# THE BROWN UNIVERSITY PETRA ARCHAEOLOGICAL PROJECT: 2010 EXCAVATIONS AT ISLAMIC BAYḌĀ

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## Introduction: Project Aims and Fieldwork Methodology

The Brown University Petra Archaeological Project (BUPAP) is a multidisciplinary research initiative that was launched in 2010. The project is aimed at increasing our diachronic understanding of the ancient city of Petra and its relationships to its neighboring hinterlands, with a specific focus at present on the northern and northwestern areas toward and including Bayḍā.[1] The BUPAP research program is designed around the use in tandem of systematic and intensive landscape surveys[2] with targeted excavations, geophysical research, and other specialist studies.

The focus of the BUPAP excavation team in 2010 season was primarily to develop a more specific understanding of the nature and chronology of the Islamic Bayḍā settlement. This report is intended to summarize the main goals and methodology of this first campaign as well as present some of the preliminary results.[3] The excavation design, methodology and preliminary interpretation sprang naturally from the results of previous research at the site — the field survey and archaeological excavations conducted by the Beidha Documentation Project directed by Dr Patricia M. Bikai[4] and a preliminary study of the ceramics from this earlier project (Sinibaldi 2009, 2010).[5]

The initial hypothesis of an Islamic period settlement in the area formulated by the Beidha Documentation Project has been confirmed by the study of ceramic finds, and this combined work has allowed the archaeological evidence at the site to be interpreted as representing a rural

1. With respect to the transliteration of Arabic place names into English, BUPAP has chosen to follow the system used by the International Journal of Middle East Studies (IJMES). We are thus using Bayḍā in contrast to a variety of other spellings that may be found in the literature (e.g., Beida, Beidha, etc.). For additional information see Knodell and Alcock, footnote 1, in this volume.
2. The Petra Area and Wādī Sulaysil Survey (PAWS), for the first preliminary report of this BUPAP project component, see Knodell and Alcock in this volume.
3. The 2010 excavation was directed in the field by Dr. Christopher A. Tuttle (ACOR and Brown University) and Micaela Sinibaldi (Cardiff University). The report was drafted by Micaela Sinibaldi, who is alone responsible for sections 3 and 4 on the pottery and historical interpretation. The excavators included Katherine Harrington and Harrison Stark (Brown University), and a team of workers from the Bdul and Ammarin tribes. We thank in particular Katherine Harrington for her hard work and welcome presence in the field. Timothy Sandiford (Brown University) and Dr. Ian B. Straughn (Brown University) were part of the surveying team focused on mapping Islamic Bayḍā. We also want to thank warmly Dr. Patricia M. Bikai for her participation in the excavations at Islamic Bayḍā as a Project Consultant, for her sharing of data from her earlier Beidha Documentation Project, and for her continuous and generous support. The pottery of the Middle and Late Islamic Periods from the excavations conducted at Islamic Bayḍā is being studied by Micaela Sinibaldi. All sections and top plans were inked by Qais Twaissi. The authors and members of the BUPAP team want to express our gratitude to the Department of Antiquities and the staff of the Petra Archaeological Park, in particular to Dr. Emad Hijazeen, Eng. Tahani al-Salhi, and Hyeam Twassi, for their contribution to the success of this fieldwork season. We thank Dr. Susan E. Alcock for her detailed comments and editing. We are also grateful for useful comments from Dr. Khairieh ʻAmr, Dr. Alison McQuitty and Dr. Carol Palmer.
4. The Beidha Documentation Project was carried out in six campaigns between 2003 and 2008. See Bikai, Kanellopoulos and Saunders 2005, 2006, and 2007.
5. The final publication of the ceramic material is currently in progress (The Pottery from the Islamic Period from Excavations of the Beidha Documentation Project. Working Title, Final Project Report Chapter).

settlement with a long occupation throughout the Islamic period.

Some of this material can be safely assigned to the period between the 11th and 14th centuries (Sinibaldi 2010).

The presence of material from the Early Islamic period recovered by the Beidha Documentation Project team suggests that the village occupation extended in the area for most or all of the Islamic Period. The evidence of a very long life for the entire area as a settlement is not surprising given the importance of the location for its agricultural resources and the availability of water due to its proximity to the Jibāl ash-Sharāh.

The site structures extend roughly E–W between as-Sīq al-Bārid and the Nabataean structures excavated by the Beidha Documentation Project, and N–S between the modern road to as-Sīq al-Bārid and the wadi south of it (**Fig. 1**). The two BUPAP trenches were strategically positioned using data from the earlier project in combination with observations deriving from the associated ceramic study. This information allowed taking into account elements such as the depth, complexity, and type of stratigraphic deposits, as well as their potential for ceramic finds.

Prior to commencing the excavation activities, a preliminary survey of the village structures was conducted by members of the BUPAP team in order to facilitate the planning and placing of the new trenches. The survey recorded a portion of the remains of the visible structures, as well as a substantial amount of illegal digging throughout a large portion of the village, especially in the western sector (area I).[6] The BUPAP survey of the Islamic Bayḍā structures has highlighted an aspect first noticed by the Beidha Documentation Project: the presence of several clusters of built areas in the village, which seemed to differ in their building techniques and architectural plan.[7] These data were one of the chief elements taken into account in placing the new excavation trenches, for one of our main aims was to start testing whether such variations have, for example, either a chronological or a functional meaning. The strategy adopted for this season was to physically connect to the test trenches of the Beidha Documentation Project in order to maximize the information gathered by both projects.

Trench A was placed with the double purpose of obtaining a specific understanding of

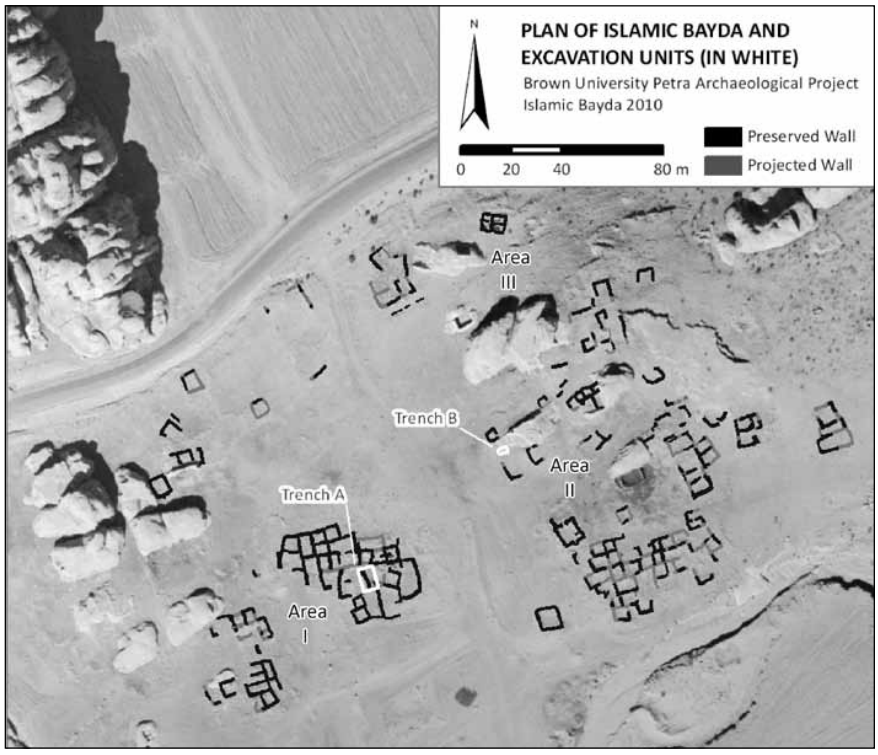
*1. Aerial photo showing an overview of the Bayḍā area, looking NW (photo by D. Kennedy).*

6. In particular, we have noticed the digging activity to be focused close to walls and doorsteps, which are, unfortunately, often the most meaningful features for archaeological phasing.
7. The new survey of structures at Islamic Bayḍā was conducted by the BUPAP team members Timothy Sandiford (Brown University) and Dr. Ian B. Straughn (Brown University) with the assistance of Micaela Sinibaldi (Cardiff University), who had also assisted with the analyses of the different building techniques and architecture as a team member on the earlier Beidha Documentation Project.

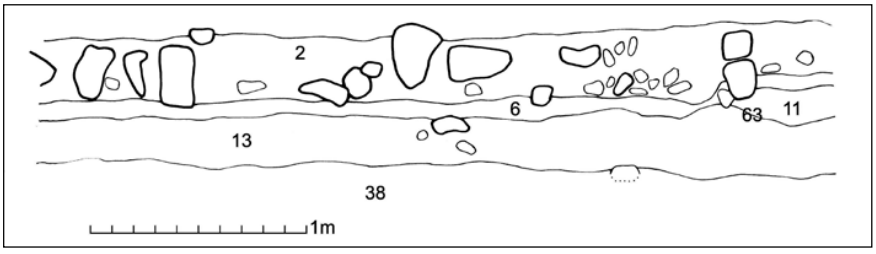
the character and function of the western part of the village (an area extending roughly for about 50 meters N–S and 50 meters E–W, southeast of the entrance to as-Sīq al-Bārid). This area, named area I by the BUPAP excavation team, is one of the most intensely built-up sectors (**Fig. 2**). The specific location of trench A (4 x 6m) allowed the testing of an area free of any robbers' disturbance, as well as an opportunity to position a trench next to one opened by Dr. Bikai's excavations, and to explore another area in what appeared to be the same architectural complex. With these aims in mind, Trench A was placed to observe what appeared to be an open area south of the entrance of Spatial Unit 3, one of the structures excavated by the Beidha Documentation Project in 2004. During the 2010 season excavations in Trench A reached in all a depth of about 80 cm extended over an area of four by six meters (**Fig. 3**).

Trench B was opened in the eastern part of the village, which is designated area II by the BUPAP team. Area II is located east of area I and southeast of the rock-cut church documented by the Beidha Documentation Project. It extends across a sector that is roughly 100 meters square and is characterized by structures of various dimensions, a substantial number of which also make use of the numerous pre-existent rock-cut features.

The decision to place Trench B in this area, also in close proximity to a trench from the Beidha Documentation Project, was again based on results gleaned from analyzing the combined data from the earlier field project and the observations from the 2010 campaign's survey work. The first reason was that the area appeared to contain architecture constructed using different




*2. Top plan of surveyed structures with trenches and areas (Map by T. Sandiford).*



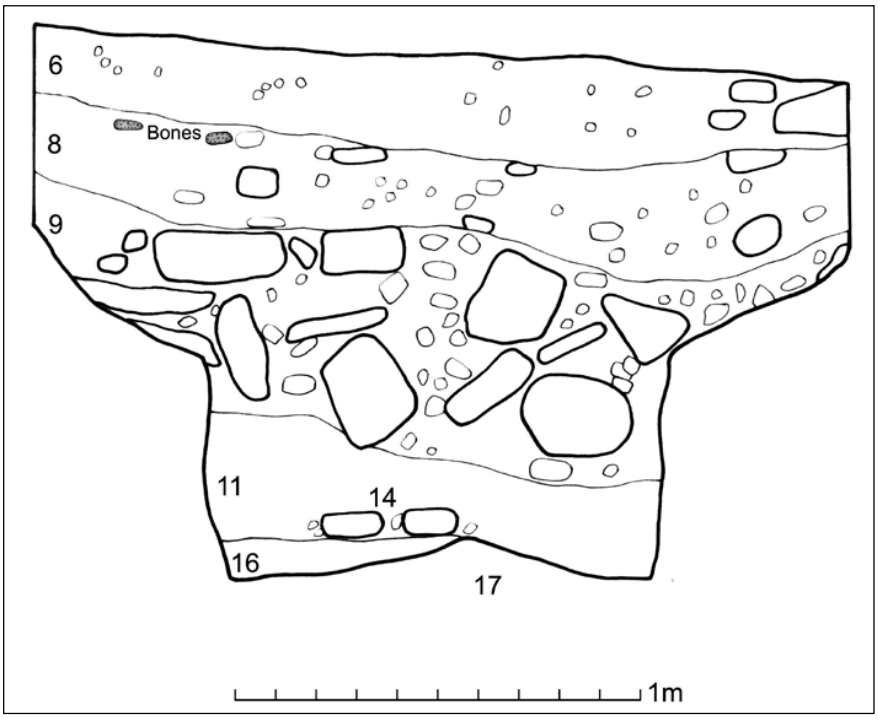

*3. The east section of trench A at the end of the excavation (drawing by K. Harrington and H. Stark).*

building techniques than those employed in the buildings in area I. The second reason is that the location also contains a deeper stratigraphic deposit with the potential to provide substantial relative chronological information. The earlier excavation project had already recovered large quantities of well-preserved pottery from stratified deposits nearby, and it was deemed important to expand the available data from the area in order to further develop our understanding of their context. This was especially important since the earlier project recovered some of the most diagnostic ceramic fragments for the entire site from BUPAP's area II (imports with a chronology from the 11th to 14th centuries).[8]

Trench B (2 x 4 m) was opened immediately south of one dug by the Beidha Documentation Project in 2004 that exposed a small structure in which several levels of collapse had been distinguished. The aim was to explore a similar and connected structure which was built partially on natural rock. During the 2010 campaign season, the excavators recorded a stratigraphic deposit of about 1.5 meters, consisting of a clear series of collapses containing occupational material and wall stones, some of which were partially exposed (**Fig. 4**). Since this trench was opened at a later stage in our campaign, and because the deep stratigraphy allowed the team only to reach — but not yet to excavate — the latest phase of occupation in the structure, it is preferable to postpone the report on this area until more data is available from our 2011 campaign season. This report will therefore focus on summarizing the preliminary results from Trench A.

It is planned that work will be continued next season in order to reach the bottom of the stratigraphy in the selected areas. To prevent contamination of the unexcavated stratigraphy, the trenches were backfilled at the end of this first season using sandbags and screened soils.

The fieldwork methodology adopted by the team during this first excavation campaign reflects the broader aims of the Islamic Bayḍā component of the BUPAP project, among which is the intent to gather a large amount of information by making use of several archaeological methods. In the specific case of Islamic Bayḍā, in addition to stratigraphic excavation, the project includes the aforementioned new survey of structures, as well as analysis of the building techniques and the stratigraphy of standing structures. Moreover, phytolithic analysis, flotation collection, and dendrochronological studies




*4. East section of trench B (drawing by C.A. Tuttle).*

8. For ceramic examples already described from the same area, see Sinibaldi 2009: 450.

are being incorporated into the overall study. Finally, a policy of 100% dry screening was adopted during this season, in order to maximize the recovery of small finds which might prove to be relevant for chronological interpretation. This approach was adopted after considering both the specific methodological needs of the study of an Islamic-period site of a rural nature in Southern Jordan and the paucity of available data for this subject for the Petra area.

Of particular importance to the planning and implementation of the excavation field methodology was the data obtained from the intensive landscape survey conducted by the BUPAP Petra Area and Wādī Sulaysil Survey (PAWS) team, which included a systematic collection of surface ceramic finds across the Islamic Bayḍā site. Elucidation of the excavation results and, in general, the interpretation of the occupation chronology for Islamic Bayḍā greatly benefited from the combined work of the landscape survey and excavation teams. Research projects employing a combination of these field methodologies have been rare in Petra, and none have focused such a coordinated effort on the Islamic period remains in the region. We are optimistic that the BUPAP results from this multidisciplinary approach will provide a high resolution picture in terms of collected data. Our hope is that this work will not only help us gain a better understanding of the chronology and nature of the excavated structures at Islamic Bayḍā, but also substantially improve our general understanding about many different aspects of human interaction with this landscape during the Islamic periods — a topic which remains largely unexplored in our region.

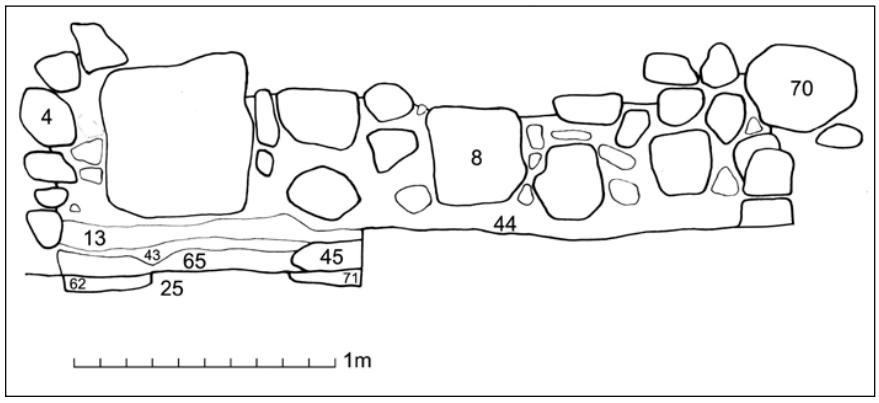
**Trench A: Preliminary Stratigraphic Phasing**

The analysis of stratigraphy recorded thus far in trench A has distinguished three main, uninterrupted phases of occupation followed by two phases of abandonment. The area has been interpreted as an open space (possible courtyard) opposite and south of the entrance of Spatial Unit 3,[9] the use of which was contemporary with the structure during at least some stages (**Figs. 5 and 8**).

The three phases of uninterrupted occupation can be broadly identified with the creation and use of the surfaces extending over most or all of the open area, which have been named stratigraphic units 25 (Phase I); 38 (Phase II); 13 (Phase III).[10] The numbering of the described phases is of course temporary, since the bottom of the stratigraphic sequence has not been reached, and it is expected that more phases will be recorded during the 2011 campaign; it is clear for example that at least one more phase is associated with the unexcavated foundation of Walls 3 and 4.

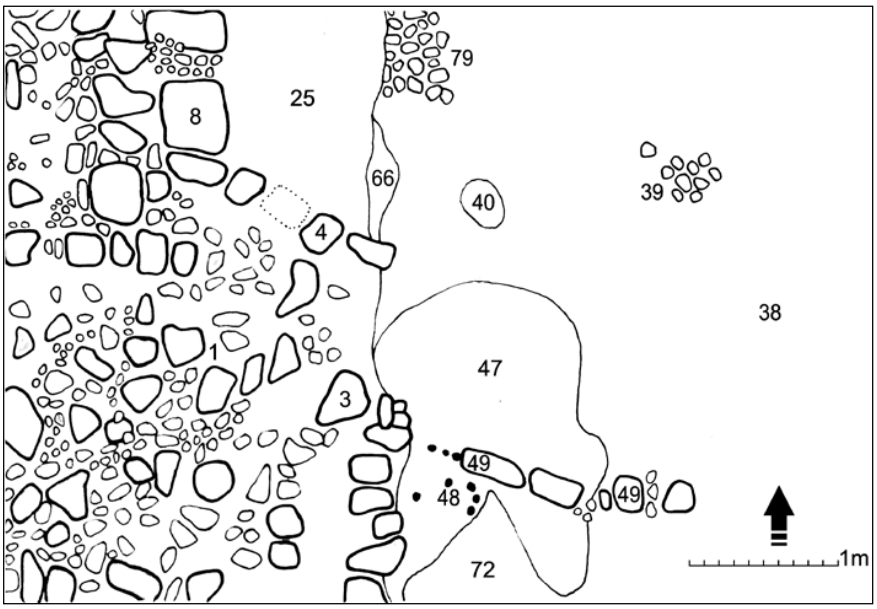
*Phase I*

This phase was characterized by the creation and use of surface 25, which was extremely hard-packed and well-leveled, probably as a consequence of a long period of occupation. Because it is still partially covered by the later surface 38, the full extent and characteristics of surface 25 will be better understood following




*5. West section of trench A (drawing by M. Sinibaldi).*

9. This structure was partially excavated originally and labeled Room 3 by the Beidha Documentation Project.
10. Stratigraphic Units cited in the text are indicated by underlining, i.e., 25. We also abbreviate this as StU elsewhere, in order to make a clear distinction with the PAWS use of "SU" for "Survey Unit".




*6. Top plan of phases I and II (drawing by M. Sinibaldi, C.A. Tuttle and K. Harrington).*

*7. Overview of trench A showing phase II (photo by C.A. Tuttle).*

its complete excavation; however, it is clear that it originally extended under the current location of wall 8, before this wall was constructed during phase III (**Fig. 5**). Therefore, in Phase I, the area south of and directly opposite the entrances to Spatial Units 3 and 4 was still undivided. Two large, shallow hearths (71 and 62) were placed in surface 25 in proximity to the earlier wall 4, possibly to take advantage of the shelter afforded by this wall; these hearths were partially covered by wall 8 when it was constructed in Phase III (**Fig. 5**). The hearths were therefore located in the space between the entrances of Spatial Units 3 and 4. Also in use with surface 25 was a structure composed of stones arranged in a nearly linear pattern (49), which still remains partially covered by surfaces 38 and 47 (**Fig. 6**).

*Phase II*

This phase is associated with the creation and use of surface 38, but also to the continued partial use of surface 25, which was not completely covered. Surface 38 also was found extending to the west beneath wall 8, indicating that it was in use before this wall was built during Phase III (**Figs. 5 and 6**).

*8. The production activity remains (StU 43) under wall 8 (photo by M. Sinibaldi).*

It is likely that the installation of surface 38 to cover most of the earlier surface 25 was an attempt to renovate the space by filling in irregularities created by use activities. Surface 38, not removed in 2010, extends throughout the trench and is characterized by traces of numerous activities which have been interpreted as follows:

In the NW corner of the trench, some sort of production activity occurred, which is not understood at the moment (43) (**Figs. 4, 6 and 7**) because its remains are largely covered by wall 8, which remains in situ. This deposit can be described as a thin accumulation of various materials including fragments of handmade pottery (some blackened by fire), abundant charcoals, small darkened stones, lumps of sandstone, limestone, and unfired clay. This activity took place exactly at the same spot along wall 4 where hearth 62 functioned during phase I.

A series of four renovations of small surfaces along wall 3 were found. The activities for which these were used probably relied on wall 3 as a kind of protection or support. In a first stage, surface 47 was laid in a very irregular shape measuring roughly one by two meters (**Fig. 6**); it was used as a base for several activities which left a large, irregular cut (72) and at least two series of post-holes that appear to be arranged along wall 3 in both linear patterns and a circular one. The post-holes (20 in total) were about 3 to 3.50 cm in diameter and between 1.50 and 3 cm deep. The circular pattern (48) was formed by curvilinear segments containing three post-holes each, the holes being spaced about 10 cm apart; this pattern appears to have resulted from a semicircular construction of about 50 cm diameter. All of the post-holes probably resulted from the wooden poles used to build these constructions. Their functions are not understood at the moment, but the relatively small dimensions and shallowness of the post-holes suggests that they were fairly lightweight; the stratigraphy also suggests that they had a relatively short period of use. At a later stage, several hearths were in use along wall 3, together with similar renovations of small surfaces on top of surface 47, probably with the purpose of leveling irregularities.

In summary, during phase II, when the space between Spatial Units 3 and 4 was still not blocked by wall 8, the users of the space renovated the area by laying surface 38. During the long use of this replacement surface a complex sequence of activities took place. These activities, which suggest both continuity and change in terms of function, took place always in the same areas: the space along wall 3 and the northwest corner of the trench (between walls 4 and 8).

*Phase III*

The last phase of occupation was connected to the use of surface 13. This surface, with a thickness from 5 to 30 cm, was found throughout most of the trench, and it was probably again laid out with the main purpose of renovating surface 38 in order to level over the traces of previous activities (**Fig. 9**). The activities associated with surface 13 in this new phase can be summarized:

In the northwest corner of the trench, two new hearths were created and used in the same area as the ones employed during phases I and II; these hearths were also used before the con-

struction of wall 8, which partially covered them. Several animal bones were recovered from between the hearths which suggest their use for food preparation.

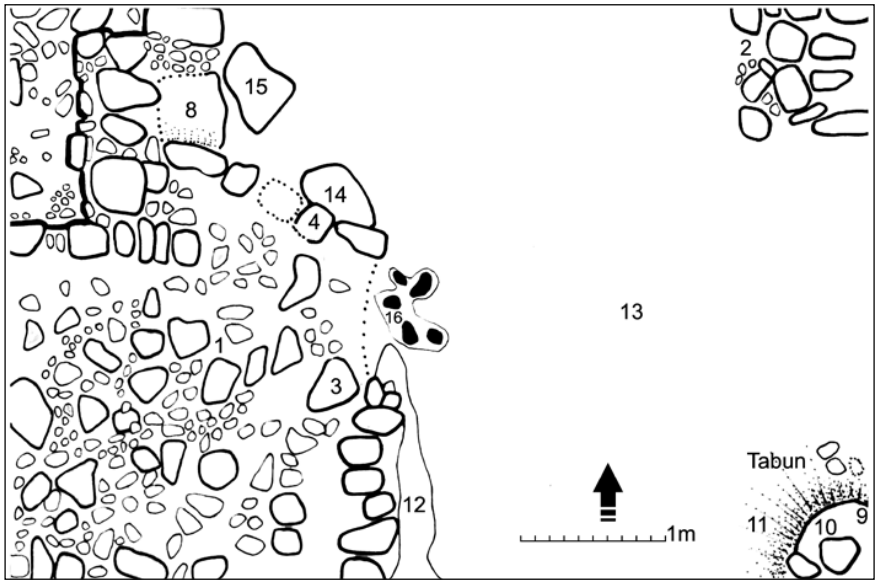
Several cuts and traces of constructions that left post-holes were created along wall 3; an example of these is 16, another semicircular construction indicated by five post-holes; this construction seems to have been larger and sturdier that that from Phase II since the post-holes are 8 to 25 cm in diameter.

In the southeast corner of the trench a bottomless *ṭābūn* (9), with a diameter of about 75 cm diameter, was constructed and used; it was found covered by abundant soil and ashes (11: see **Figs. 9 and 10**).

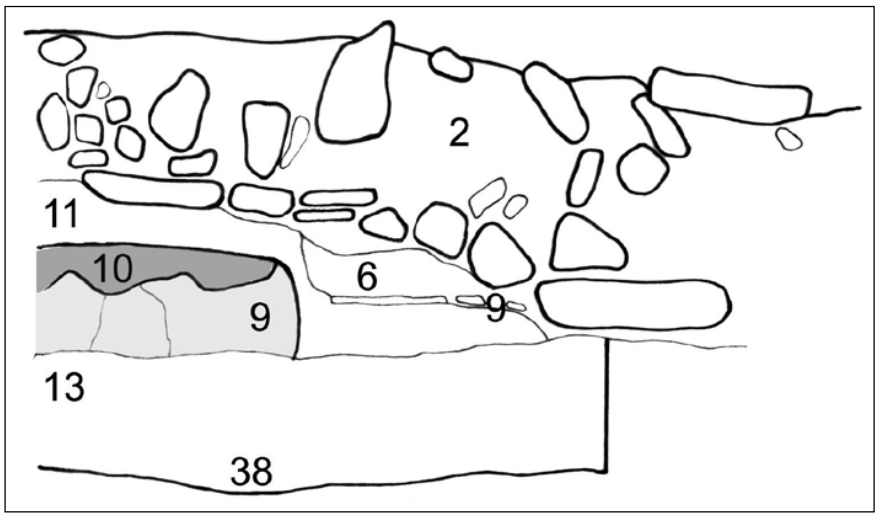
At a later stage, a thick wall (8), sitting on a foundation of mud mortar (44), was built in the northwest corner. This wall, abutting both wall 4 and the entrance wall of Spatial Unit 3 (70), created a division between the area south of the entrances to Spatial Units 3 and 4, showing some change made in the arrangements of the space by the users of the structures (**Figs. 4, 8 and 11**).

*Phase IV*

The whole area of Trench A was found covered by a thick level of soil and stones of various dimensions (2) which has been interpreted as resulting from a series of collapses. It is difficult to determine the sequence or phasing of these events in most areas of the trench due to




*9. Top plan of phase III (drawing by C.A. Tuttle, M. Sinibaldi, K. Harrington).*




*10. South section through the ṭābūn (drawing by C.A. Tuttle).*

*11. The ṭābūn under the collapse (photo by K. Harrington).*

the intense compacting and disturbance of the area by both the actions of natural agents and the passage of people and animals. Only the southeastern corner of the trench permitted reconstructing in detail the collapse that had sealed the *ṭābūn* (**Figs. 9 and 10**). A layer of soil rich in dark, decomposed organic materials (6, maybe remains of a roof made of vegetal material?) already covered the whole area before a series of collapses from the courtyard's walls (2) buried the *ṭābūn* (9) in several stages; during one of the collapses a flat stone hit the *ṭābūn* at an angle, causing the "explosion" of the upper part of the oven. Ceramic fragments from the *ṭābūn* were thus scattered all around and the ashes and pebbles (10, 11) from its interior were fanned out from its broken walls. Surface 13 was also compressed from the impact of the stones falling on the *ṭābūn*. The recording of such a sequence of events shows that the *ṭābūn* was still in good condition when it was abandoned.

*Phase V*

The second phase of abandonment is a recent one; it consists of the deposition in the modern era of loose stones from nearby areas (1), due to various activities including the looting of the village structures (**Figs. 5 and 8**).

## The Ceramic Assemblage from Trench A: Stratigraphic Unit 13

This short report will introduce a representative sample of the pottery assemblage excavated in 2010, and suggest some elements of discussion on the subject.[11] The data provided here are very preliminary and will acquire more robustness with the excavation of the complete stratigraphic sequences of trench A and trench B, as well as with an increasingly available body of evidence on the ceramic chronology of the Petra area for the Islamic period. For the limited purposes of this report a very specific ceramic assemblage from a single stratigraphic unit (13),

11. The observations in this section also build on former ceramic analysis of the pottery from excavations of the Beidha Documentation Project, see Sinibaldi 2009.

*12. Wall 8, looking west (photo by M. Sinibaldi).*

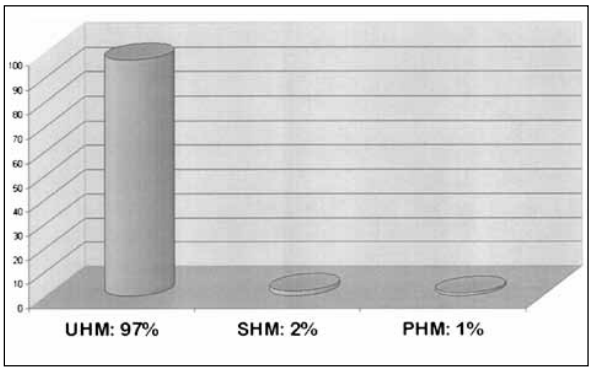
will be analysed here. This stratigraphic unit has been selected because it is the only occupational surface that was completely excavated in 2010 and, as discussed above, it is also representative of the last phase of occupation and use of the area. The material examined derives from the entire soil matrix of StU 13 and not just the hard-packed surface itself; since it was the result of a single and intentional levelling action the material from within the stratum has been interpreted as generally *pre-dating* the actual use of the surface. However, it is probable that some of the sherds recovered became embedded in the surface during its use life. The ceramic assemblage is therefore generally related to a period of time predating the creation and subsequent use of surface 13. In addition, some selected ceramic fragments from 2 (resulting from the collapse of the structures around the courtyard) will be presented; although some intrusions are very likely in this deposit, the generally high consistency with the material from 13, and the stratigraphy itself, indicate that most of these sherds probably belong to the phase associated with the use of surface 13.

The fragments presented here are representative of the entire assemblage from 13 and are those for which it is possible to indicate possible parallels in the Petra area. In terms of methodology, it should be stressed that, although some mention is made of parallels from other areas, priority should be given first of all to parallels from the Petra region because of great regional specificity — one of the clearest characteristics of the kind of pottery analysed here.[12]

A few general and quantitative data on the assemblage from 13 can be presented here. The assemblage consists of 839 fragments in total, consisting 100% of the so-called handmade group with the exclusion of one fragment from the Iron Age and a very few non-diagnostic Nabataean-Roman fragments, which are all wheel-thrown.[13] The production is extremely uniform: apart from one fragment with a dark grey core, all fragments have a black core, a clear indication for similar firing conditions of incomplete

12. The importance of "regionality" is suggested by a study in progress by Sinibaldi on ceramics of the Petra region in the Islamic periods. This study has generated the parameters used here to describe the fragments. The study is currently based on the stratified ceramic assemblages from Wādī Farasa (Humboldt University, Berlin), Khirbat an-Nawāfla (Department of Antiquities of Jordan) and Bayḍā (Beidha Documentation Project and Brown University Petra Archaeological Project). In addition, smaller stratified assemblages from Petra have been analysed, including those from Tomb 303 and the Djinn Blocks, both projects by the Institute Français du Proche Orient. The study also includes the materials from the surveys of the Finnish Jabal Harun Project (Helsinki University) and of the Brown University Petra Archaeological Project in the Petra region. Work is still ongoing for some of the described assemblages and the final publications for others are currently in progress.

13. Iron Age and Nabataean-Roman ceramics were also found in the area of Islamic Bayḍā by the PAWS survey team.




*13. StU 13: Proportions of Surface Treatments in Handmade Pottery Groups. UHM: Unpainted/Unslipped Handmade; SHM: Slipped Handmade; PHM: Painted Handmade.*

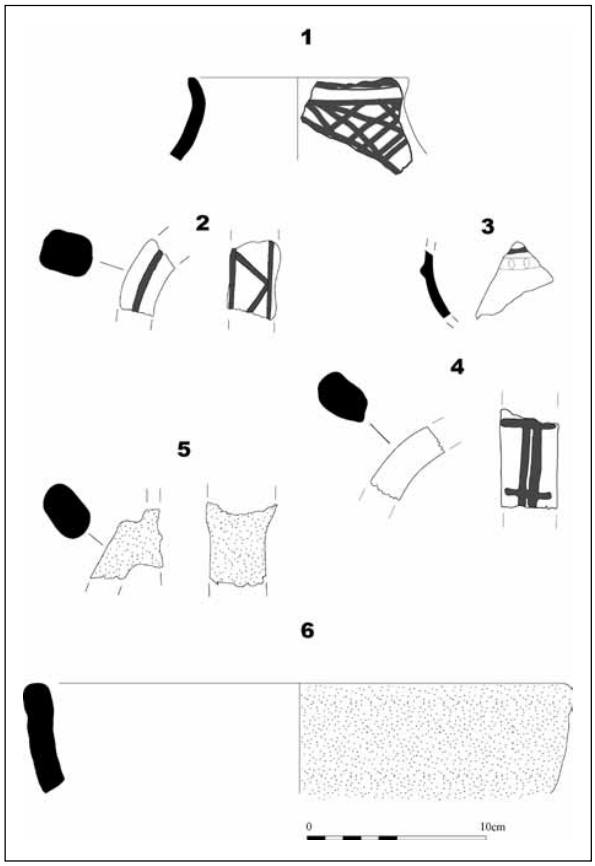
oxidation. Moreover, 100% of the fragments are made with the same general kind of fabric, characterised by a chaff, minerals, and calcite content. The manufacture quality, however, is variable.[14]

It is possible to discuss some aspects concerning surface treatment. Figure 13 shows that the proportion of fragments with decorated surface is about 3%. Of this, 2% is composed of slipped surfaces, while only 1% have painted surfaces. Therefore, despite the relatively small size of the assemblage analysed here, it can be observed both that the percentage of painted fragments is very low and that slipped pottery is about twice as prevalent as painted pottery. Moreover, 100% of the slipped pieces use a red slip, and none of these, despite the size of individual fragments, is also painted. These slipped fragments derive from three forms: juglets, basins, and cooking pots (**Figs. 14.5-6**). Finally, there appears to be no specific quality standard either in fabric selection or manufacturing technique associated with the slipped pieces. In summary, these data seem to suggest that this specific ceramic group (characterised by a red slip) seems to include different forms and different manufacturing quality standards.

As for painted, unslipped pottery (**Fig. 14.1-4**), all fragments appear to be painted with what can be broadly defined as a linear design, and the paint lies directly on the clay without the use of a slip; of these, the majority is red-painted, and only one fragment is painted in brown/black. Finally, the highest percentage of unpainted and unslipped pottery fragments derive from a variety of open and closed forms (**Fig. 15**).

The large majority of forms identified in 13 consist of cooking pots and jars, followed in quantity by bowls, basins, juglets and jugs. In addition, from the same assemblage, there are several examples of cooking pot lids and objects which have been interpreted as spindle whorls.

Some comments on these basic data can be made at present, bearing in mind, of course, the preliminary nature of these observations. Red-slipped surfaces in Islamic period ceramic assemblages have not been systematically recorded in the Petra area. Experience shows that it




*14. StU 13 and StU 2: A selection of painted and slipped ceramic fragments (PHM and SHM) (illustrations by M. Sinibaldi).*

14. Parameters such as manufacturing techniques, manufacturing quality level, firing, and fabric type are those being developed in the aforementioned Sinibaldi study, and are some of those used to describe ceramics of the "handmade" class. Manufacture quality in particular is an aspect which has been isolated as a diagnostic element to be recorded more closely since it may be a signifier for different types of production environments (Sinibaldi 2009: 461-462).

**Fig. 14.1 (StU 2)**

Fabric: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Primary manufacturing technique: hand formed and possibly reworked on a turning tool
Manufacturing quality: medium
Surface treatment: smoothed on the external surface; dark red paint; no slip
Firing: black core; orange surface
Form: jug/jar (rim)
Rim diameter: 12 cm
Wall thickness: 5 to 7 cm

**Fig. 14.2 (StU 13)**

Fabric type: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Manufacturing quality: medium
Surface treatment: smoothed surface; red paint; no slip
Firing: black core; orange surface
Form: jug/jar (handle)

**Fig. 14.3 (StU 13)**

Fabric: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Primary manufacturing technique: handformed and probably reworked on a turning tool
Manufacturing quality: medium
Surface treatment: smoothed on the internal and external surfaces; red paint; no slip
Additional surface decoration: applied band with subcircular impressions
Firing: black core; orange surface
Form: jug/jar (wall)

**Fig. 14.4 (StU 13)**

Fabric type: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Manufacturing quality: medium
Surface treatment: smoothed surface; red paint; no slip
Firing: black core; orange surface
Form: jug/jar (handle)

**Fig. 14.5 (StU 2)**

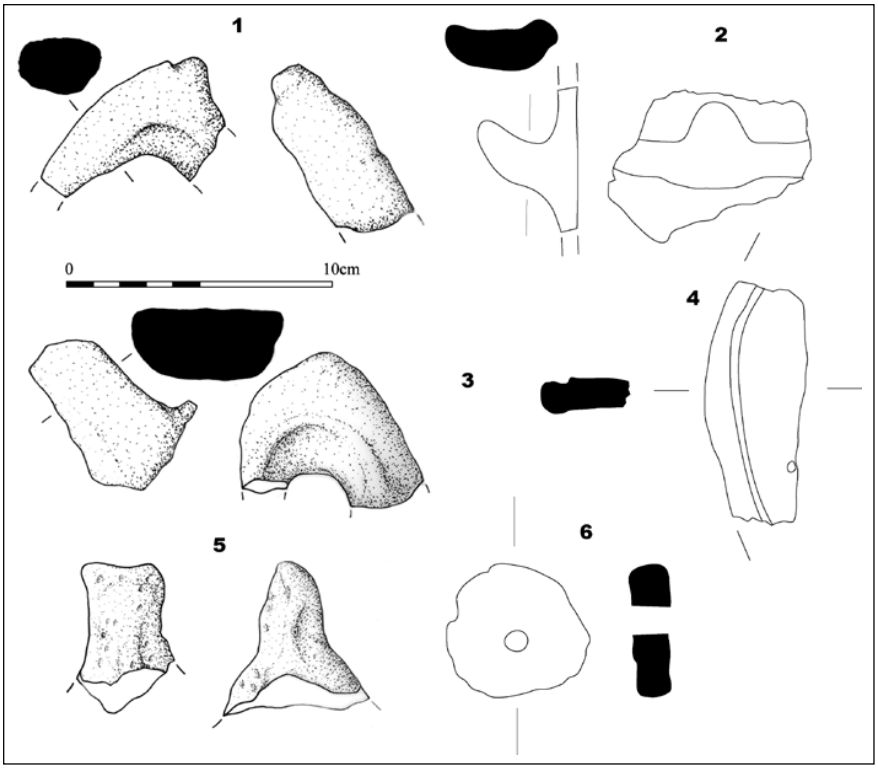
Fabric type: chaff, minerals and calcite inclusions (large chunks)
Fabric hardness; medium
Chaff quantity: low
Manufacturing quality: high
Surface treatment: smoothed surface; red slip
Firing: black core; orange surface
Form: jug/jar (handle)

**Fig. 14.6 (StU 13)**

Fabric: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Primary manufacturing technique: coil made and possibly reworked on a turning tool
Manufacturing quality: low
Surface treatment: smoothed on the external and internal surfaces; red slip on external surface
Firing: black core; orange surface
Form: basin (rim)
Rim diameter: 30 cm or more
Wall thickness: about 1,50 cm

is often hard to define the presence of any slip for the so-called handmade pottery group in the region. This difficulty certainly extends to red slips, but there are instances where these can actually be identified.[15] However, since there is substantial variation in how scholars record "red slip," it is not always possible to identify these materials in publications. Nonetheless, it would appear from an analysis of reports from both excavations and surveys that red-slipped surfaces might exist in general through all Middle and Late Islamic periods in the Petra region and Southern Transjordan. It is suggested here that a systematic recording of this characteristic, including the proportions of its presence in an assemblage, might be useful for several purposes, including chronological interpretation.

As for the painted pieces presented from this assemblage in general, the simple zig-zag decoration on handles is a popular one, both in the Petra area and more generally in Jordan.[16] Some comments may also be presented about specific forms. Of particular relevance are the fragments related to cooking vessels (**Fig. 15.1-5**). The selected pieces are all very well represented in the Bayḍā assemblage. A first observation can be made on the contemporary presence of examples from different types of cooking pots in 13; this seems to suggest that several models of cooking pots were employed at the same time




*15. StU 13 and StU 2: A selection of unpainted and unslipped ceramic fragments (UHM) (illustrations by M. Sinibaldi).*

15. At the site of Wādī Farasa, near the Petra city center, red-slipped pottery consists of a small but easily identifiable group, which makes up about 50% of the all slipped fragments. Sinibaldi would like to thank Dr. Stephan Schmid, Director of the International Wādī Farasa Project, for permitting this material to be discussed prior to his final publication of that project (Sinibaldi, the pottery from the Islamic Period from excavations at Wādī Farasa. Working title, final project report chapter).
16. At al-Wu'ayra it is present in a Late Ottoman context (Tonghini and Vanni Desideri 2001: 717, fig. 18.b and d); at ash-Shawbak, again in a Late Ottoman phase (Brown 1988: 141, fig. 14.52). Outside the Petra area, this kind of decoration is present at Karak castle (Milwright 2008: 351, n. 7), at Tall Dayr 'Allā in the third period (Franken and Kalsbeek 1975: 194, fig. 70. 20, which was interpreted in Sauer 1976: 94 as Mamluk chronology) and at Tall Ḥisbān it is recorded from the beginning of the Ayyubid period (1200 AD) through the Late Islamic period (personal communication, Dr. Bethany Walker). Sinibaldi would like to thank Dr. Bethany Walker for allowing mention of this last information from an in-press draft of her work on the Ḥisbān pottery.

**Fig. 15.1 (StU 13)**

Fabric: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Manufacturing quality: medium
Surface treatment: smoothed on the internal and external surfaces
Firing: black to grey core; surface color not uniform
Form: Cooking pot (handle)
Max diameter: about 25 cm
Wall thickness: 7 mm
Further details: blackened by fire

**Fig 15.2 (StU 2)**

Fabric: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Manufacturing quality: medium
Surface treatment: smoothed on the external surface
Firing: black core; surface color not uniform; blackened
Form: cooking pot (handle)
Further details: blackened by fire

**Fig. 15.3 (StU 13)**

Fabric: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Manufacturing quality: medium
Surface treatment: smoothed on the internal and external surfaces
Firing: black core; orange surface
Form: cooking pot (handle)

**Fig. 15.4 (StU 13)**

Fabric: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Primary manufacturing technique: hand formed
Manufacturing quality: medium/low
Surface treatment: smoothed on the upper and lower surfaces
Additional surface decoration: incised line along the border
Firing: black core; orange surface
Form: cooking pot lid
Diameter: uncertain
Further details: one through hole; the lower surface is modeled to fit a vessel rim and is completely blackened

**Fig. 15.5 (StU 13)**

Fabric: chaff, minerals and calcite inclusions
Fabric hardness; medium
Chaff quantity: medium
Primary manufacturing technique: hand formed
Manufacturing quality: medium/low
Firing: black core; surface color not uniform (orange to grey)
Form: cooking pot lid (knob handle)
Further details: pierced with a fine-pointed tool; non-through holes are unevenly distributed on the surface

**Fig. 15.6 (StU 13)**

Fabric: chaff, minerals and calcite inclusions;
Fabric hardness; medium; Chaff quantity: medium
Primary manufacturing technique: reworked from a handmade closed form
Surface treatment: smoothed on internal and external surfaces
Firing: black core; orange surface
Form: spindle whorl
Diameter: 4 cm; hole diameter: 1 cm; thickness: 1. 4 cm

immediately preceding the general use of this particular courtyard surface; these forms include the cooking pot with an appliqué band and ledge handles and the one with basket handles (**Fig. 15.1-3**). It should be noted that the cooking pot with the appliqué band (**Fig. 15.2**) is also an excellent example of the continuity of forms throughout the Islamic periods in the Petra area. It is by far one of the most common forms at Islamic Bayḍā and, as observed before, it has been recorded extensively in Petra from at least the early Crusader through to the early Ottoman period, possibly as a non-specialised product well established in the local tradition.[17] It seems to start being used in the region at least in the 11th century (as it appears to be documented at Khirbat al-Mu'allaq: see Lindner *et al*. 1996) and continued until at least the Ottoman period (as documented at Khirbat an-Nawāfla: 'Amr *et al*. 2000). Such observations must therefore be considered as a warning against attempts to attach a specific chronology to this long-lasting form with minor variations. Both of these aspects — the long tradition of some specific forms and the contemporaneous use of different models of cooking pots — need to be considered when attempting to make connections between forms and chronology.

Similar observations on long-lasting forms can be made to some extent on the perforated lid fragments illustrated here (**Fig. 15.4-5**). They probably belong to the type that has a knob handle and a series of holes and was intended for use on a cooking pot. It is one of the various types of lids present at Bayḍā, and is present in the ceramic assemblages from both the Beidha Documentation Project and the BUPAP work at Islamic Bayḍā. This very long-lasting form in the Petra area is already recorded in assemblages that date from at least the 11th century (Khirbat al-Mu'allaq: Lindner *et al*. 1996; Khirbat an-Nawafla: 'Amr *et al*. 2000) and it is still present, although with possible variations, during the Middle/Late Islamic periods.[18] A similar lid has also been recovered from a mixed context with a prevalently Middle Islamic chronology from excavations at Tomb 303 in Petra.[19] It appears, finally, that the lids illustrated could have been associated with either of the two models of cooking pots presented here. Both the appliqué band cooking pot and the perforated lid have similarities with those found at the sites of an-Naqa', al-Mu'allaq and ar-Ruwayshid; however only the example from al-Mu'allaq was excavated and dated to the pre-12th century period (Lindner 1999: 494, fig. 25; 481, fig. 5; 486, fig. 14; 480). In summary, the two described types are very significant examples of remarkable continuity of forms during most of the Islamic period. The danger of attaching chronological values to both specific decoration patterns and forms which have a remarkable longevity in the Petra region, without taking into consideration simultaneously all other diagnostic elements together, has been discussed elsewhere (Sinibaldi 2009: 462) and the assemblage presented here appears to confirm this point.

Finally, several examples of spindle whorls came from the stratigraphic units related to the use of surface 13 (**Fig. 15.6**), and therefore are most likely to be associated with the activities performed in the courtyard. These objects represent secondary use of available materials, being made from reworked ceramic fragments from handmade vessels. Whorls made in this fashion and of this size (4-5 cm diameter) are known in Jordan from at least the Iron Age period onward. [20] The Islamic Bayḍā finds also include a "failed" spindle whorl, which was broken during the process of drilling the central hole.

## Discussion and Preliminary Interpretation of Stratigraphy and Data from Trench A

Despite the preliminary state of our fieldwork, it is possible to make some observations on the results of season 2010, bearing in mind

17. See Sinibaldi 2009: 453, fig. 8 and 462 for discussion and a full profile.
18. Tonghini and Vanni Desideri 2001: 712, fig. 8.d; for Crusader or immediately earlier, see Vannini and Vanni Desideri 1995: 532, fig. 17.8-9, where the chronology is not indicated.
19. Sinibaldi would like to thank the directors of this project, Dr. Christian Augé and Dr. Isabelle Sachet, for the opportunity to study these ceramics and for permitting mention of the data prior to its final publication (Sinibaldi, A Middle Islamic Ceramic Assemblage from Excavations at Tomb 303, Petra. In I. Sachet (ed.), *Au Pied du Monument au Serpent de Pétra. Fuilles archéologiques du Tombeau 303 d' Ath-Thughrah*).
20. See for example Daviau and Dion 2002: 184-188; 258-9, figs. 2.144. 1-17.

that a clearer picture will probably be available after the next campaign in 2011. Stratigraphic excavations suggest that the explored area was an open or semi-open area most likely in use sometime during the life of the structure north of it (Spatial Unit 3). Moreover, the evidence suggests that before the last phase of renovation, a larger area was shared between the users of Spatial Units 3 and 4, which appear to be two separated habitation units. It is possible that this separation of spaces had to do with some property divisions or with some functional changes in the use of the area during its last phase of occupation.

It is also clear that the entire area included in trench A was external in relationship to a structure created by walls 3 and 4, which remains unexcavated. Some change in the use of this space is therefore very clear towards the end of phase III, not long before its abandonment. However, it is also clear that there was a generally intense continuity in the use of the courtyard throughout phases I, II and III, since the study of stratigraphy indicates that repetitive activities of similar natures took place in the same areas of the open space (courtyard?): this includes continuity in the creation of the constructions supported by post holes along wall 3, and in the creation and use of hearths in the northwest corner, along wall 4. This observation, together with the clear lack of evidence of abandonment of the area during the three phases, proves that there was no gap in the occupation of the area, and probably also not in the identity of its group of users. It appears as a matter of fact that the users decided to renovate the walking surface regularly, but still continued to perform the same activities in the same places.

This concept is reinforced by the clear consistency of ceramic materials throughout the sequence. Furthermore, the total lack of any indications of abandonment of the area between the different renovations of the working surfaces suggests that the area served a permanent occupation of the structures, rather than a seasonal one. It thus appears that the group of people using these spaces was part of a settled population, and that they were employing the external facing of the permanent structure formed by walls 3 and 4 to perform activities outdoors, including baking bread, cooking on hearths, and spinning. There is, moreover, no evidence of substantial fluctuation in the settlement occupation, of the kind, for example, observed at the rural site of Fāris on the basis of the change in the arrangements of ovens (McQuitty 1994: 72).

One of the most relevant questions in this context, therefore, is about the length of time that passed between each renovation of the use surfaces. It is not easy to calculate the life of the temporary constructions exposed, such as the ones indicated by the post-holes, especially because they are at this stage not fully understood. Nevertheless, we can reasonably assume that, given their fragility, they would probably need to be replaced quite often — perhaps even every few months; this would suggest a use of each surface for no longer than only a few years.

The *ṭābūn* found in phase III is perhaps a more useful point of reference in this respect. The *ṭābūn* in use during phase III (**Fig. 11**) seems to correspond well to the most common model of bread oven used until recently in the areas of Palestine and Southern Jordan, and it is especially typical of rural settlement. In form it is made of unfired clay, about 80 cm in diameter, and (being bottomless) it uses a base of rounded pebbles. When such an oven is installed, it is normally placed in a cut that is made into the ground; it is often covered over with readily available material after each use, such as soil, chaff or dung, to preserve the heat (McQuitty 1994: 55–56, 72, 1984: 261). The BUPAP Islamic Bayḍā work has therefore sampled ashes for phytoliths analysis from both inside and outside the *ṭābūn*, since these may well reflect different kinds of actions related to the same baking activity.

The *ṭābūn* is largely restorable and is currently under conservation. It had a ceramic lid and was filled with a large quantity of pebbles and ashes; all of this material was recovered during the excavation. It is similar in dimensions to others excavated in Jordan, such as the one found at Khirbat Fāris, dated to after the 12th century phase (Johns *et al.* 1989: 79). It appears that at least some sort of structure or even a simple wall would normally be expected as a protection for a *ṭābūn*; however, it has not been possible to assess this possibility for the *ṭābūn* of phase III since it was located in a corner of the trench, and the area around it remained unexcavated and not

completely visible.[21]

In her interesting ethnographic and archaeological study of *ṭābūn*s in Jordan, Alison McQuitty points out that the main characteristics of an 11th century *ṭābūn*, described in a historical document, appear to have little changed until today; for this reason, it is possible to use ethnographic evidence to better understand archaeological examples. McQuitty evaluates the use of modern *ṭābūn* ovens as having a life of three to fifteen years, and observes that when the *ṭābūn* goes out of use, it is often replaced on the same spot (McQuitty 1984: 265, 1994: 63, 70). Of course, other elements would need to be considered in order to assess the duration of the installation at Bayḍā, such as the frequency of the oven's use. This would in turn be connected to the possibility that more than one oven was in use at the same time by the same group of people — a factor which cannot be assessed at this moment, given that the trench did not completely expose the limits of the open area. However, this time span (three to fifteen years) appears to fit well with the rest of the evidence for the use of phase III. In any case, the opportunity to identify archaeologically a phase for a relatively short time period is valuable for both observing its characteristics and understanding the associated finds.

At the same time, this continuity in the main characteristics of the *ṭābūn* means that in terms of absolute chronology, the *ṭābūn* is much less helpful. This form of bread oven is the most widespread of any type during the Islamic period in southern Bilād ash-Shām. In fact it has been documented since the Bronze Age with very similar characteristics over time (McQuitty 1994: 69-70). Other *ṭābūn*s were found at Islamic Bayḍā during excavations of the Beidha Documentation Project, and a contemporary *ṭābūn*, which appears generally similar to the excavated one, is still visible in the area of as-Siq al-Bārid.

It is possible, finally, to generally describe the building techniques and architecture evident in structural remains of the village, although a detailed and systematic study is planned for subsequent seasons when further excavations will permit better visual inspections of the structures. In general, some differences in the quality of the building techniques are evident. An example is area III, where some of the walls already excavated by the Beidha Documentation Project show a higher quality of construction, characterized by more organized courses using building elements of a greater uniformity. The building techniques in areas I and II, however, are characterized by less regularity regarding orientation of the walls and dimensions of the building elements, which are less evenly cut and arranged in less organized courses. All walls analyzed so far utilize a mud-mortar bond and are characterized by the use of local materials, including occasional elements that are in secondary use (i.e., Nabataean stones that exhibit different dressing styles). All building elements can be roughly defined as between semi-hewn and roughly-squared to dressed stones; construction with these materials then proceeded with a boulder and chinking technique. Given the general paucity of studies about Islamic period sites in the Petra area — and especially those of a rural nature — such elements cannot at present be used to contribute to any specific chronological interpretation.[22] The Islamic Bayḍā project will be pursuing additional studies that relate this architecture with associated stratigraphy in order to help create a basis for comparisons in the Petra region and, hopefully, contribute towards developing a possible chronology of the standing structures.

The documentation of how architectural elements were employed during the Islamic periods also remains scarce for the region around Petra. What is known as a result of the work conducted by the Beidha Documentation Proj-

21. A systematic study of these structures in northern Jordan, a kind of work currently lacking for the south, shows that in that region it was common for a *ṭābūn* to be housed in a building by itself, in order to protect the baker from the natural elements; the ovens discovered at Ayla were arranged near to a wall, as perhaps part of a larger structure (McQuitty 1994: 60-62). Excavations at al-Mu'allaq in the Petra area uncovered a *ṭābūn* dated to the Islamic period that was positioned in the corner of a building (Lindner 1996: 119). It has also been observed that sometimes a small structure is found associated with *ṭābūn*s that could serve for storing fuel (McQuitty 1984: 264).

22. At Khirbat an-Nawāfla, in area V, all walls from the Nabataean to the Early Ottoman period are bonded with mud mortar ('Amr *et al*. 2000: 248).

ect, which included Spatial Unit 3, is that rooms in Islamic Bayḍā can be characterized by the use of roof-supporting arches and the presence of small semicircular structures, possibly with a storage function, along the internal facing of the walls.[23] In the Nawāfla excavations, structures with arched roofs were uncovered that date from the Ayyubid through to the Early Ottoman phases, where a *ṭābūn* oven was also recorded (ʻAmr *et al*. 2000: 247–248).

As a result of the ambiguity in the available data regarding Islamic period constructions in the region, an assessment of absolute chronology for the excavated deposits rests at this moment on the evidence provided from ceramic remains. Yet it must again be stressed that given the absence of available parallels that were studied by similar methods, and from sites of similar function in the Petra region, as well as the general preliminary stage of research on ceramics of the Islamic period in Transjordan, makes any interpretation a very tentative one. Nonetheless, work on several assemblages of the Petra area is currently in progress and the present evidence seems promising with respect to advancing the definition of better ceramic chronologies in the future. Based on the available evidence, it is possible to propose, for the moment, a tentative chronology only for the Late Islamic period.[24] This data would fit in the context of former observations on the high percentage of Late Islamic pottery in the Jibāl ash-Sharāh area, based on pottery readings from surveys, and more generally, with the recorded presence of Late Islamic Period settlements in the Petra area (ʻAmr *et al*. 2000; ʻAmr *et al*. 1998: 504-515; ʻAmr and Momani 2001; Tholbecq 2001: 405).

Other finds from the stratigraphic deposits include small glass fragments and worked hematite pieces. Hematite pieces are an important element found in the artifact assemblage from excavations at the nearby site of Ṭur Imḍayy (Simms and Russell 1997), occupation at which is dated from the 17th to the 19th centuries. However, the Ṭur Imḍayy excavations also yielded a significant number of other lithic artifacts, such as gunflints and fire starters, distinctive artifacts that have not yet been identified amongst the material culture recovered during the first season at Islamic Bayḍā. The limited publication of the pottery assemblage from Ṭur Imḍayy unfortunately does not afford us any useful comparative information (Simms and Russell 1997).

Another notable absence at Bayḍā, when considering a possible late Islamic period chronology, is tobacco/smoking pipes. During the Ottoman period, smoking pipes appear to have been produced since the 17th century (Simpson 1990) and to be present until the late 19th century in Palestine (Ziadeh 1995: 211). In Petra, tobacco pipes have been clearly recorded in the Ottoman phase at al-Wuʻayra, dated from the 18th century onwards (Tonghini and Vanni Desideri 2001: 717, fig. 19). Several examples dating mostly from the 18th century have been recovered from surveys of the Finnish Jabal Harun team,[25] and fragments of additional examples were also recovered during the 2010 season of the BUPAP PAWS survey, but the chronology of these latter examples still needs to be assessed. These finds confirm the presence and use of such objects in the Petra region since at least the early 18th century. The total lack of such finds in the excavations at Islamic Bayḍā is particularly noteworthy and, in association with the ceramic observations, might suggest a chronology within the range of the late 15th to the 17th centuries.

In conclusion, the evidence presented here reflects the challenges of trying to determine the chronology of rural sites from the Islamic period in the Petra area based on archaeological sources. The importance of both careful stratigraphic study and the analysis of the archaeological context cannot be stressed enough when aiming at understanding the chronology and character of the described site. For this reason, the method of analysis of the project included the regular

23. Bikai 2007: 370, and observations on the site by the current team.

24. For Late Islamic as a general definition in this paper we refer to the chronological system adopted by D. Whitcomb (Whitcomb 1992): Late Islamic: 1400-1800 AD. However, whenever possible, specific dates expressed by centuries will be adopted.

25. On the basis of similarities in fabric and shape with dated examples, most of the fragments found in the Finnish Jabal Harun Project survey do not appear to be earlier than 18th century. Sinibaldi wishes to thank Dr. Paula Kouki (Helsinki University) for sharing this information from a publication that is in progress.

use of a Harris Matrix for every stratigraphic situation, including standing structures, a close study of the building techniques, and the analysis of botanical remains with several methods of analysis. Finally, an important part of the ongoing methodology is the careful analysis of excavated ceramic assemblages in synergy with the ceramics from the BUPAP landscape surveys. All of this research will be conducted within the framework of studies already in progress that are aimed at developing a chrono-typology of Islamic period ceramics of the Petra region.

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