undertook soundings at six areas (Area I-VI). With the exception of Area I, it has proven impossible to establish where her other soundings were located other than in a very general sense. Due to these complications, as well as the importance of differentiating our excavation units from those of the past, for this project we are designating our excavations by Arabic numerals (e.g., Area 3).

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# LPPNB Ba'ja 2001. A Short Note.

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A fourth season of excavation was carried out between Sept. 11 and Oct. 11 2001 at LPPNB Ba'ja, north of Wadi Musa, southern Jordan, under the directorship of both authors. The team consisted of 20 members from seven countries; up to 22 local workmen were employed.

The already difficult conditions and logistics of excavations at Ba'ja were worsened this year by a considerably more difficult site access, caused by partial deepening of the gorge's bed. Torrential rains in winter and early May had reduced its gravel fill by as much as 2-3m at spots (e.g. Fig. 2), which resulted in more exhausting climbing and transport for maintaining the excavation infrastructure (for reports on the previous seasons *cf.* the bibliography).

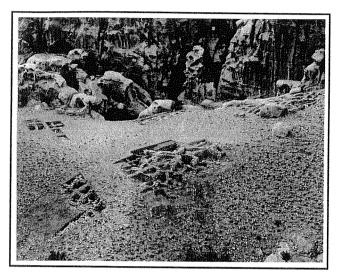


Fig. 1. Site from SE in October 2001. (photo by Boris Borowski)

# Research Objectives of the Season

We approached the season with the following objectives: 1) Clearance of the supposed gate structure in B 74 (Area B-South), which we assumed to have given access to the site in this prominent topographical position.

2) Extension of Area C towards the west in order to identify a possible open space in the settlement. (Fig. 3)

3) Removal of the balks in Area B- North for understanding the ground plans exposed here in 2000. (Fig. 4)

4) Opening the first squares in the extreme slope setting of Area F in order to understand architectural engineering in very steep locations. (Fig. 5)

5) And finally, the excavation of the collective burial in Area D, which was found associated with a wall painting (Gebel 2001). (Figs. 6-7)

In general, it may be stated that the 2001 season was to clarify further the many exceptional finds uncovered in the 2000 season. Except for Area F no new quarters of the site were opened.

#### **Field Operations**

Altogether 6.5 new 5 x 5m squares were investigatd, while excavation continued in three previous squares in the locus of the collective grave (Area D 11/12/21/22); eight balks were removed in Area B-North. In B-South excavations continued in B74; B84 and B85 were newly opened. In Area C the eastern half of C0 and the western halves of C10 and C20 were opened, while the balks between C11/21, C21/22 and C10/20 were removed; digging continued in the eastern halves of C10 and C20. In the newly opened steep-sloped Area F, Squares F10-12 were excavated. The only operation in Area D was the excavation of the collective burial.

In addition to the excavation work, conservation measures and related work were carried out in the oldest parts of excavation (Area C: partial filling of rooms, conservation of wall tops; storage of dressed stones for wall restoration, etc.).

#### Results

The results of the 2001 season appear less spectacular than those of the previous season because work concentrated on the further investigation of these findings. In general, the 2001 results have enabled us to plan for an interim monograph evaluation of the site's results so far, in order develop on that basis the future research questions for the long-term project. The next season in spring 2003 will follow some open questions for that monograph, and will open the second term of excavations at Ba'ja.

1) The supposed gate structure in B 74: The nature of this interesting structure was not entirely clarified since we did not reach its foundation in 2001. However, having traced the height for about 2m (width: c. 1.7 m), we still feel justified in interpreting it as the passage (which was blocked later) to the main part of the village, situated in a topographically most prominent situation. At an intermediate stage in its development, the width of the feature was reduced by the construction of an east-west wall that narrowed the passage to the east. Later again, the "gate" was blocked by a wall from the west and filled with stones. Then the previously mentioned E-W-wall was taken down to an approximately horizontal level, and the whole area immediately to the east of the gate was intentionally filled in a sequence of events that cannot be detailed here. As indicated by excavation in the neighboring squares B 84-85, the "gate" remnants were finally incorporated in the later domestic architecture of the area that must have provided another access solution for the main and central parts of the village.

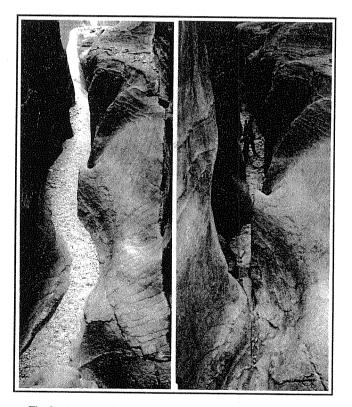


Fig. 2. Access to the site through the gorge in 2000 (left: bed still with gravel fill) and in 2001 (gravels washed out, bottom lowered by ca. 3m). (photos by H.G.K. Gebel)

2) The supposed open space west of the buttressed wall in Area C (Fig. 3): Extending the excavation of Area C did not confirm the existence of an open space or plaza immediately west of the buttressed facade in CO/10/20. Rather, a series of walls seem to radiate from this "facade" in the western direction. These are further connected by dividing walls of varying quality oriented roughly northsouth. This creates the impression that at least in the upper preserved stratigraphy this area became overgrown by a dense pattern of rooms and spaces rather than having functioned as a plaza. However, three phases of occupation can be identified in the western parts of Area C, and only the painstaking analysis of the architectural events will reveal whether these spatial subdivisions belonged to the original situation or were subsequently added. *In situ* floors of the first and second phase were exposed and the approximate level of a third phase was also identified. It appears obvious that the buttresses were continuously maintained through all the three phases, and that the building in Area C is a core from which the occupation developed structurally.

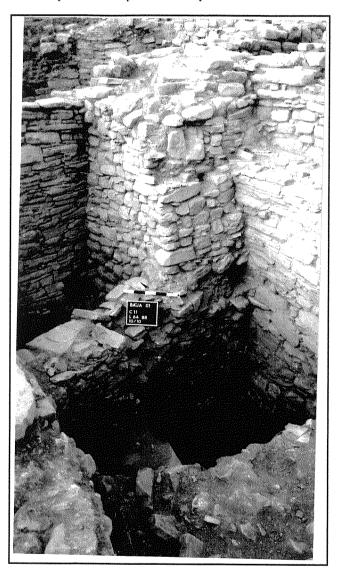


Fig. 3. Western Area C with one of the buttresses existing in two building phases, from SSW. (photo by H.G.K. Gebel)

3) Ground plans of Area B- North (Fig. 4): The balk removals allowed us to understand that we are dealing with the basement parts of two or three domestic units on different building terraces, of which the original floors have not yet been reached. Numerous alterations (blocking of wall openings, rebuilt wall courses, inserted staircases, etc.) show that the spatial use of buildings was reconsidered continuously. The remains of a stairwell confirms that connections between basements and first floors could be achieved by built stairs, whereas rooms with no openings in the walls indicate that ladders through openings in the ceilings served this function in other cases.

4) Area F (Fig. 5): A considerable depth of deposits (with one wall preserved to a height of at least 3.70m) had already been found in Test Unit 5 during the previous season. In this year's excavations we opened three squares immediately south of the edge that separates the topography of Areas C and F (Gebel and Bienert 1997: Fig. 4:B). Here we found a dense pattern of architectural features, which indicates that the settlement extended considerably downslope. The main walls of the architecture of the slope run north-south along the direction of the slope, while all the system of east-west room-dividing walls between (following the contour lines) lean extremely downslope. Thus the groundplan is characterized by small rooms, indicating that, here as elsewhere on the site, we are most probably dealing with the basements of two-storied houses. No bottom floors were reached in this difficult terrain, but two and possibly three succeeding floors were reached. So far, no evidence of specific activities other than domestic / workshop ha been identified here. Certainly, the northern parts of Area F belongs to the domestic occupation of the site. The occupation of such an extreme slope area (35-40°) in our view triggers arguments of spatial stress in Ba'ja.

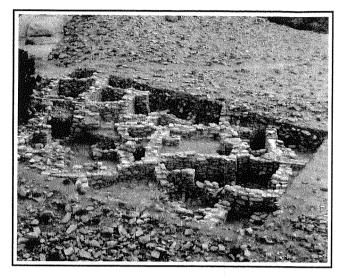


Fig. 4. Area B after the balk removals, from W. (photo by H.G.K. Gebel)

5) Collective burial (Figs. 6-8): The final excavation of the multiple burial already encountered in 2000 in a small room lined with chamber-like walls in D1 1/12/21/22 was the focus of work of anthropologists headed by Prof. Dr. Michael Schultz, Göttingen University. The burial must have been originally covered by the long stone slabs found in the area, presumably resting on top of the chamber walls. The eastern chamber wall was set in front of the miraculous wall painting on the room wall (Gebel 2001a-b).

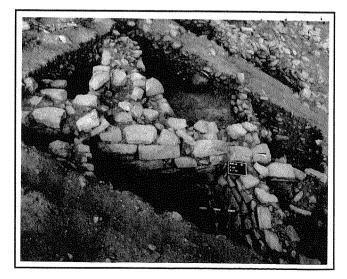


Fig. 5. Area F from W. Note the steepness of the slope. (photo by H.G.K. Gebel)

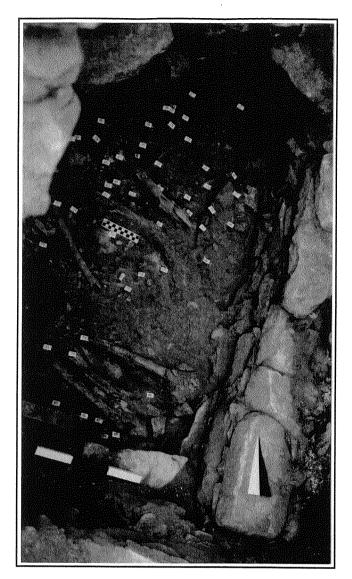


Fig. 6. Upper layer of the collective burial in Area D with wall painting (E of the arrow), as already excavated in the 2000 season. (photo by H.G.K. Gebel)

Prior to final analysis the anthropological investigation of the human bones indicates that c. three adults and nine very young infants were buried in the chamber, which occupied ca. 0,65m<sup>2</sup>. The depth of the bone layer reached c. 35cm. No pathological features were detected with the remains during excavation. The dead were obviously buried in many individual events: the depositions followed the general pattern of placing the last inhumation in the grave's center while the postcranial bones and skulls of the previous ones were pushed towards the margins. This caused a high fragmentation of the bones, and a further separation of the body parts. There is evidence for partial or fully mummified body parts in the grave (several parts were found articulated), but is not clear from the field observations if these were brought into the grave or developed here. The grave obviously was disturbed already in early Neolithic times, possibly in search for grave goods, since parts of its floor pavement was found mixed with the bones. Possibly also grave goods were removed: it still contained plenty of scattered beads, 9 arrowheads of one type, a pressure-flaked dagger possibly deliberately broken in three parts (Fig. 8), one mother-of-pearl ring (Fig. 7B), a "mace-head" (Fig. 7C), a beautiful mother-of-pearl paillette from under a newborn's skull (Fig. 7A). Red pigment occurred throughout the grave, partially coloring bones and grave goods.

# Important Insight on a Stratigraphical Pattern of LPPNB Pueblo-Like Villages (H.G.K.G.)

From the excavation in Ba'ja it appears now more than likely that the groundplans of LPPNB pueblo-like multiroomed buildings, stretching across one terrace or more, exclusively represent basements. They may show ceiling/floor features of an upper storey, staircases leading up, or fill that gives evidence of a second or even third floor. The stratigraphical investigations so far could not explain why only superimposed basements occur in this at least two-storied environment and how basements could undergo the many changes in plan and function in evidence while still supporting an upper storey. Fresh insights from Ba'ja 2001 revealed a simple explanation that may add a new understanding for a hitherto unknown pattern: the "basements" received their alterations when they still were in use as upper storeys. When

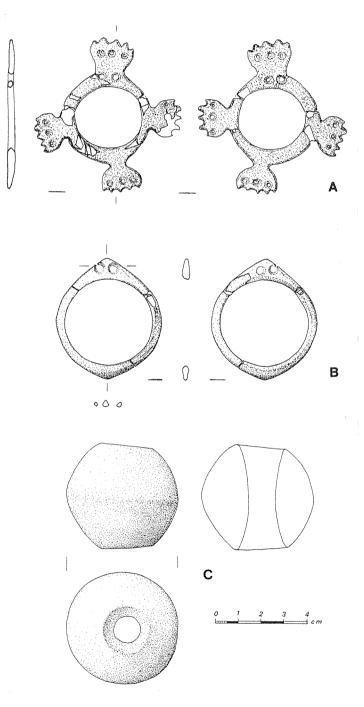


Fig. 7. Goods from the collective burial: mother-of-pearl object found under the skull of a newborn (A); mother-of-pearl ring (B); mace-head- type object made from igneous rock (C). (drawings by Britta Winckler)

their basements became too shallow, or functional changes were necessary, they were intentionally filled, and the former upper storey became a basement by adding a new storey above it. In this moment another episode of groundplan alterations happened by insertions of stairs, walls, buttresses to support planned upper storey features etc., closing of windows and passages, etc. The complexity of architectural events in this process results from the fact that building measures could happen in one building at different levels (terraces), and the overall good preservation of LPPNB buildings (basements) is the result of the aforementioned intentional filling. If we assume that the latest upper storey always is eroded away, the stratigraphies should contain only superimposed basements. (Gebel n.d.)



Fig. 8. Pressure-flaked dagger from the collective burial. The tip was found weeks ago in the lab by Prof. Schultz, attached to human remains extracted as a bloc. (photo by H.G.K. Gebel)

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#### Selected Comments

Generally, the excavations of the 2001 season confirm interpretations offered in previous reports. But in the case of Area C a body of puzzling new evidence was revealed. We dare to speak of architectural monumentality for this important part of the site. In 1997 the eastern part of the building in Area C already revealed an extensive cooking area covering some 4 rooms. The layout of the building and its western extensions exposed in this season let us assume its use by a large kinship group cooperating economically.

While the overall character of the occupations in Areas B, C, D, and F is domestic, the supposed gate may indicate a corporate feature in a strategic position (access to the site from the west) that was deliberately blocked.

The assumed communal space in the flat Area B remains to be tested in the future. It is most likely that the topsoil layer and the underlying fine-grained layer in Area B were cleared of stones in the post-Neolithic (agricultural activities). But this fine-grained layer above the ruined tops of LPPNB walls

already contained striking in situ finds of the LPPPN (e.g., one hoard of blades with a core). This contradicting evidence might be explained in view of the stratigraphical pattern described above.

Area F shows that we have in the steep slope settings of Ba'ia an immediate access to the floor levels of the basements, since major parts of the eroded building material of the upper storeys were taken downslope here. The exploitation of an extreme slope like Area F as a residential construction area illustrates that all space in Ba'ja was needed, despite that fact that architectural engineering was unable to maintain stable massive buildings on such topographies.

It appears obvious that the collective burial does not contain a special selection of individuals, such as those related to an ancestral ritual. It may rather represent the regular mortality distribution within a large family, whose members received individual grave goods. The high rate of infants may reflect a high infant mortality in Ba'ja.

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# Brief Report on the PPN Chipped Lithics Workshop, Niğde, Cappadocia, Turkey (4-8 June 2001)

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The 4th Workshop on PPN Chipped Lithic Industries, held in Niğde, Turkey, was extraordinarily interesting and enjoyable for the nearly 50 registered participants. One of the highlights of the Workshop was a visit to the obsidian sources at Kaletepe/Kömürçü, one of the Göllü Dağ flows, where we saw outcrops of obsidian, and workshops ranging from lower Paleolithic to the PPNB. This was followed by a short tour of tourist sights, including Derinkuyu, one of the amazing underground cities that are cut into the soft tufa.

There were three days of oral presentations and posters, 38 in all, organized around four themes: PPN Lithic Technology, Obsidian Production and Exchange from late Epipaleolithic to Pottery Neolithic, Integrative Studies of PPN Technical Systems, and PPN Lithic Cultural markers: Spatial, Social and Symbolic. The final afternoon was a general discussion and synthesis.

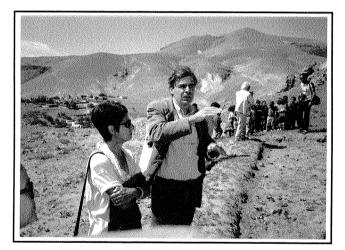


Fig. 1. Excursion scene from the PPN Chipped Lithics Workshop 2001. (photo by F. Hole)

The last day of the Workshop was a day-long tour of the amazing Cappadocian countryside with its strange tufa formations, and of the archaeological sites, Köşk Hüyük, Tepecik, Aşıklı and Musular. We also toured the Gümüşlar Monastery and underground city cut into the face of a tufa cliff, and the beautiful gorge-like Ihlara Valley with its own rock-cut churches and houses. The day ended with a splendid dinner at the Agaçli Motel in Aksaray.

The Workshop was held in the Niğde Museum auditorium. Unlike previous Workshops, there were no displays of lithics and few papers discussed technology or typology as such; rather most of the papers dealt with the implications of the lithics in terms of raw material, function, trade, prestige, and symbolism. Of particular interest were the discussions of lithics from recently-excavated sites in Turkey, presented by a number of Turkish graduate students. A mere suggestion of the variety of topics follows.

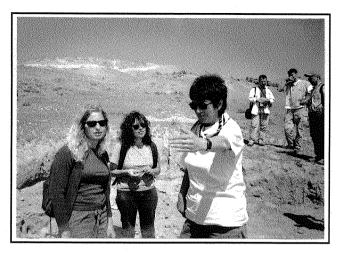


Fig. 2. Excursion scene from the PPN Chipped Lithics Workshop 2001. (photo by F. Hole)

There was considerable discussion of the nature and role of the ad hoc, expedient (or "non-Hollywood") versus standardized or formal lithics. It is now well-known that the proportion of the ad hoc group rises through the PPN, but the functional and social implications are not understood. It was also noted that the raw material for the different categories of tools differed. Another discussion concerned the implications of differential quantities of flint versus obsidian in sites and, indeed, differences within contemporary contexts in a single site. It has come to be realized that the PPN in Anatolia refers to settled communities lacking agriculture, unlike the situation in the central and southern Levant. It is curious, and also unexplained, why some sites grew very large and compact, like Çatalhüyük, while the surrounding plain was essentially devoid of sites. The question of special function sites, some for ritual, was also highlighted, particularly in relation to Nevalı Çori, Göbekli, Jerf al-Ahmar, and Nahal Hemar to name the most prominent.

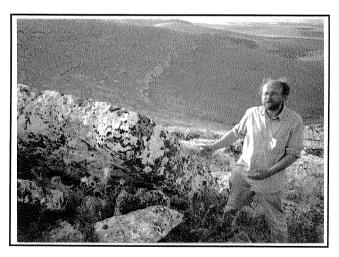


Fig. 3. Excursion scene from the PPN Chipped Lithics Workshop 2001. (photo by F. Hole)

Another unresolved issue is the location of the living sites whose artisans worked the obsidian flows, and under what system they transported the finished products. Use-wear analysts are coming up with a number of new and interesting results including the ability to recognize sheen on obsidian, and the (apparent) re-use of arrow heads for burins, scrapers, knives, etc. Several reports dealt with the geographic distributions of specific types and how some that had been thought generally regarded as restricted in space are now known to overlap, for example, the distributions of bullet and naviform cores.