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Take a look, make a sketch and re-think it: surveying and 4D models for reconstructing archaeological sites

Moritz Kinzel

Abstract
The reconstruction of an archaeological site is in general a very complex system. We have to consider that the reconstruction of an archaeological site should be seen as a medium to illustrate the context of the findings and to visualize how the archaeological site or parts of it have looked like. Site reconstructions do not only cover the architecture and/or the environment, the socio-economic systems should also be included as an important part of this complex system. I focus on the use of survey data and different models for the reconstruction of archaeological sites. Reconstructions help to understand the site, and this is already the case while the excavation takes place. Reconstruction should be an 'open system' and an ongoing process, from the very early beginning of an archaeological project until the end and beyond.

1. INTRODUCTION

This contribution focuses on the use of survey data and different models for the reconstruction of archaeological sites. Therefore we have to consider that the reconstruction of an archaeological site is a medium to illustrate the context of the findings and to visualize how the archaeological site or parts of it have looked like. Site reconstructions do not only cover the architecture and/or the environment, the socio-economic systems should also be included as an important part of this complex system. Here I will concentrate on reconstructions as illustrations and visualizations, instead of discussing the issue of on-site (in situ) reconstructions.

2. GENERAL CONSIDERATIONS ON RECONSTRUCTING ARCHAEOLOGICAL SITES

The reconstruction of archaeological sites is a complex system with various components (Fig. 1). Our main information for the reconstruction comes from the preserved remains. The *findings* must be the main source. We should always go back to the findings, to remember what we have. To get as much information as possible out of the findings and the context of the findings, *documentation* plays an important role.
The different ways of documentation are important for the way of understanding and the *interpretation* of the findings. It is hard to separate documentation and interpretation clearly. Even in our understanding that documentation is the first objective step, we have to consider that the way we document and the decision what we document is often already an interpretation of the findings. The process of documentation and interpretation is going hand in hand.
Another major source for understanding and reconstructing an archaeological site is the *survey information* of the site's surrounding. A survey can provide important information on the relationship between the settlement and its environment. The environmental context can give some hints for the raw material resources and the human effects on the environment. The resources for building materials are linked directly with the findings. Especially in case of building material surveys could offer answers to question on construction and material. An important role in the case of the reconstruction of (vernacular) architecture as a part of the archaeological site is played by tradition or rather traditions. Traditional architecture can offer a variety of possible explanations for 'strange' or unusual contexts of findings. Often it is easy to find similarities and to pick up some arguments you need to fit your findings into your interpretation. We have to be aware of the differences between the archaeological context and the recent observations. However, for the reconstruction it is more help- and useful to know about the differences.
In a next step the collected excavation and survey data go into simple *2D and 3D models*. This can be a set of classical ground plan-, section- and/or profile-drawings. This information goes into a simple CAD model. This simple simulation is the basis for models with higher complexity. At this point, we should introduce the time dimension. Time is a major aspect in the context of reconstruction. We have to keep in mind that any reconstruction cannot be more than a snapshot, focusing on one moment within a living process of the development of a given site. By using virtual reality reconstructions we are able to factor time into the model. So we have to think in terms of *4D models* instead of talking about 3D models (Kinzel 2004).
All data together allow us to reconstruct the architecture (or parts of it) and the environment of a site. To get a better understanding of the site it is helpful and necessary to reconstruct the probable socio-economic systems of a site (Gebel 2002, Purschwitz and Kinzel 2007). The aspect of socio-economic systems provides information on function, use and life, needed for a realistic visualisation of an archaeological site. I will come back to this point later on.
Now, when we assume to have all the information needed for the site reconstruction, we really should *re-think* all the arguments we have. We should re-think all findings and all interpretations. For the reconstruction of archaeological sites constant re-thinking is indispensable. We must not stick to one idea only, if there is more than one option.

With this background it is now possible to try a preliminary reconstruction of an archaeological site. The connections and correlations between architecture, environment and the socio-economic system have to be put into context. At this point, some problems might occur, caused by missing data or unclear findings. Nevertheless should it be possible to give an idea how the archaeological site looked like and how life was during the occupation of the site. Reconstructions should be an open system, always open for new ideas, information and arguments.
The following part will concentrate on the reconstruction of the architecture as a substantial part of an archaeological site.

3. LIMITS AND POSSIBILITIES OF RECONSTRUCTION

There is a still ongoing long discussion on the limits and possibilities of reconstruction (e.g., Sober 1991, Kinzel 2006, Nennstiel in prep.). As mentioned above, reconstruction should be understood as an ongoing process of discussion and interpretation. Often the architectural remains are far too complex for simple explanations, because of missing data and various building events. Therefore we have to distinguish at least three different levels of probability during the reconstruction process:

1. A *'provable' reconstruction* is based on the archaeological results and *findings* (Fig. 2: A). This includes interpreting ground plans, profiles, projections and photos, if they are available. It is possible to reconstruct constructions or structural elements directly from the findings: e.g., completed ground plans according to collapsed walls, or a completed modular (timber-) structure with missing elements in a modular system.
2. A *'plausible' or 'find-oriented' reconstruction* is the result of comparisons with similar results from other squares, areas and sites (Fig. 2: B). Considering the fact that the situation above the preserved crown of a wall is never clear, a reconstruction may become 'plausible' if compared with form and construction of similar situations: e.g. the wall heights of the 'Round Houses' in Neolithic Shkarat Msaied showing a wide range of varieties. Some are preserved to a height of only 20-30 cm, whereas others stand up to 1,60 m. Following our guideline we would use the archaeological results of the better preserved structures to get an idea how to reconstruct the less preserved structures to a certain degree of plausibility.
3. A *'free' or 'completed' reconstruction* (Fig. 2: C) in addition to all evidence available, is based on building characteristics from comparable areas with similar climatic condition and building technology, including elements of imagination and aesthetics: e.g. a completed house with an 'unknown', but suitable, roof construction (using survey information and ethnoarchaeological data); addition of atmospheric elements like smoke, dust, etc.; There is only one question to ask: 'How far would we like to stretch our imagination?'

Combining these three levels of approaches creates a more complex view on architecture (and findings) than using only one. But we should be aware of dividing the different steps during the process of reconstruction to be sure what is actually present and which elements are absent. There should always be a part in a reconstruction which shows the preserved parts and the artistic additions.

4. SCENARIOS RELEVANT FOR RECONSTRUCTION

There are some scenarios which might be helpful for the understanding of architecture and its reconstruction (Purschwitz and Kinzel 2007, Gebel and Bienert 1997). These scenarios are an open system (Fig. 3). There are many options to go back and forth, and parallel development is usual and always possible.

1. In the beginning there is the development of building ground and the exploration of building material: e.g., stones, mud, mortar elements, lime, wood, water, etc.
2. Building activities: erection of architecture and preparation of the building material, tools and 'work power'.
3. Use with modifications of function and architecture: e.g., maintenance of roofs, ceiling and/or floors, compartmentalisation of larger spaces, etc.
4. Have there been 'dramatic events': e.g., earthquakes, fires, heavy rainfalls/floods, conflicts, parallel to a beginning abandonment? The beginning abandonment could result in neglected maintenance.
5. Dilapidation processes parallel to post-occupational use of the architecture: e.g., extraction and recycling of building material, intra-mural dumps, ruin squatters, etc.
6. After a final abandonment we may imagine a scenario of the development of the ruin with mainly natural depositional, erosion and/or sedimentation processes. According to these processes we can assume a deflating of the surface (e.g., agricultural use).
7. Last but not least an often overseen scenario, though indispensable for any reconstruction, is the excavation and interpretation of archaeological sites. The way of excavating, documenting and interpretation has a direct influence on the data for the understanding and the reconstruction of the site.

These scenarios are only snapshots of specific situations we can observe in the findings. Normally these scenarios occur consecutively, but the scenarios are not fixed in their temporal order. They can also happen at the same time.

5. CASE STUDY: RECONSTRUCTING THE EARLY NEOLITHIC ARCHITECTURE OF SHKARAT MSAIED, SOUTHERN JORDAN

The Neolithic site of Shkarat Msaied was excavated by a Danish team under the directorship of Ingolf Thuesen between 1999-2005 (Hermansen *et al.* 2006). Shkarat Msaied is located on a small plateau on a saddle 1000 m above sea level, between two peaks and wadi systems some 13 km north of Petra / Wadi Musa (Figs 4-5).

The site provides well preserved circular buildings dated to the E/MPPNB (~ 7000 BC). At least sixteen Roundhouses were excavated with diameters from 3 to 6.50 m. The walls were preserved to a height from 20 cm to 1.60 m.

The documentation was made by hand drawing ('classic way'), photography and levels. The information on architecture was used to create a simple 3D model. During fieldwork, a 3D model can be helpful to get an undisturbed view on findings or structures to recognize specific contexts. Especially the combination of this 3D model with processing the information on stratigraphy into a '4D model' can be very helpful for the later reconstruction. All other diary and locus sheet data were put into a filemaker database.

After the documentation and first interpretation process we can enter the level of a *'provable' reconstruction* (Fig. 2: A). The findings (preserved structures) provide clear information about the building techniques for walls, floors and entrances. Walls were erected with sand and lime stones around a wooden scaffold. The stones were set into a kind of lime-mud mortar. Often upright standing stone slabs mark the entrances. Floors were plastered with a fine lime plaster floor, some of them were red-stained. There is evidence for an original wooden scaffold by a series of wall channels running along the interior wall face. The function of this scaffold is still unclear. Was it necessary for the construction of the walls or was it a support for a complex roof construction? Is it a reflection of a former tent-like structure?

With the question: 'How high were these walls?', we enter the reconstruction level of *'plausible' reconstruction* (Fig. 2: B). We tried to answer this question with an archaeological experiment. We collected all wall stones from the excavated fill of one unit to get an idea how high the walls would have at least been. The collapse fill inside the walls of that unit (Unit K) contained roughly 1/2 m³ of dressed stones per m³ of excavated volume (Hermansen *et al.* 2006). We could reconstruct a wall height of at least around 2.20 m. This is an amazing result, given the fact that some of the structures were only preserved to a height of less than 50 cm. For the interior wall face we have the evidence of wall plaster and re-plaster activities, with both lime and mud plaster. For the exterior wall faces we only can assume a mud or loam plaster, to prevent infestation (Fig. 7).

The doors or rather the entrances were found mainly blocked. This feature is interpreted as an argument for a seasonal use of the settlement. Usually seasonal use has a large influence on specific features of the architecture and its spatial use. In Shkarat Msaied the entrances are relatively small. This is a common feature in traditional vernacular architecture of semiarid mountain areas, to avoid or minimize climate influences on the house interior. A possible, plausible reconstruction of an entrance would be one with a wooden lintel on top of the completed upright standing stone slabs marking the entrance (Fig. 8).

The borderline between 'plausible/find-oriented' reconstruction and 'free/completed' reconstruction is often hard to define. The step to '*free/completed*' reconstruction occasionally remains unnoticed (Fig. 2: C). For Shkarat Msaied it is impossible to define a clear border between these two levels of reconstruction. There is a certain height of the walls, but not the exact one. We have a similar situation with respect to the roofs. The findings and results of the archaeological research point to a specific way of constructing roofs, still in practice today in the traditional vernacular architecture of the Greater Petra Area. Fig. 9 shows some of the hitherto discussed possible reconstructions. Attempts at reconstruction started with domed roofs, followed by pitched roofs and ended up with a discussion on flat roofs (Dennis 2002, Dennis 2003, Kinzel 2004). As regards the form of the roofs, there is a wide range of possible materials which could have been used for the roof construction. Reed, grass, stones, mud / mud bricks, branches, a kind of tarpaulin or hide/skin were part of the stock. We used different 3D models made with programs such as *Cinema 4D, Nemetschek Allplan or Google SketchUp* to discuss different types of roofing during our fieldwork, in order not to overlook a detail that could tell us more about how the houses were covered. Fortunately the findings and results of the archaeological investigations made in Unit K of Shkarat Msaied offer some ideas how a roof and a roof construction could have looked like (Kinzel 2004, Kinzel 2005, Hermansen *et al.* 2006, Hermansen and Bille Petersen in prep.). As a result of an intra-mural fire the house collapsed toward the interior. All material was gathered there in clear defined stratigraphy. In addition we profit from the result of the experimental archaeology fieldwork done by Samantha Dennis in nearby Beidha (Dennis 2003). In general, we can describe for Unit K a flat roof consisting of several layers from bottom to top: roof beams (*juniper?*), branches or reed, wickerwork and/or brushes (e.g., *ephedra*), several layers of mud and mortar (*including some lime mortar lumps and embedded fist-sized stones*). Fig. 10 shows a section through the structural members of Unit K and a reconstruction of the interior of the same Unit. In Unit K a central post supported the solid roof construction. The wall faces were plastered and partly painted with reddish pigments.

In the case of building and building material a *Survey* on raw material resources and subrecent traditional building was very helpful. For Shkarat Msaied we found all necessary resources in the direct surrounding. Even today with a much less dense vegetation, we can find large juniper trees with straight branches 8 m long in the wadis. The same we can say about the soils with relatively high lime contents for mortar. Wall stones were collected in the sandstone formations or the wadi bed. For the foundations bigger limestone boulders were used. They were collected in the wadi beds or they were carried down from the limestone plateaus east of Shkarat Msaied. The water resources are not clear yet, although there is enough water in the aquifers of the wadi bed. 'Water management' during the Neolithic period is a relatively new field of research. Recent findings by Gebel (2004) or Fujii (in press) show the potentials of 'water' research for our understanding of life in the Neolithic.

A *Survey* during the fieldwork in Shkarat Msaied, Ba'ja and Basta focuses on the traditional Bedouin architecture in the region (Haberkorn 2000, Kinzel 2004, Kinzel and Zaid in prep.). The houses were documented by photos and drawings. Construction details and dilapidation processes were studied and documented as well. The building technologies nowadays are in their characteristics very similar to the Neolithic ones. Substantial and solid wall and roof

constructions with predominantly windowless exterior walls were chosen to minimize influences of the climatic extremes of the semiarid mountain area, especially between night and day. The traditional wall construction is in general very close to the Neolithic technique, so is the roof construction in terms of roof layers. However, we should use the visible features of traditional architecture only to get ideas about what we are dealing with. As mentioned above, for the reconstruction we should always be aware of the differences.

The next step in the reconstruction of the archaeological site is to extend our attention from one single house to the village and then in a further step to the site as a whole. In order to understand spatial and environmental contexts of the settlement, I promote here to do a walk around the site to make some sketches from different views of the site, to get the feeling how the settlement had been placed into the landscape (Fig. 11). This method gives a feeling for the accessibility of the place and what the whole setting is alike. In the stage of 'free (or completed)' reconstruction we are dealing with a lot of intuitive decisions based on experience and imagination. Again I recommend to use simple, basic 3D models to 'place' the site into the 'landscape'. These 'simple' models, as shown in Fig. 6, created with the free software of *Google SketchUp*, can be used as a basis for later investigations for the site presentation. There is a wide range of options: these models could be a starting point for interactive Internet or screen platforms, where the user would be invited to try her or his own ideas on the reconstructions (Nennstiel in prep.). It is easy to work with different layers to offer different depths of information (see Fig. 6 with added stratigraphy information).

In Shkarat Msaied hand-drawn reconstructions were used to get a basis for discussions. One of these is shown in Fig. 12. We need these visualisations both in field and at home as well. Hand drawings are very suitable. We do not need to turn on our computer, nor do we have to render every view or perspective to get a presentable stage of reconstruction. By means of hand drawing we can try out a lot of possibilities without being too precise. It is just a matter of training and education of the architects and/or archaeologists. Like the survey sketches of the site setting, hand-drawn reconstructions offer a more intense analysis of the material. And the reconstruction work should already start during the fieldwork to create an open discussion on findings, documentation, interpretation and excavation strategies.

Computer-based digital reconstructions can offer the same, but with other efforts. Pl. IV: 2 is an example how different media could be combined in a computer-based visualisation of Shkarat Msaied. Pl. IV: 1 presents the current situation during the excavation work. The excavation area is situated in the middle of the circle the road describes at this slope. The present-day situation is marked by a semiarid mountain setting with eroded slopes to the east. With the animation software *Cinema4D* a simple 3D model was placed 'on site' into a slightly modified landscape, according to the results of the palaeobotanical research (Hald 2004). In a final step the same model was modified with *Adobe Photoshop* into a 'Neolithic' landscape and a settlement in use. Atmospheric furniture, like animals and humans, was added and a morning light spot was set. This kind of panorama could be part of a publication or on-site information to present a kind of snapshot of a possible situation 9000 years ago (Pl. IV: 2).

6. PERSPECTIVES

In the near future there will be more possibilities in the digital world of reconstruction, through the rapid development of 3D animation- and CAD- software (e.g., *Cinema4D* or *SketchUp*). Also the approach to Laser Scan based 3D models will change the documentation of preserved structures and the use of the data. The 3D models of the findings will be used as a database platform. The 3D model will be the surface for a kind of Geographic Information System (GIS). But as of now the capacity of an average computer still cannot deal with the high amount of collected data, e.g. it is still impossible to create and use a complex 3D model in a relatively short time without using various kinds of very specialized software. A laser-scanned high resolution 3D model is often unpractical in the context of exhibitions and presentations. Here more idealized models, with less information, are more effective and attractive to the audience. Interactive elements could offer a solution for a presentation of the results on the reconstruction of an archaeological site, to both scientific and public audience as well. What we need is a dialogue between the researchers and the public already during fieldwork and afterwards. Reconstruction could be a part of that dialogue and it is a good vehicle to stimulate the discussion. For this purpose, there is no difference between hand drawings or virtual reality computer-based reconstructions.

7. SUMMARY

The reconstruction of an archaeological site is a very complex system. In a reconstruction all information about the site, from e.g. excavation and surveys, are put together in a specific order to create a coherent picture. This leads often (and logically) to some snapshot-like visualizations. Only one moment in a long complex history is presented, while other developments on the site are ignored or simply absent. Normally we can only recognize some scenarios of the site history (Purschwitz and Kinzel 2007). In very rare occasions we are able to show an ongoing, floating process. Therefore it might be helpful to present the way of reconstructing in the order of the work flow: starting with the presentation of the findings. What is really preserved? This is a very important issue, because the preserved structures and findings are our primary sources for all our thinking about reconstruction. In a second step we should present what we can reconstruct directly from the findings and the results of archaeological research. In a third step add the parts which could be plausible to the context and the findings. In a final step all needed details could be combined to create a picture of the past that is also aesthetically attractive.

Finally, the way we are reconstructing an archaeological site should fit into our concepts for the site presentation. Is the reconstruction part of the final publication as a simple

figure or could it be presented on a CD in the context of an interactive site presentation? Is the reconstruction part of a visitor centre or of an exhibition? The site reconstruction could be presented on a poster, a screen, an interactive program or as a real model. There are several ways of using a reconstruction, even in the post-excavation merchandising activities, e.g. postcards, paper models (a real 3D model!), books, etc. Reconstructions help to understand the site, and this is already the case while the excavation takes place. Reconstruction should be an open system and an ongoing process, from the very early beginning of an archaeological project until the end and beyond.

REFERENCES

Dennis, S., 2002, '"Beidha Late than Never": Presentation and Conservation of Prehistoric Sites in Jordan?', *CBRL Newsletter* 2002, pp. 6-8

Dennis, S., 2003, 'The Experimental Reconstruction of a Pre-Pottery Neolithic B Structure at Beidha in Jordan', *Levant* 35, pp. 39-48

Fujii, S., in press, 'Domestication of Runoff Water: Current Evidence and New Perspectives from Jafr Basin, Southern Levant', *Neo-Lithics* 2/08

Gebel, H.G.K., 2002, *Subsistenzformen, Siedlungsweisen und Prozesse des sozialen Wandels vom akeramischen bis zum keramischen Neolithikum*, II. *Grundzüge sozialen Wandels im Neolithikum der südlichen Levante* (Freiburg: Universitätsbibliothek) (http://www.freidok.uni-freiburg.de/volltexte/466)

Gebel, H.G.K., 2004, 'The Domestication of Water: Evidence From Early Neolithic Ba'ja?' in H.D. Bienert, J. Häser (eds) *Men of Dikes and Canals: The Archaeology of Water in the Middle East*, Orient-Archäologie 13 (Rahden : Verlag Marie Leidorf), pp. 25-35

Gebel, H.G.K., Bienert, H.D., 1997, 'Ba'ja Hidden in the Petra Mountains. Preliminary Report on the 1997 Excavations' in H.G.K. Gebel, Z. Kafafi, O.G. Rollefson (eds) *The Prehistory of Jordan*, II. *Perspectives from 1997*, Studies in Early Near Eastern Production, Subsistence, and Environment 4 (Berlin: ex oriente), pp. 221-262 (with contributions by T. Krämer, B. Müller-Neuhof , R. Neef, J. Timm and K.I. Wright)

Haberkorn, J., 2000, 'Ba'ja and Fersh: Bedouin Architecture of the 20th Century', *Annual of the Department of Antiquities of Jordan* 44, pp. 142-144

Hald, M.-M., 2004, *Plant Remains of Shkarat Msaied: Preliminary Observations* (http://www.neolithic-shkaratmsaied.hum.ku.dk/botanic.htm)

Hermansen, B.D., Bille Petersen, M., in prep., *Reconstructing Early Neolithic Architecture: the Case of Shkarat Msaied*

Hermansen, B.D., Thuesen, I., Jensen, C.H., Kinzel, M., Petersen, M.B., Jorkov, M.L., Lynnerup, N., 2006, 'Shkarat Msaied: the 2005 Season of Excavations. A Short Preliminary Report', *Neo-Lithics* 1/06, pp. 3-7

Kinzel, M., 2004, 'Some Notes on the Reconstruction of PPNB Architecture', *Neo-Lithics* 2/04, pp. 18-22

Kinzel, M., 2005, 'Stein auf Stein. Frühjungsteinzeitliches Bauen in Südjordanien', *AIV Forum* 1/2005, pp. 55-59

Kinzel, M., 2006, 'The Architectural Reconstruction of Basta' in H.G.K. Gebel, H.J. Nissen, Z. Zaid *Basta*, II. *The Architecture and Stratigraphy*, Bibliotheca neolithica Asiae meridionalis et occidentalis & Yarmouk University, Monograph of the Faculty of Archaeology and Anthropology 5 (Berlin: ex oriente)

Kinzel, M., Zaid, Z., in prep., *The Old Village of Basta: Studies on Traditional Vernacular Architecture in Southern Jordan*

Nennstiel, B., in prep., *Hölzerne Großbauten in frühkaiserzeitlichen Militärlagern der provinzialrömischen Regionen – Möglichkeiten und Grenzen der Rekonstruktion*

Purschwitz, C., Kinzel, M., 2007, 'Baja 2007. Two Room and Ground Floor Fills: Reconstructed House-life Scenarios', *Neo-Lithics* 2/07, pp. 22-35

Sober, E., 1991, *Reconstructing the Past: Parsimony, Evolution, and Inference* (Cambridge: MIT Press)

NOTE

All photos, sketches and drawings are by Moritz Kinzel, Shkarat Msaied Neolithic Project.

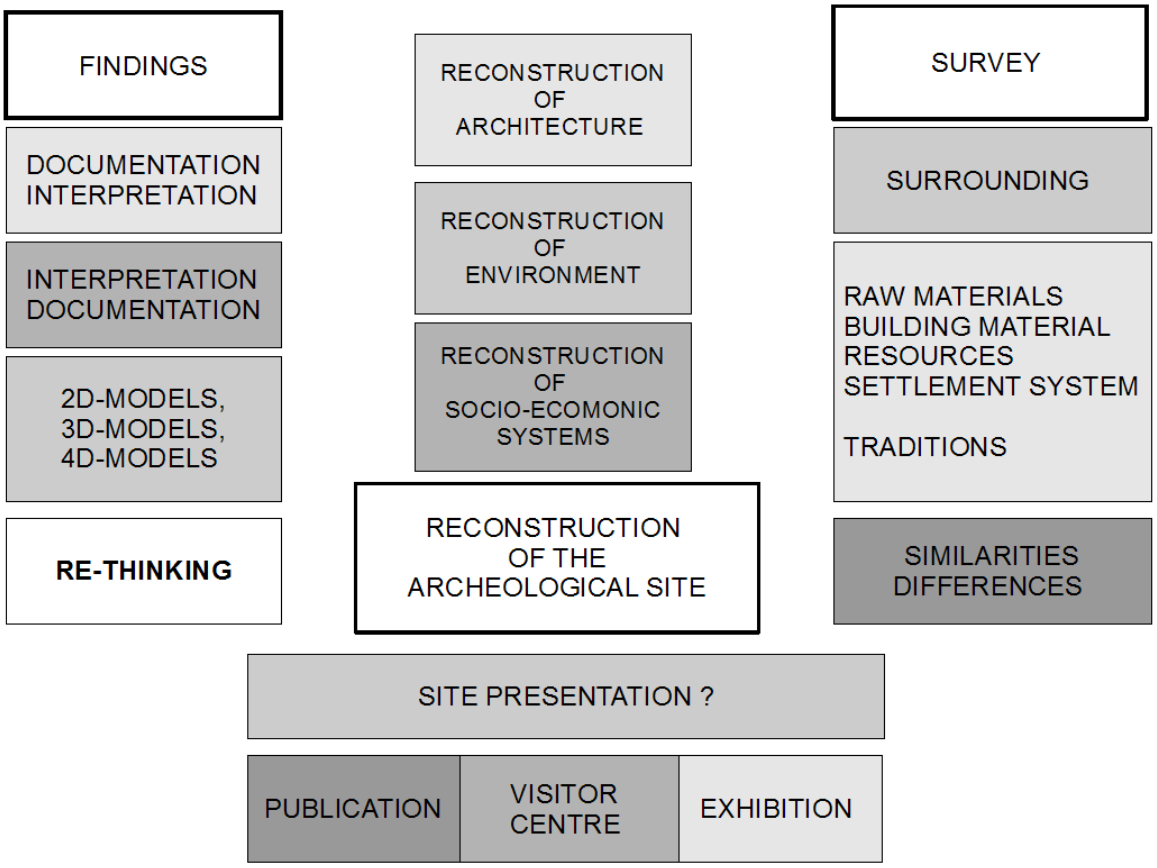

Fig. 1 - The complex system of factors relevant for the reconstruction of archaeological sites.

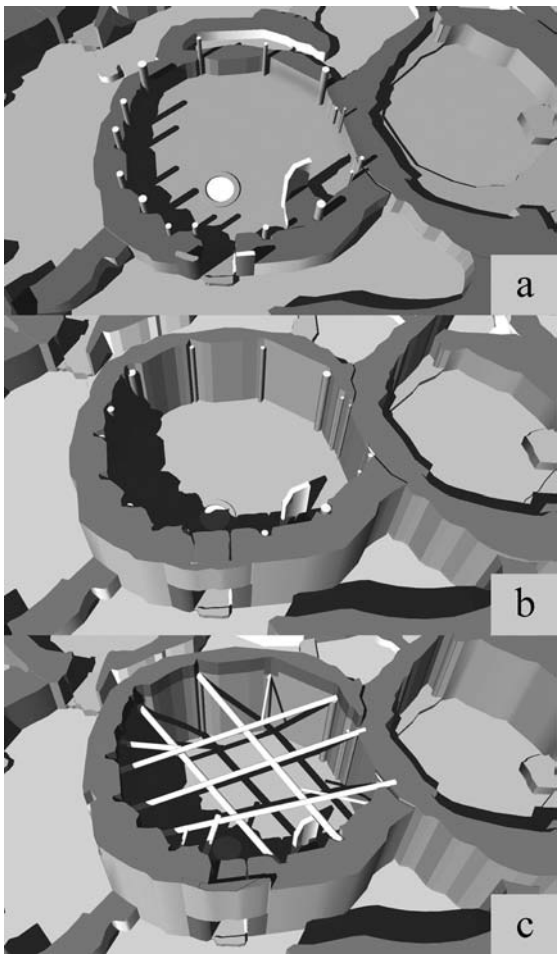

Fig. 2 - Levels of reconstruction: 'provable' reconstruction/findings, 'plausible or find-oriented' reconstruction, 'free/completed' reconstruction.

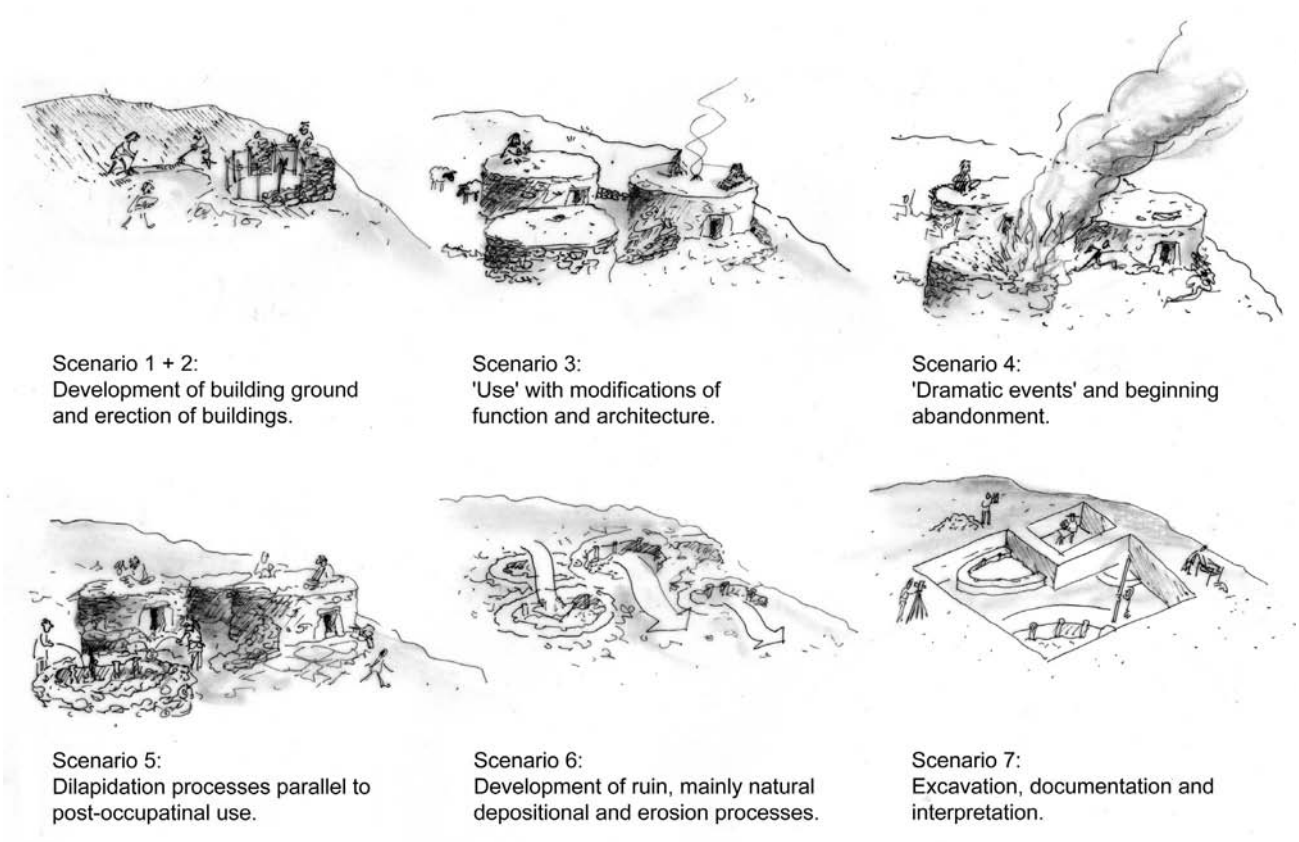

Fig. 3 - Scenarios relevant for the reconstruction of architecture.

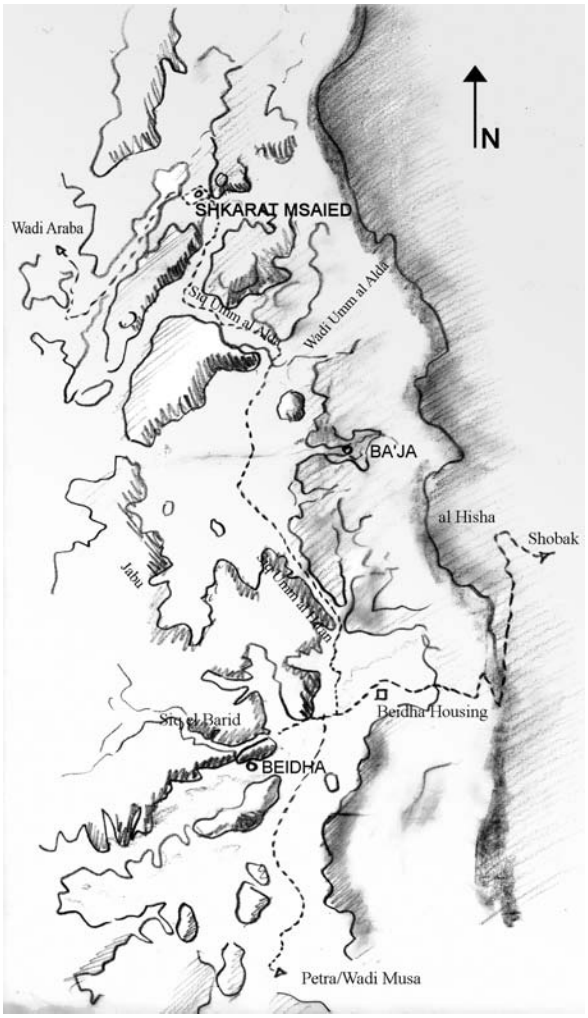

Fig. 4 - Shkarat Msaied: location of the site.

Fig. 5 - Shkarat Msaied: preserved structures of Neolithic architecture.

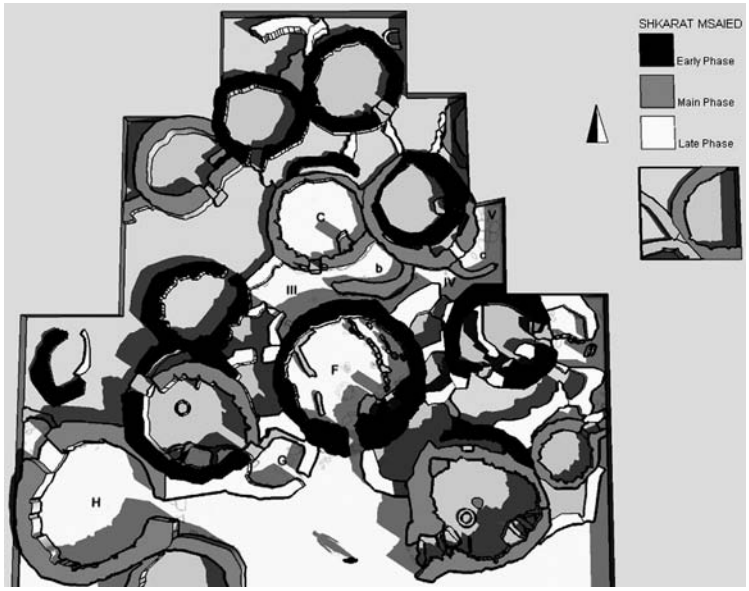

Fig. 6 - Shkarat Msaied: basic 3D model with information on stratigraphy.

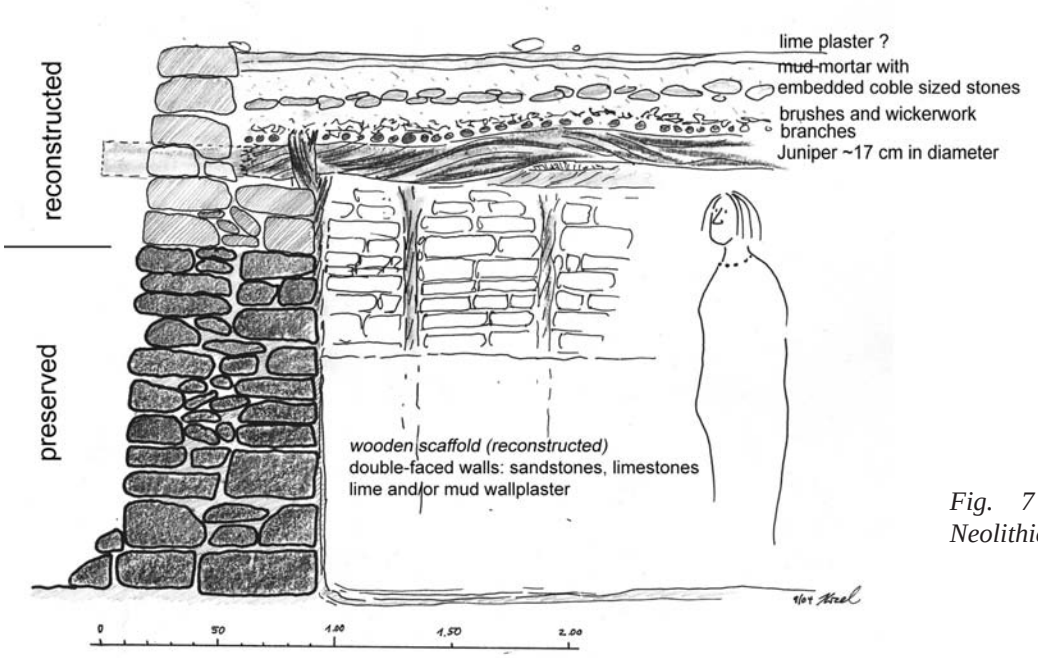

Fig. 7 - Shkarat Msaied: Neolithic building techniques.

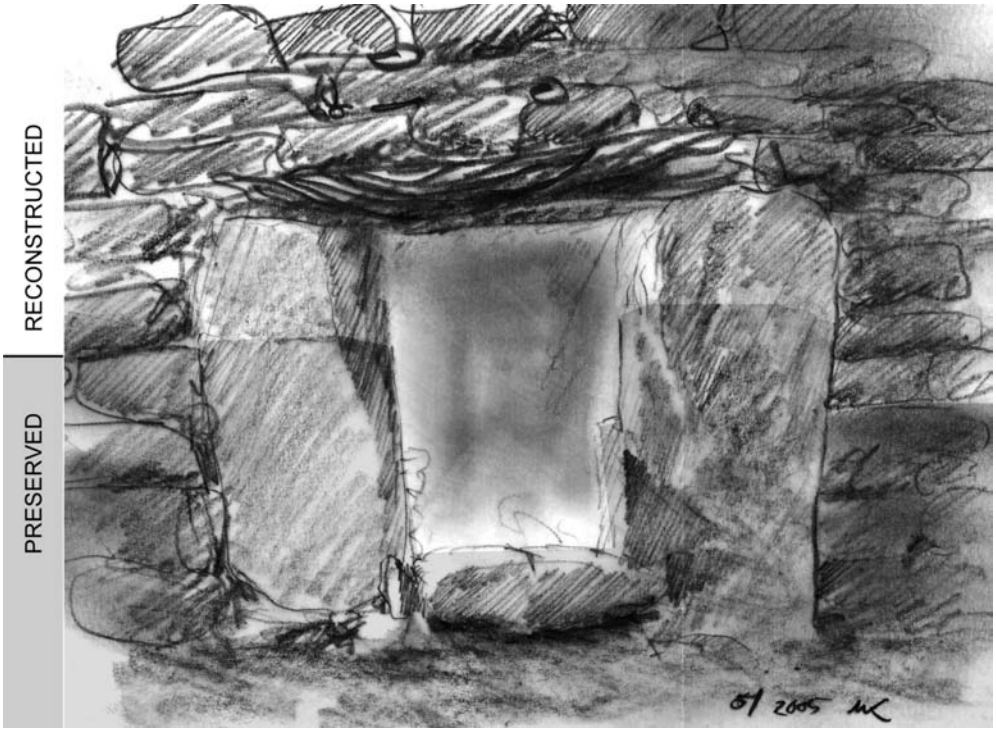

Fig. 8 - Shkarat Msaied: reconstruction of the entrance of Unit C.

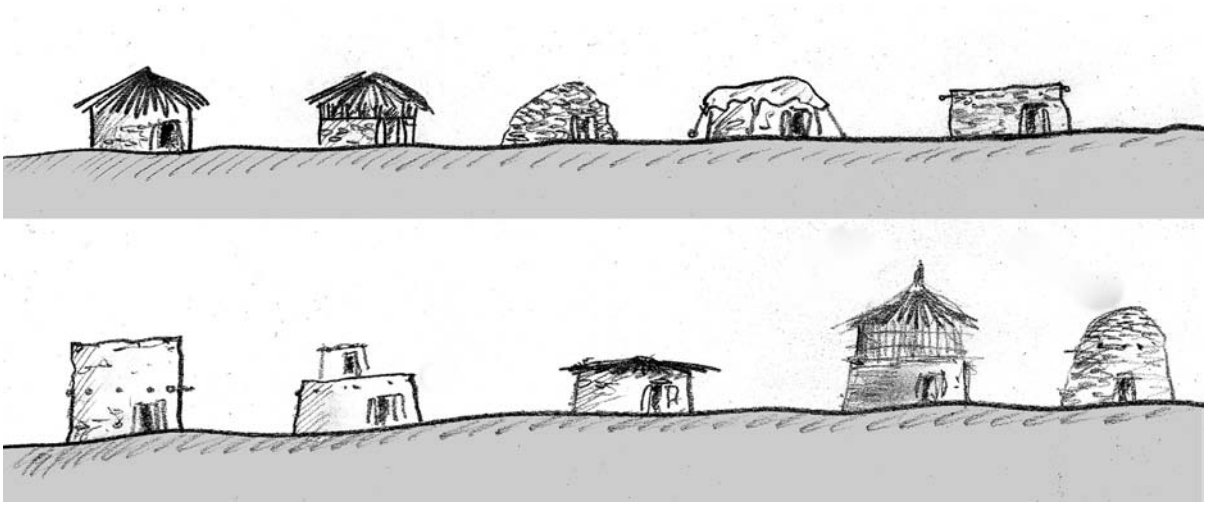

Fig. 9 - Variations of possible Reconstructions of MPPNB architecture.

Fig. 10 - Shkarat Msaied: reconstruction of the interior of Unit K.

Fig. 11 - Shkarat Msaied: survey sketches from different views.

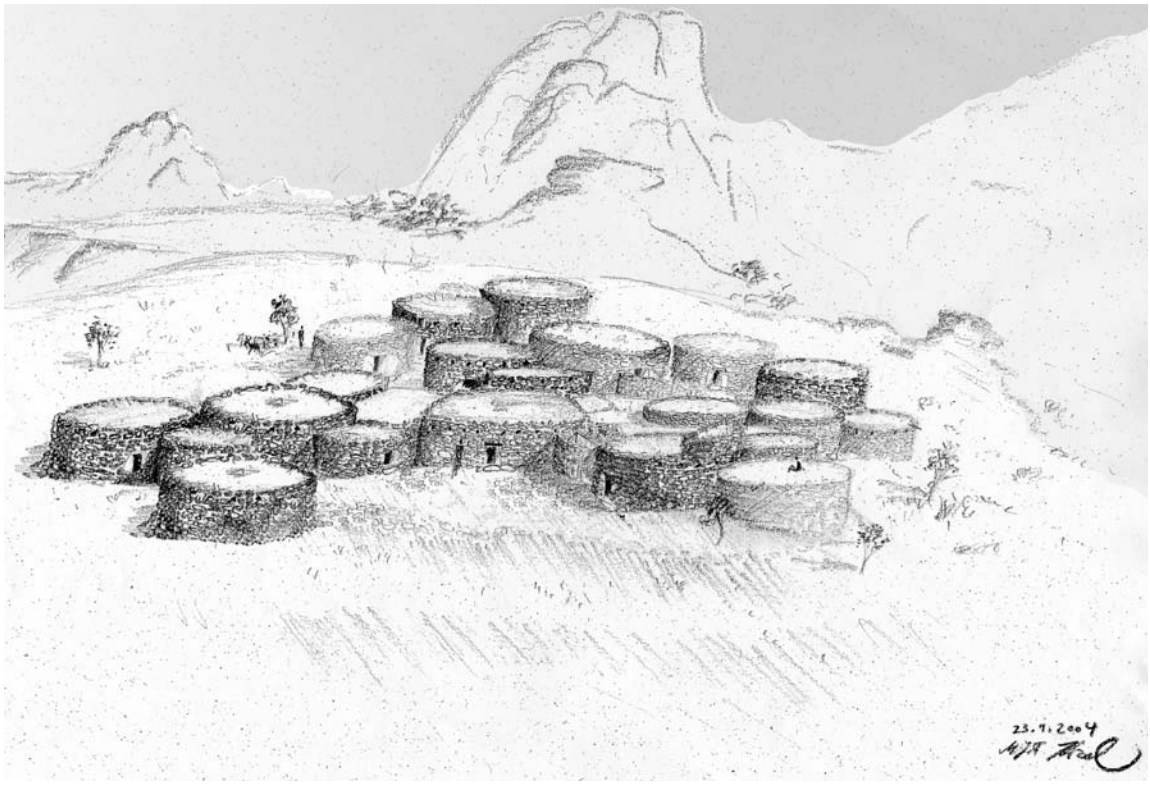

Fig. 12 - Shkarat Msaied: reconstruction hand drawing.

1 - Shkarat Msaied: site situation AD 2003.

2 - Shkarat Msaied: reconstructed site situation 7000 BC.

3 - Regional Conservation Boards in Turkey and their coverage.