

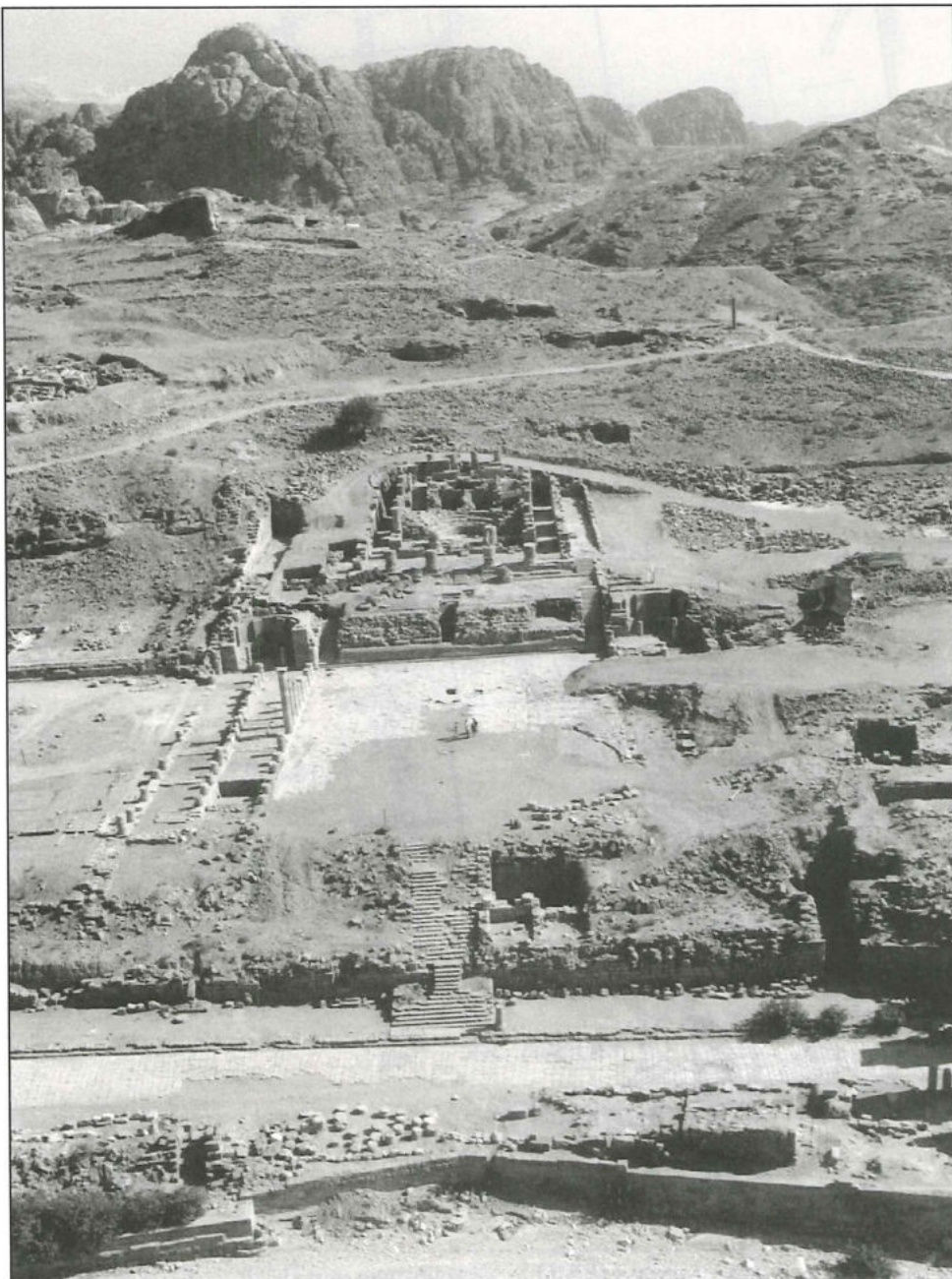
BROWN UNIVERSITY 1999 EXCAVATIONS AT THE PETRA GREAT TEMPLE

by
Martha Sharp Joukowsky

Under the auspices of the Jordanian Department of Antiquities, the seventh season of Brown University excavations took place at the Petra Great Temple from June 5 to August 6, 1999. Figure 1 is an aerial view of the site at the close of the 1999 season, and Figure 2 is a plan of the 1999 trenches.

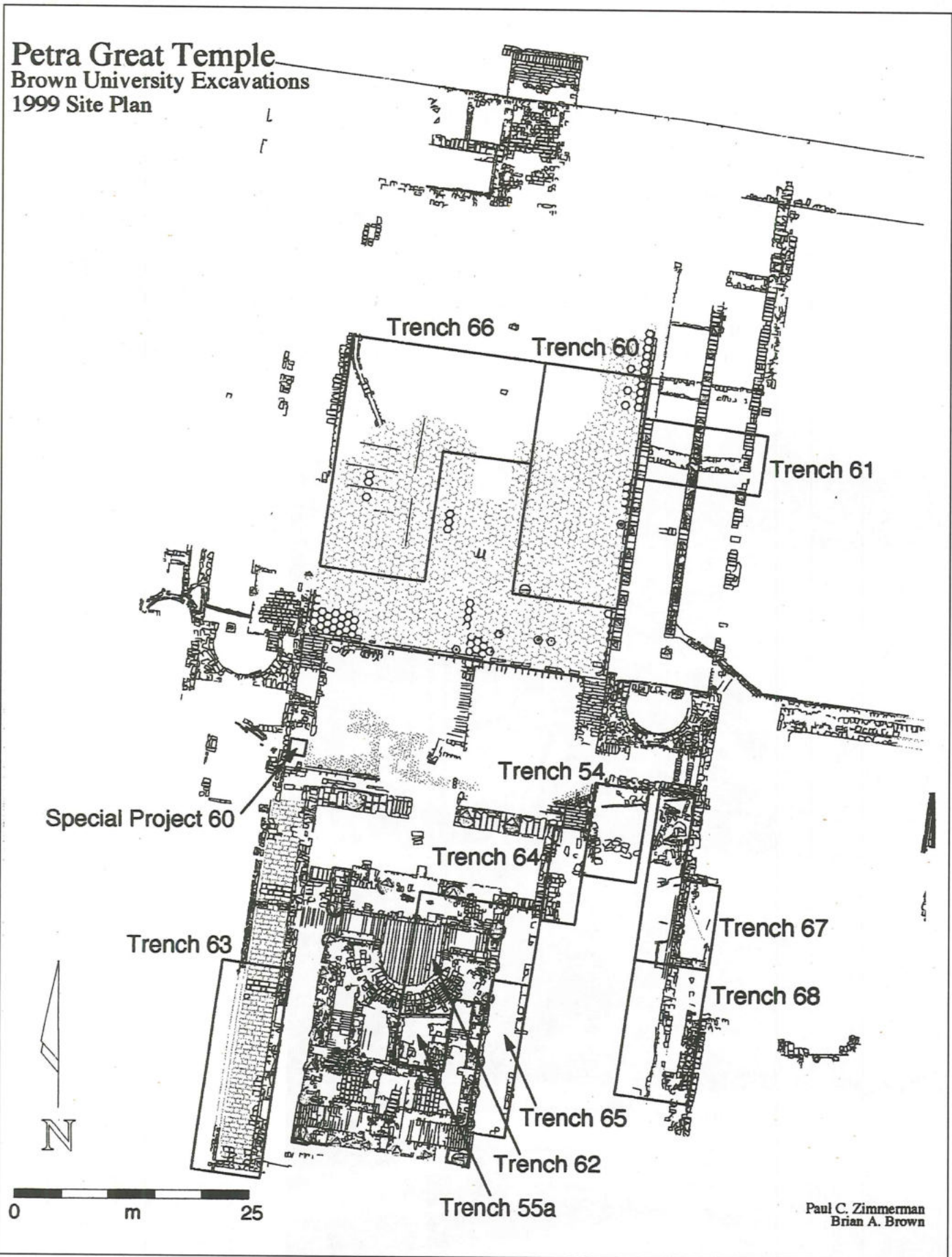
The 1999 excavations were made pos-

sible by the Brown University Graduate School Salomon Award, the World Monuments Fund, the Samuel I. Kress Foundation, the American Express Company for Temple conservation, the Luther I. Replogle Foundation, the Halmos Family Foundation, the Julie Chrystie Webster Award, and Brown University Alumni Awards and Honoraria.



1. Aerial view at the completion of the Great Temple 1999 excavations, looking south (Photograph by A. A. W. Joukowsky).

Petra Great Temple
Brown University Excavations
1999 Site Plan



2. 1999 Petra Great Temple Site Plan showing excavated trenches (Paul C. Zimmerman and Brian A. Brown).

With Brown University researchers in Engineering, Computer Science, Applied Mathematics, Mathematics and the Center for Old World Archaeology and Art and Department of Anthropology, a multi-disciplinary research effort was undertaken in 1999. We initiated a project to develop virtual reality systems to recreate 3-D scenes of the Great Temple. The SHARP (SHape Analysis, digital ARchaeology, Photogrammetry) project is being developed using the Brown University Great Temple databases. The project is funded by a three-year 1.2 million dollar grant from the United States National Science Foundation. We are hopeful that we can design software that will allow archaeologists to model and reconstruct buildings, statues, and other complex shapes from photos and video. It is a significant interdisciplinary effort for scientific research with a direct application to important problems in the analysis of archaeological finds.

The project is designed to develop more descriptive and effective ways of using computers to model and make inferences about three-dimensional shapes and surfaces. The project's other major goals are to design more effective computer site models for unearthed artifacts and structures that will incorporate time, location, three-dimensional position and other data gleaned from object images. Using computers to construct three-dimensional models for reassembling artifacts including statues and columns and other structures from images, the aim is to build a database of those fragments, and to make use of computers to recognize or infer

artisan or artistic style from fragments of larger pieces. This would help archaeologists determine what groups of ancient people produced the objects as well as relate structures at one site to other sites.¹

The 1999 field season staff was comprised of Martha S. Joukowsky, Director; Artemis A. W. Joukowsky, Photographer and field archaeologist; Dr Joseph J. Basile, Associate Director; Paul C. Zimmerman, Chief Architect-Surveyor; Deirdre G. Barrett, Finds Recording; Monica L. Sylvester, Computer Database, Sara G. Karz, Glass Analyst and Archaeologist; and Ueli Bellwald Fresco Restorer. We were also honored to receive the visits of His Highness Faisal Al-Hussein as well as volunteers Karen L. Asfour, Jad M. Asfour, Harry Randolph Brubaker and Francesca Bennett.

Besides Stephen V. Tracy, epigraphist, and Donna D'Agostino our computer systems analyst, 1999 Great Temple Consultants included architectural historians Judith S. McKenzie and Chrysanthos Kanellopoulos; Thomas R. Paradise, geologist; Zbigniew T. Fiema, archaeologist and historian; Christian Augé, numismatics; and Daniel Herbert and Yvonne Gerber for Nabataean Fine and Plain Wares analyses. Our Foreman, for the past six years of excavation is Dakhilallah Qublan who also has been responsible for the carrying out of the consolidation and conservation of the Great Temple. For help in moving architectural components and soil removal the Director General of the Petra Regional Planning Council, Professor Dr Zeidoun Al-Muheisen, assigned both truck and bulldozer

1. Reassembling archaeological artifacts by hand or through the use of images is laborious, time intensive, and often impossible because pieces or features are missing. Current computer algorithms can only recreate simple structures such as spheres, straight lines or cylinders automatically or with little human intervention. Reconstructing complex shapes usually requires considerable human intervention with the computer. An additional goal is to construct as complete a record as

possible of a site excavation in a way that is fast working and easy for people to access. Constructing three-dimensional models to make precise geometric measurements for small artifacts and large structures at a site may allow us to reassemble it. Eventually we hope to be able to have the archaeologist use virtual reality to look at an area during excavation as if that person is actually there in the reconstructed site.

drivers to help us. Sami Al-Nawafleh very ably served as our Jordanian Department of Antiquities Representative.

1998 saw the publication of our first five years of excavations with *Petra: The Great Temple, Volume I - Brown University Excavations 1993-1997*.² This volume is published by the Brown University Petra Exploration Fund and has an accompanying CD-ROM with all our site databases.

At Brown University's Center for Old World Archaeology and Art, Erika L. Schluntz defended her Ph.D. dissertation in 1999, entitled, *From Royal to Public Assembly Space: The Transformation of the "Great Temple" Complex at Petra*,

Phasing

At the Great Temple we have identified 12 phases (I-XII) showing the process of architectural changes or changes brought about by natural causes. Nabataean Phase I is devoted to the quarrying of the bedrock and the East 'Cistern' of the Upper Temenos. Site Phase II, dated to the last quarter of ca. the first century BCE, is the first major Nabataean construction phase and includes the building of the canalization and the East Perimeter Wall. In the Lower Temenos this phase includes the building of the Arcade, the Triple Colonnades, Exedrae, the Hexagonal Pavement, and the Central and Lateral Staircases. The Upper Temenos East-West Retaining Wall and the Wall and Arches of the East 'Cistern' are also constructed. The Temple columns are erected along with the Corridor Walls and the Exterior Walkways. In Phase III there is a major remodeling with the blocking of the Cen-

tral Staircase, the building up of the Upper Temenos and the redesign of Great Temple with the construction of the Inter-Columnar Walls, Vaulted Rooms, Interior Stairs and Platforms, and the Theatron.

Dated to the mid-second century, Nabataean-Roman Phase IV, follows a minor collapse when the Propylaea Stairs are built to provide access to the Lower Temenos, the Lower Temenos East Arcade cross-Walls are built and the East Arcade are filled in. Phase V in the Temple sees the reuse of large ashlar with the building of the Pulpitum. At this time as well, the West Corridor Wall Doorways are narrowed and the Walkway Walls are rebuilt. Closely following Phase V is Phase VI when a major damage brings about the collapse of the Lower Temenos West Colonnade. In the Temple the floors are robbed. In Phase VII there is abandonment in the Temple with the collection of a chocolate brown fluvial deposit. Phase VIII of ca. fourth-fifth centuries, is a period of reuse. There is industrial reuse of the Exedrae in the Lower Temenos, and domestic reuse in the Temple Theatron, Vaulted Rooms, 'Cistern', under Central Arch, and in East Corridor. The West Walkway Doors are blocked, an east-west wall is constructed across the Walkway South, and most of the Walkway West Wall is re-erected. Phase IX is a time of abandonment when the collapse of the Lower Temenos East Colonnade takes place and the Temple East Porch Columns collapse. A fluvial deposit then accumulates. In Phase X there is the major robbing of the upper stair treads of the Temple Stairways. In Phase XI there are a series of major collapses, and Phase XII encompasses the mod-

2. This volume by Martha Sharp Joukowsky has contributions by Christian Augé, numismatics; Deirdre G. Barrett, lamps and small finds; Joseph J. Basile the architecture of the Lower Temenos; Jean Blackburn, artist; Leigh-Ann Bedal, neutron activation results; Donna J. D'Agostino database design and results; Sara G. Karz glass; Elizabeth E. Payne the subterranean canalization system; Thomas R. Paradise geology and weathering; Eri-

ka L. Schluntz the architecture of the Great Temple and its sculptural program; Monica L. Sylvester database entry; Stephen V. Tracy inscriptions; Terry Tullis ground penetrating radar; Peter Warronock botanical analysis; and Loa P. Traxler and Paul C. Zimmerman surveying strategy. A CD-ROM accompanies this volume with the trench reports with plans and section drawings for each season, as well as the database results.

ern era when the Lower Temenos was used for Bedouin farming and Nazzal's dump was dug between the fallen East Porch Columns.

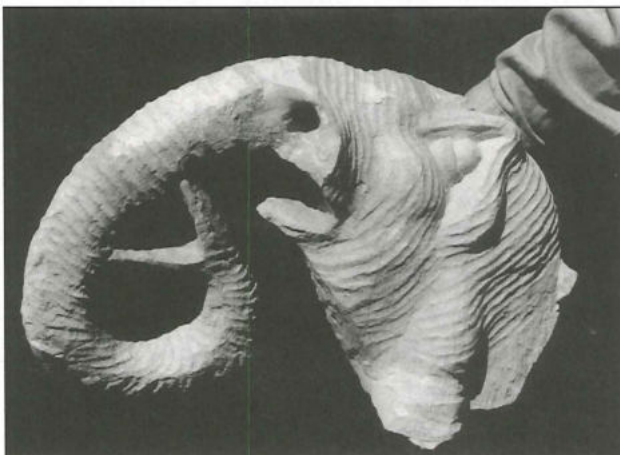
In the following discussion each trench is phased within itself from earliest to latest deposits. For clarity we will identify these as "stages", using Arabic numbers and make correspondences whenever possible with Great Temple Site Phases.

THE 1999 EXCAVATIONS

The active excavations of the Great Temple have been detailed both in the five year report and in *ADAJ* Annual Reports (1993-1998). The 1999 research included excavation in the Lower Temenos, the Upper Temenos and in the Great Temple itself. These excavations will be described in that order.

Lower Temenos

As the Lower Temenos provides the true, formal introduction to the Great Temple, its monumental expanse is integral to our understanding of what the Nabataeans sought to achieve in the construction of the precinct. The 1999 excavations saw the Lower Temenos cleared of overburden completely exposing the Hexagonal Pavement and defining the East Triple Colonnade. Not only did we find another bust of a Fortuna pilaster, but we also recovered the first *complete* elephant head from a collapsed capital shown in Figure 3. Added to this were sev-



3. Reconstructed elephant-head capital (Photograph by Ueli Bellwald).

eral more elephant parts bringing the total number of sculpted elements to 200 fragments.

Excavated in the East Colonnade, *Trenches 60* and *61* were excavated by Sara G. Karz. Located to the west of the Eastern Colonnade on the Lower Temenos, *Trench 60* is 25.3 m north south length-by-11.3 m east west width. A specific goal for the excavation of this trench was to ascertain the extent to which the Hexagonal Pavement continued to the north and west of this area. Examination of several factors suggested the following four stages of events. In stage 1, the Hexagonal Pavement located to the west of the westernmost row of columns in the Eastern Colonnade, was installed on the Lower Temenos. Stage 2 (Site Phase III) represents the repair of the Hexagonal Pavement. A small section of pavement in the southwest corner of *Trench 60* is replaced by two semi-circular paving stones. Stage 3 (Site Phase VI) is a stage represented by earthquake collapse when the columns fell in the East Colonnade, generally to the northwest. The damage seen on the Hexagonal Pavement probably resulted from the impact of column drums and other heavy debris. And stage 4 is overburden.

Excavation of this section of the Lower Temenos (Fig. 4) provided information about the preserved extent of the Hexagonal



4. View of the Eastern Colonnade of the Lower Temenos, looking north (Photograph by A. A. W. Joukowsky).

Pavement in the east, and the extent to which this pavement is extant to the north. *Trench 60* is also important, because it is the first extended section of the Lower Temenos that has been excavated next to the westernmost row of the East Colonnade, thus providing the first clear picture of how collapse affected the colonnade, and, by extension, the Hexagonal Pavement. Furthermore the discovery of its unorthodox circular paving stones, provides interesting avenues of explanation regarding repairs and reuse of the Lower Temenos.

The semicircular pavers in the southwest corner of the trench are interesting in their conspicuousness. There seems to have been no attempt to manufacture these pavers in the style of the rest of the floor, hexagonal in shape and of similar size. This locus initially appears to be in line with the central staircase, although further examination reveals that it is actually both north and east of this staircase. This locus represents evidence of repair in the Lower Temenos, either to the Hexagonal Pavement itself, or to the canalization that lies beneath.

Despite expectations that the pavement immediately next to the stylobate of the East Colonnade would have been crushed by fallen column drums, this area proved to be relatively intact. It appears likely that the bottom two or three column drums of some of the columns remained standing and did not collapse on the pavement.

The removal of the overburden immediately to the west of the east suggests how these columns may have collapsed. The seemingly random arrangement of pavers in excellent condition are positioned next to pavers that have been completely shattered may not be as odd as it initially appears. A fairly distinct line of shattered and broken pavers lines up nicely with the tenth column from the south in the westernmost row of the East Colonnade. This line of damaged

pavement is oriented approximately 70° west of north. Finally, the excavation of *Trench 60* resulted in the discovery of four elephant trunk fragments in the northeast and north areas of the trench, further establishing the original location of elephant-headed capitals in the Lower Temenos, associated with the triple colonnades.

Trench 61 is located within the East Colonnade and measured 6.0 m north-south-by-13.7 m in width from east to west.³ To the west is *Trench 60*. The purpose of *Trench 61* was to complete the excavation of the East Colonnade, which continues both north and south of *Trench 61*. To the west of *Trench 61* is the Hexagonal Pavement. To the east is the *paradeisoi* ornamental garden, surveyed in 1998 by L.-A. Bedal. A specific goal of this investigation was to find the southern limit of the inter-columnar wall constructed between the columns of the center row of the East Colonnade. Very quickly it became evident that the inter-columnar wall in the center row of columns does continue throughout the north-to-south length of the trench, although in the northern section it is in very poor condition, being defined by only one large block. As the excavation approached the stylobate level (in both the west and the east), the tops of two east-west walls were discovered, the first extending between the western and central stylobates, and the second between the central and eastern rows. This building belongs to Site Phase IV. The eastern stylobate was missing the two expected columns, although columns were found in the western and central rows.

It is possible to create a relative chronology, based on the stratigraphy and architecture suggesting the following scheme of development. In stage 1 (Site Phase II) the original architecture of the East Colonnade is constructed. Stage 2 (Site Phase IV) is a stage of reinforcement with the construction

3. To the north of *Trench 61* are Trenches 17, 25, and 30 excavated in 1995, 1996, and 1997 respectively.

of east west walls, which are a preventative measure to counteract the downhill movement of soil and other fill. These walls abut the stylobates, suggesting a later construction date. In stage 3 there is the remodeling of the East Colonnade with the construction of inter-columnar walls in the central row. Stage 4 (perhaps Site Phase VII) represents abandonment and destruction with the deposition of ashy layers (Site Phase VIII). The evidence of fire seems particularly pronounced in the eastern half of the trench. And stage 5 is the accumulation of overburden. The completion of this section of the East Colonnade in 1999 provided information about the construction of the colonnade, as well as its later repairs and additions. Furthermore, the northern extent of the inter-columnar wall in the center row of the colonnade was finally determined.

A total of twelve elephant capital fragments were identified of which ten were recovered in the overburden. This distribution suggests that the elephant capitals were placed only on the columns of the western row of the East Colonnade adjacent to the Hexagonal Pavement. Of the 12 fragments, 11 were recovered in the western side of the trench.⁴

Trench 66 was located on the west of the Hexagonal Pavement. Due to the fact that

ground penetrating radar results (GPR) had indicated that the Underground Canalization System might lie under the Lower Temenos Hexagonal Pavement, we also wanted to investigate what signs of disturbance might be evident in the west. There were also esthetic reasons for this clearance, which concentrated on being able to show the complete sweep of the Nabataean Lower Temenos Hexagonal Pavement. In past years of our excavation here, it should be noted that we have cleared 34.5 m² of overburden in the Lower Temenos. As can be seen in the aerial photograph (See Fig. 1), the northern extent of the Hexagonal Pavement has been eroded away or pulled up by plowing by Bedouin farmers. It is indeed a pity that this pavement is not complete (the most northern pavement block is located some 24 m to the north of the East West Retaining Wall).

The *Trench 66* excavations clearly demonstrated how the West Lower Temenos West Colonnade columns fell in antiquity. Five separate collapsed columns were detected on the surfaces of the Hexagonal Pavement. Calculating the length of each indentation (measured from the estimated center and location of the Western Stylobate), it was found that the column shafts measured at least 7.10 m in height. The

4. Throughout the excavation of Trench 61 there has been much interest in the original floor level and floor surface of the Colonnade. The lack of any flooring material, and the discovery of the pair of east-west walls created much speculation, for the upper surfaces of the walls seem to be on the same level as the top of the stylobate, but are rough and do not represent a flat surface, and seem to be an unlikely candidate to have been the floor itself. So, was there a paved surface between the column rows? No evidence of such a floor, such as marble tiles, mosaic, or *opus sectile*, has been identified. Only a very small number of tesserae have been recovered, also unlikely evidence of a floor surface. If a floor surface had been placed on the upper surface of these walls, then the stylobates would not have been on the same elevation, but at a step down from the floor; an awkward arrangement. It is possible that a floor surface once cov-

ered both the area between the column rows as well as the stylobates themselves, thus creating a flat area down the entire length and width of the colonnade.

These problems aside, a possible explanation for the placement of such walls in the East Colonnade. The platform upon which the Lower Temenos is constructed may have become unstable at some point (perhaps the result of an earthquake, although there is no specific evidence to suggest it at this time), necessitating the construction of reinforcing structures, such as these walls. As demonstrated by the excavation of Trench 17 in 1995, these walls are very high, and abut the stylobates to the west and east. Fill was apparently then deposited into these rectangular chambers created between the stylobates, providing some improved measure of stability to the structure.

width of each indentation measured from the outer edge was 1.65-1.70 m, or approximately the same width as the standing columns on the East Colonnade. A deep indentation in the crushed Hexagonal Pavement was observed at the extreme end of each fallen column and its capital - each of the elephant-headed capitals recovered in 1999 was located in such depressions.

Thirty fragments, of which nine all belonged to the same elephant head have given us our first true complete picture of a complete Asian elephant headed capital. The head shown in Figure 3 was fragmented into four pieces and the trunk into five pieces. Another elephant head measured 0.35 m in length-by-0.32 m in width-by-0.24 m in thickness. This specimen is in excellent condition with the abacus, acanthus head-dress, forehead, cheeks and eyes in pristine condition, however, the trunk area and the left tusk have been bruised by plow marks and there is a cut on the right side of the head.

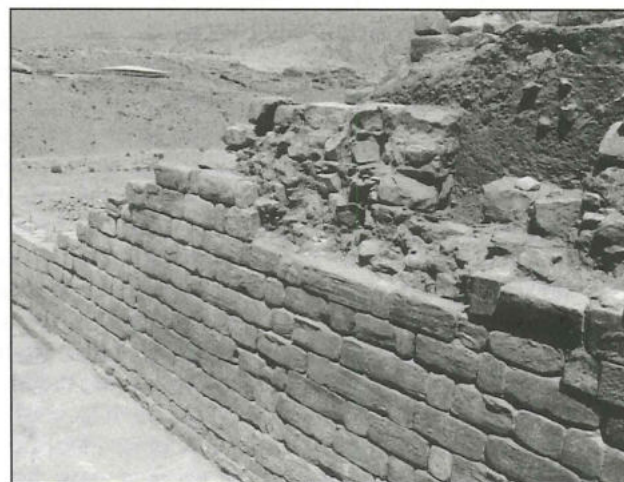
Cultural materials other than elephant parts and stucco were sparse. Of interest was that there were some 77 ridged white stucco column fragments, which had sharp arises and were unlike any of the ridged elements previously found. It can be reasoned that they decorated the elephant headed column shafts. Additionally a bronze coin was recovered, which before cleaning appears to be mid-fourth century in date.

Upper Temenos

In the Upper Temenos three trenches, *Trenches 54, 67 and 68*, were excavated which produced extraordinary results. The first project, *Trench 54*, was located immediately south of the 'Cistern' and east of the East Walkway, measuring 10.2 m in length-by 5.05 m in width.⁵ Its purpose was to identify the use of the area to the east of

the East Walkway and south of the 'Cistern.' Specific goals included further investigation of the canalization identified in the west of the trench in 1997, and the relationship of this area to the East Cistern, especially the construction of the arch springer wall that defines the north boundary of the trench. Excavation began with the removal of the clay pipe in the north of the trench, which after clearing revealed the rubble fill behind the 'Cistern' arch springer wall on the north boundary of the trench, where a deep gravel deposit of fill was encountered. Efforts then were concentrated on a sondage placed immediately east of the canalization serving to examine the construction of the canalization, and to find the founding level of the gravel deposit. This gravel deposit's depth still remains unknown, but it probably rests on bedrock and could probably be assigned to Site Phase I.

Projects 2 and 3, the most interesting excavations east of the Temple in *Trenches 67 and 68*, revealed a large section of bedrock, which in antiquity had been quarried by the Nabataeans in Site Phase I. Shown in Figure 5, this impressive excavated plaza, 5-by-25 m, served as a lavish platform backed by a monumental East Perimeter Precinct Wall.



5. The East Perimeter Wall, looking northeast (Photograph by A. A. W. Joukowsky).

5. To the north of Trench 54 is the East Cistern (Trench 53) excavated 1997-1998, to the west is Trench 19 excavated in 1995 and Trench 64 ex-

cavated in 1999, and to the east is Trench 67 excavated in 1999. The area south of Trench 54 remains unexcavated.

Measuring 34 m in excavated length, this wall's west face was 14 courses high and the depth of deposit from its highest point measured 10 m. Set into the wall was a half-excavated well-preserved doorway standing to a 3.39 m height. Buried for 2000 years, its simple entablature and interior variegated sandstone ceiling remained in pristine condition, exhibiting Nabataean workmanship at its best. Sharing the east side of the Perimeter wall and located to the east was a small reservoir, 1 m in depth, measuring 4.8-by-2.8 m. It is unclear if this should be assigned to Site Phase II, but we tentatively assume it is.

The purpose of the *Trench 67* excavation was to examine the depth of deposit adjacent to the east 'Cistern' wall and the wall itself, which is a continuation of the East Perimeter Wall. A secondary aim was to determine the character of the deposit - did it have a specific purpose, and if so, could we determine what this purpose was? When was it constructed and what was its relationship both with the 'Cistern' to the north and the East Perimeter Wall to its east? *Trench 67* measurements are irregular, measuring 3.65m east west on the north, on the east 20.15m north south-by-8.20 m east west which included the reservoir, east of the East Perimeter Wall. A 1.00 m balk was left on the west side of the trench to serve for soil removal and to assess the stratigraphy. The slope of earth was from the south to north and the preservation of remains in the south was better than the north due to the fact that there was less exposure to the elements and less erosive action.

Found to the west abutting the East Perimeter Wall were a series of crudely constructed rock installations with water channels. These installations in *Trench 67* pose several interesting questions. What is the relationship of these structures to the building of the Temple? The answer is not clear, but the evidence suggests that although the reading of the pottery is late first century BCE,

these structures were constructed at a later time, i.e., sometime after the Temple activities ceased. What is clear, is that the Nabataean builders prepared the area as a surround for the Temple and quarried the bedrock so that it could be used as an even platform on which to build. And what is the architectural relationship to the *paradeisoi* or pleasure park to our east? Although the area is suggested to be part of the Temple Precinct, it is not clear what relationship exists between the two areas.

Stage 1 of Site Phase II consisted of wall construction and the paving of bedrock with limestone pavers. Wall construction included the north south East Perimeter Wall, the east west North Wall, and the East Reservoir bonded to the East Perimeter Wall. Stage 2 included the construction of crude rock-built installations, and a late water channel canalization system, and Period 3 Site Phase VIII was comprised of ashlar fall and topsoil.

The third project, *Trench 68*, initially measured 15.90 m north south-by-5.20 m east west. Located to the south of *Trench 67*, the east wall of the Temple continues from *Trench 67* along the Eastern Perimeter Wall of the precinct. The northern boundary of the wall begins at the *Trench 67* Reservoir. In past years this area has been filled with fine sandy silt, rock and stone tumble from the higher most east Eastern Wall which has a partially collapsed arch lying directly to its southeast. What appear to be two walls are most likely part of the same wall. More excavation will have to be undertaken to clarify their relationship, but it is likely that we will find that the East Perimeter Wall bonds with the most east Eastern Wall and its arch. These deposits represent two phases of development, from earliest to latest. Belonging to Site Phase I, Stage 1 is the preparation of bedrock and the construction of the East Perimeter Walls, and Stage 2, Site Phases X-XI, is collapse and debris, comprised of two fluvial de-

posits.⁶

This turned out to be a most productive excavation for the initial definition of the East Perimeter Wall of the Temple Precinct. The most east Eastern Wall is the highest architectural element of the Great Temple site and is marked by the placement of our Site Datum Point. Much more work must be undertaken if we are attempting to define the East Perimeter Wall. A consideration is the eventual consolidation and preservation of these walls, which stand well over 10.00m in height.

The Great Temple

In the Great Temple five trenches were excavated. First we will examine the Temple West and the West Walkway in *Trench 63*. Then we will turn our attention to the Temple East and examine *Trench 64*, the East Walkway; then we will go inside the Temple to *Trench 55A* the East Vaulted Chamber, followed by *Trench 65* the East



6. The West Walkway, looking north (Photograph by A. A. W. Joukowsky).

Corridor, and finally we will describe the excavations of *Trench 62*, the *Theatron*.

Excavated on the Temple West was the completion of the West Walkway in *Trench 63*. Measuring north south 22.70 m-by-3.74 m east west, the depth of deposit was 4 m in the Walkway south. (The overall length of the West Corridor Wall from its point of termination in the south to Doorway 1 in the north, measures a total of 36.05 m in length-by-3.74 m in width). Shown in Figure 6, this was excavated by Artemis and Martha S. Joukowsky. Features here revealed the east face of the West Walkway 'Byzantine' Wall, the West Walkway Pavement and a late East West cross Wall at the south end of the trench which extended across the Walkway abutting both the West Walkway 'Byzantine' Wall and the West Corridor Wall. Uncovered as well was the west face of the West Corridor Wall with four doorways that originally led from the West Walkway through the West Corridor Wall into the West Corridor. These were found to be in an excellent state of preservation.⁷ Important as well was the excavation of the doorways because of the delicate condition of the preserved frescos that in antiquity wrapped around the doorway threshold blocks.⁸ Figure 7 shows the relationship between the West Corridor and the West Walkway.

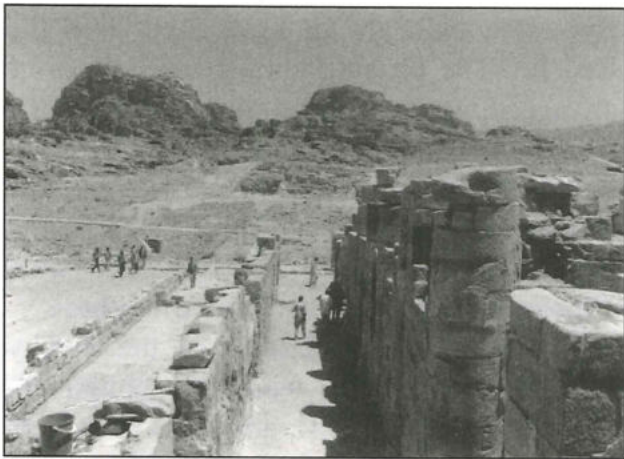
The periodization for *Trench 63* is as follows: Stage 1(Site Phase II) is the construction of the West Corridor Wall, and the doorways with their doorjambs and thresholds; stage 2 is represented by the pavement; stage 3 is when most of the Western Walk-

6. The stratigraphy of the south balk, 4.20 m in width, indicated that there were two fluvial deposits separated by stone fall. The first or earliest fluvial level was a Munsell pale red 10R 6/3 and ranged from 1.80 m in depth on the east to 0.60 m depth where burning was evidenced and it became a Munsell 5YR 3/1 or very dark gray. The uppermost fluvial deposit also sloped from east to west and was approximately 2 m in depth with a Munsell reading of 2.5YR 5/4 or reddish brown. The 2m deep overburden was filled with large ash-

lars that had fallen from the East Perimeter Wall.

7. *Trench 63* is the extension of the West Walkway at the point where its excavation was halted in 1994 in Trenches 8, 10 and 11.

8. Of interest is that a limited amount of cultural material came from these trenches. For the amount of overburden excavated there was little pottery, bone, metal or glass. Some ridged column stucco was found in the soil, but the artifact material on the whole was minimal.



7. The West Walkway (left) and the West Corridor (right), looking north (Photograph by A. A. W. Joukowsky).

way Wall was reconstructed; in stage 4 the threshold blockages were installed,⁹ and the East-West cross Wall was built to the south. In stage 5 the pavement was robbed, and period 6 represents earth fill, collapse and accumulation of debris in the West Walkway. The interpretation of the *Trench 63* deposits has some major inconsistencies, however, in stage 1 we can confirm the Nabataean construction of the West Corridor-East West Walkway which corresponds to Site Phase II or to the earliest Nabataean construction of the Great Temple (antedating the building of the Theatron and staircases). This wall architecture has an extraordinary number of Mason's Marks, largely featuring a mason who incised his blocks with "S" or the Nabataean "O." The expert construction of this wall points to the earliest architectural plan of a peristyle Great Temple enclosed by surrounding Corridor Walls.

Stage 2 is more problematic, because we do not fully understand the placement of the West Walkway. It can be reasoned that a West Walkway must have existed, or why are the doorjambs with threshold blocks built into the West Corridor Wall? If there were no Walkway, from where would the

thresholds be assessed? It is probable, therefore, that there was a Walkway Pavement of which we have vestiges, and there was a most western Walkway Wall outer wall, which must have collapsed and was rebuilt in Site Phase VIII.

The partial collapse of the Temple in the fourth century is reasonably certain, and the later builders had different needs. So they blocked up the multi-access doors to the West Corridor,¹⁰ and constructed the 'Byzantine' Wall. They also reworked the flow of the West Corridor making it the most important access to the edifice. It would then seem that the West Corridor became the focus for entering whatever part of the complex was still in use. A makeshift bench was constructed and set just before Doorway 2. As they had a massive problem with water flowing over the Walkway, they constructed a blockage wall or dam with its opening, so that the water flow could be regulated.

Another, perhaps minor point to be considered is the various phases of the doorways, which are interrelated with the stucco wrapped around their interiors. The earliest stucco is just short of where wooden doors original to the corridor doorways would have been. It is assumed that the earliest doorways of Site Phase II were appointed with wooden doors that could be closed and locked from the inside of the West Corridor. The evidence for locking mechanisms can be seen just behind the doorjamb blocks where large cavities are cut into the ashlar to support the insertion of a beam. In Doorway 2, there are two cuts on the upper surface of the threshold block, which would have served as support for a support rod. For some reason, these wooden doors were removed and the doorways were completely blocked up with stone walls. The stucco on the interior West Walkway reflects this development showing that it has been com-

9. After recording, these walls in the doorways have been removed.

10. The blockage walls between the doorjambs in

Doorways 3 and 4. They also foreshortened Doorway 2 so that passage could be gained by only one person at a time.

promised and damaged by the building of these later walls. Figure 8 illustrates Doorway 4 with the consolidated stucco wrapped around the doorway.

Turning now to the Temple east, *Trench 64* is the extension of the East Walkway at the point where it abuts the Temple Pronaos. The objective was to clear the enormous amount of collapse covering the area so that the architecture could be defined.¹¹ Measuring north-south 6.80 m-by-3.80 m east west, Martha S. Joukowsky, Monica L.



8. Decorative stucco on the West Corridor Wall at Doorway 4, looking southwest (Photograph by A. W. Joukowsky).

11. The north-south late (?)Byzantine Wall excavated in Trench 19, 1995, of the Temple East Walkway was used as a gauge for the trench on its east perimeter. The sondage excavated in the south of Trench 19 as well as the excavated portion of the East Walkway flooring was used as the starting point for the trench north. The exterior east surface of the exterior East Anta Wall was used as the perimeter to its west which was partially uncovered in Trench 48, 1996. The line point of the south end of the East Anta wall served to mark its southern limit.

12. Trench 64 is fairly straightforward in its develop-

Sylvester and Sara G. Karz supervised the trench. The phasing shows four stages of change: Stage 1 was the construction of the Anta Walls and the Threshold with the construction of the earliest Temple in Site Phase II. In stage 2, the floor was laid and there was a repair of the East Walkway, which possibly is aligned with Site Phase V. Stage 3 was the re-building of the shabby East Walkway Wall, which we tentatively place in Site Phase VII; and in stage 4 there was collapse and the accumulation of debris.¹² Although we believe our phasing to be correct, the time framework after stage 1 is not completely secure. We assume this Walkway to have been constructed at the same time as when the Great Temple underwent remodeling in Petra Great Temple Site Phase II. The East Walkway, like its counterpart on the west, would have provided access into the Corridors.

On the Temple East, the inner East Vaulted Chamber saw completed excavation in *Trench 55A* supervised by Brian A. Brown. The objective was to define the East Adyton's architecture, provide a clearer picture of the phasing and construction methods of the Temple, and find evidence of the room's function as well as possible earlier structures built in the same area. The East Vaulted Chamber measured 7.5 m north south-by-4.8 m east west and is located in the eastern half of the temple complex. This room is bonded to the west by the West Vaulted Chamber, it is bounded to the north by the *Theatron*, to the east it abuts

ment. However later builders have compromised this Walkway. It appears as if the integrity of its east wall was compromised by a problem in antiquity with the canalization system. Additionally the limestone pavement was partially robbed away in the eastern part of the trench. When the later east wall was put into place it was after an earthquake that left the area filled with architectural elements that served in the reconstruction of the easternmost East Walkway Wall. This north south wall was found to have been rebuilt with fragments of acanthus leaves and other capital elements.

the north south West Staircase and on the south it is bounded by the Central Arch. The main architectural features of the room are four walls, one of which (the north wall) is angled and serves as a support for the *Theatron cavea*. A door, and a window are set into the east wall, there is floor bedding with at least two distinct fill/foundation layers, and there is a branch of the Temple's extensive subterranean canalization system. The room was also roofed by a vault, which collapsed in antiquity.

As has been the case in other areas of the Great Temple complex, this excavation resulted in more questions than answers. None of the findings offered conclusive solutions to the problems of construction and phasing of the rear temple area or even the room itself. But despite the dearth of evidence, the excavation did result in some potentially important discoveries. First, all of the walls were uncovered down to the floor bedding. At the southeast and southwest corners, part of the foundations of the room walls were excavated as well. This allowed a fuller examination of the walls and their means of construction, and has resulted in proposed phasing that may have ramifications for other areas in the vicinity of the room and in the entire temple complex. Second, a segment of the Temple complex's main canalization artery was discovered in the western side of the room. This segment seems to connect the branch discovered under the Central Arch with the site's main conjunction under the Temple Forecourt. More importantly, at least two of the walls (south and west walls) were partially founded upon the walls and capstones of the canalization. Third, a "sondage" was sunk in the southeast corner of the room. While not yielding the hoped-for datable materials such as coins and pottery, it nevertheless revealed enough evidence for two distinct, plausible theories as to the construction method of the room and possibly other areas in the rear of the Temple. Final-

ly, two primary deposits were recovered. Since the two deposits rest on the floor bedding and underneath the "roof tile" layer, the pottery taken from these loci may provide a *terminus ante quem* for the robbing of the floor tiles. This, at least, may help in assigning an absolute date for the so-called "abandonment" phase of the Temple.

Excavation continued with the removal of a layer of accumulation/collapse comprising loose soil and large ashlar masonry. Beneath this lay the "roof tile" layer, which contained very few pieces of masonry (excluding architectural fragments from column drums and cornices) but a large, even quantity of roof tiles. A very thin separate layer lay under the roof tiles; the only remains taken from this locus was the pottery from the two primary deposits. Beneath this locus lay the floor bedding. Due to a depression in the soil, the canal passing through the room was discovered and excavated. After the entire room had been excavated to the level of the floor bedding, a decision was taken to excavate a sondage measuring 3.20 m east west-by- 2.60 m north south in the southeast corner. This area was excavated as far as possible until time and space constraints forced an end to this excavation.

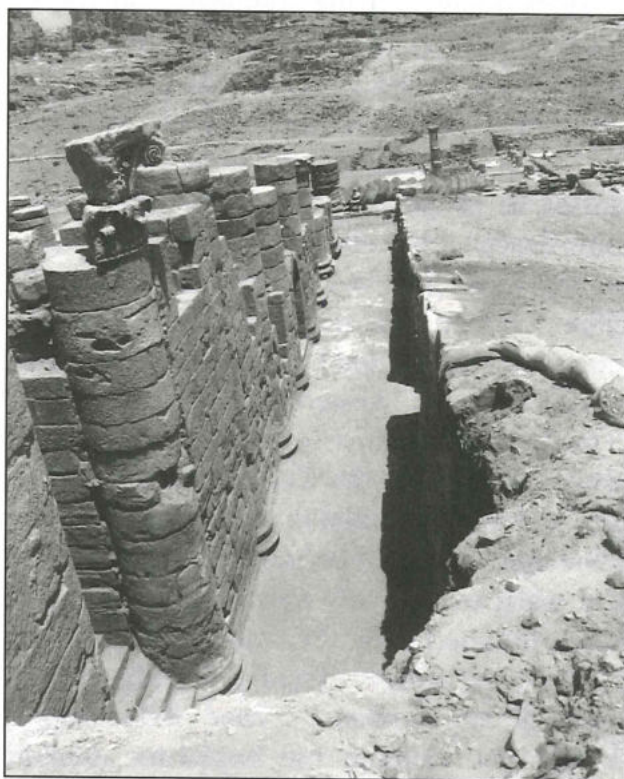
Several problems, however, remain unsolved with regard to the East Vaulted Chamber's phasing. These questions center on the foundations of the room's walls, i.e., whether they were founded on foundation trenches or on some type of platform or terrace within the colonnade. The evidence from the sondage in the southeast corner of the room was equivocal on this point. Another problem also concerns the walls of the room: the issue of a possible second phase of use, during which their height was raised in order to support the vault which in turn supported the theater seating.

In stage 1 or Site Phase I, the lowermost foundation or build-up under the Temple complex is laid. Evidence for this layer,

which consists of stones of unknown size that extend under the west wall of the canal, was found under the hydraulic cement of the canalization in the room. It is unclear if this foundation was laid specifically on the route of the canalization system or under the entire room or rear temple area, nor could it be determined if this level rests upon bedrock. In stage 2, belonging to Site Phase III, there is the platform canalization construction in which a platform is constructed on which the walls of the East Vaulted Chamber are founded, and at the same time, the canalization architecture (walls, capstones, first layer of hydraulic cement) is built into the platform. In other words, the platform was constructed with the canalization as the first priority. In stage 3 (again belonging to Site Phase III) is the wall construction, during which the walls of the trench are founded upon the platform and the canalization. The southwestern corner of the south wall rests upon a capstone of the canal; the west wall is founded on several layers of small-sized, tightly packed stones, which in turn rest upon the west wall of the canalization. The window and the door are also associated with this building period. In stage 3a there is wall build-up and redesign of the room. In stage 4 the floor tile bedding and floor are laid. The bedding for the floor is laid after the *Theatron* is built, and it is logical to assume that the floor pavers are also put in place during this phase. Presumably this is after some minor collapse within the Temple or a period of abandonment. In stage 5 or Site Phase VI the floor tiles are robbed out and the doorway is narrowed.¹³ In stage 6 there is minor reuse. During this time, assigned to Site Phase VIII, the East Vaulted Chamber seems to have been reused for squatting and small storage. Evidence for this period is scant but solid, for there are two primary deposits recovered on

the floor bedding. In stage 7, the room served as a storage depot for roof tiles. Large quantities of roof tiles were found above the floor bedding. This period may also correspond to the Site Phase that groups other areas in which reuse focused on industrial applications, such as lime burning. Then in stage 8, Site Phase IX, there is collapse. At some later point, the vault over the room collapsed, bringing down a large part of the Theater and other architectural features from the Temple rear into the room. And stage 9, Site Phases XI-XII, is represented by accumulation and overburden.

Now we turn our attention to the Temple East Corridor (Fig. 9) with standing walls of six meters in depth. Although this Corridor's frescoed walls have been damaged, the decorative program of the East Corridor was found to replicate the West Corridor with stucco panels and wall relief decorative



9. The East Corridor, looking north (Photograph by A. A. W. Joukowsky).

13. The narrowing of the doorway is placed in this phase due to the fact that the bottom course of

the add-on of the door seems to rest on the floor bedding or at the most 1-3 centimeters above it.

elements accented by architectural representations in reds, greens, yellows and browns. These rich decorative schemes can be dated to the first century CE, or to Site Phase II.

Trench 65, in the Eastern Corridor between the Corridor Wall and the Inter-Columnar Wall, measures 14 m north-south-by-3.5 m east-west. It links the southeast east-west Staircase with the east half of the Theatron and East Corridor. Brian A. Brown and Martha S. Joukowsky assumed responsibility for this excavation. As past excavation has proven that the temple complex is axially symmetric, the purpose of *Trench 65* was to remove the debris and accumulation in the East Corridor to allow unimpeded access from the Temple Forecourt to the East Vaulted Chamber and the Stairways on the southeast.

Specific goals of the excavation included the protection of the decorative stucco on the East Corridor Wall. Preserving what appeared to be similar painted and molded stucco wall decoration in the East Corridor was a major priority and confirmed that the construction/configuration of the East Corridor matched that of the West Corridor. Unfortunately, no molded or painted plaster was discovered below the previously excavated areas of stucco on the top several courses of the Corridor Wall. These patches of stucco included two fragmented panels flanking the doorway in the Corridor Wall; they were conserved and remained *in situ* at the conclusion of the 1999 excavation.

The sequence for the East Corridor appears to be as follows: In stage 1 (Site Phase II), the earliest building phase for the Great Temple, the East Corridor was constructed and paved. Stage 2 (Site Phase III) represents the construction of the Inter-Columnar Wall. In stage 3a (Site Phase VI), the original corridor paving was robbed out, and the

East Corridor of the Temple no longer served in its previous function(s). Fill accumulated over the robbed out floor, and the East Corridor served in some capacity, because a sandy fill, which is about 0.10m in thickness accumulated. It appears as if the East Corridor floor remained in use through the early part of stage 3. The evidence seems to imply a period of use until the mid-fourth century CE or before the 363 CE earthquake. In stage 3b, some activity was going on in a deposit above the fill on the Corridor floor, which then suffered a fire. This is Activity Level 1. This stage 3b conflagration is represented by burned soil 0.15-0.25 m in thickness. And in stage 3c, over the burned level, a broken pavement floor is put down, Activity Level 2. The floors of this period were insufficiently preserved for anything other than general comments on their architecture and associated deposits. What is clear is that the East Corridor is still in use at this time. Thus the use of the East Corridor after the initial paving was removed was suggested by a thin deposit of fill, followed by a localized fire and then by the floor pavements.¹⁴ Stage 3d represents a minor collapse and accumulation. In this early collapse (perhaps associated with Site Phase VIII), in the East Corridor north, a number of Special Finds were recovered, including the fragment of a marble sculpture, a bone needle, a cosmetic spoon, a ceramic bowl, leg fragments of two molded figurines, an elephant trunk, a complete lamp dated to the first century CE, and four coins, one of which is Nabataean. Of particular interest is the crude limestone figure of a woman in a shrine with two columns. The woman wears a chiton over one shoulder, the other shoulder and the breast are bare. This piece, shown in Figure 10, measures 9.5 cm in length-by-8.7 cm in width-by-5.1 cm in thickness. Hereafter was the

14. It is far from certain if the broken pavement and the burning represent one, two or even more

phases of occupation. We have elected to place them into two distinct subphases.



10. "Lady in a Shrine" (Photograph by Sara G. Karz).

early great fluvial deposit followed by some destruction, measuring 0.75-to-0.90m in thickness in the balk. On top of this level is a collapse of plaster and stones measuring 0.30m in depth and following this there is a later, greater secondary fluvial deposit 0.40m of sterile sand accumulation. And Stage 4 represents a major collapse and destruction deposit. Here was a second great fluvial deposit perhaps caused by an earthquake. This is the Site Phase X-XI in which the majority of the walls and columns fell. This collapse is a minimum of 1.30m in depth. There may have been a secondary collapse after the initial great major collapse. The stage 4 destruction level comprises the collapse of large stone masonry from the Inter-Columnar and Corridor Walls and architectural fragments from adjacent areas. Then stage 5 Site Phase XII is the later accumulation and modern debris deposits - there is a mixture of disturbed deposits overlain by humus and soil erosion from the south.

Two large juniper beams (the larger measured 1.60m in length), were recovered. Additional wood samples deeper in the profile of stage 4 contexts were also discovered. These were sent to Cornell University's Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology. A large number of architectural fragments were also recovered including door jambs, a seat from the theatron, decorative capital elements and half of an upper order capital. The majority of the recovered architectural fragments, however, were cornices and panel fragments from the stucco decoration of the Corridor Wall and plaster fluting from the columns within the trench's boundaries.

In our study of the East Corridor columns, two Mason's Marks were discovered on the third column from the north on the sixth drum from the base - one appears to be a "x" and the other a Nabataean "g." In the collapse of the East Corridor Wall's northernmost Doorway, left *in situ*, was another complete drum with two Mason's Marks - one appears to be a Nabataean "t" and the other, a Nabataean "h."

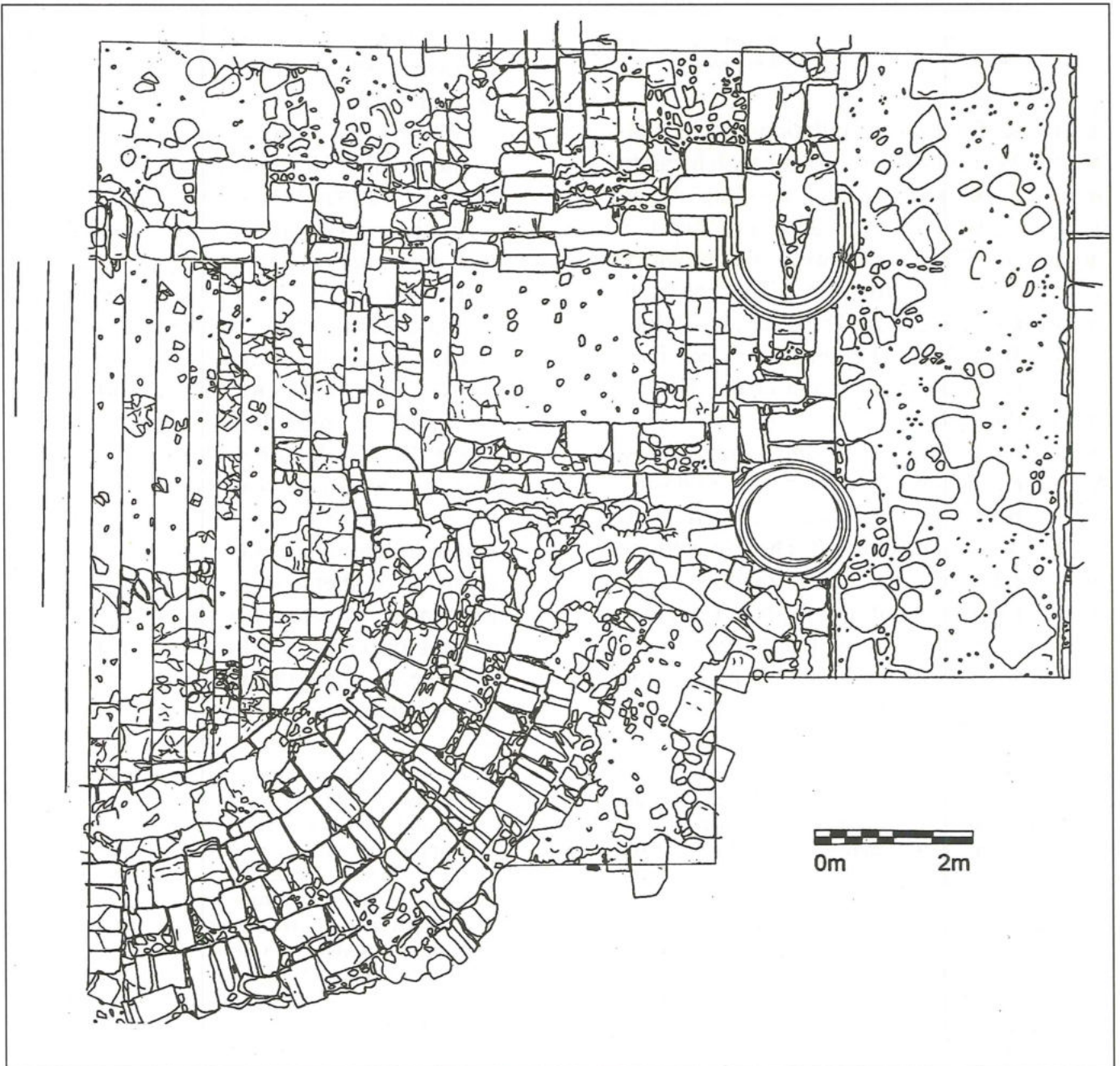
The limitations inherent in dating deposits above and below loci are difficult but do give us some indication suggesting that once the Temple was no longer in use that the East Corridor functioned as an enclosure area. The ceramics point to this being of a fourth century date, which place these deposits to range over four centuries, if not more. Several options can be formulated to explain the presence of the overwhelming amounts of animal bone material. The first, and perhaps preferred explanation, is that the debris is of random origin, deposited over a period of time by campers. A second possible interpretation, and one that is preferred, is that the architecture continued to serve for the keeping of camels and possibly other animals. Thirdly, the detritus may represent imported fill. This would negate that this deposit reflects an actual use level.

The Theater

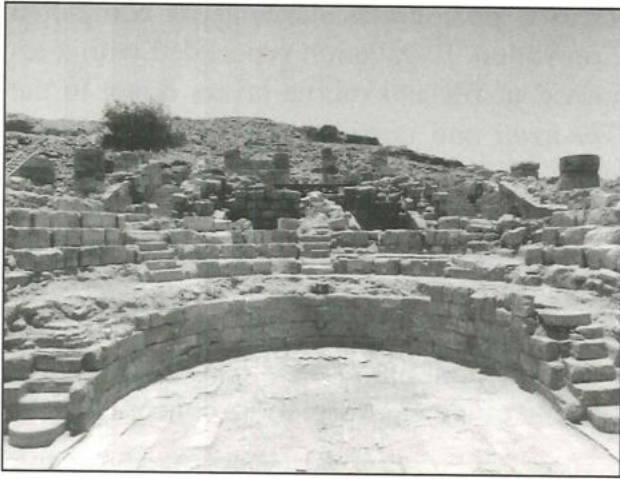
Of greatest significance for the 1999 excavations was the continued and completed clearance of the Theater and the Pulpitum, which have completely exposed these eloquent structures in their entirety. Excavated by Associate Director, Joseph J. Basile and Monica Sylvester, the *Theatron* is truly the most extraordinary structural component of the Great Temple. Figure 11 is a plan of the eastern half of the structure and Figure

12 is a photograph showing its completed excavation. Excavation proceeded with a removal of fill and rubble layers down to the *Theatron* and corridor architecture. In almost every instance, the features were found to mirror those discovered in the west half of the installation - seats, walkways, staircases, orchestra and Pulpitum walls and floors, columns and antae.

Excavation in *Trench 62* resulted in a wealth of new information concerning the



11. Plan of the east half of the theater (Drawn by Paul C. Zimmerman and Joseph J. Basile, drafted by Martha S. Joukowsky).



12. Completed excavation of the Theatron, looking south (Photograph by A. A. W. Joukowsky).

enigmatic Theatron installation and its Pulpitum. While little was found which might help us with phasing and absolute dating (i.e., an inscription or cache of coins), a number of discoveries were made which were of some significance. The complete exposure of the extant Theatron and Pulpitum confirmed our hypotheses concerning the symmetrical arrangement of the Theater installation, and the extent of classicizing influences in its design and construction. Also, theories regarding the relative phasing of the Theatron as later than the interior colonnade were confirmed.¹⁵ The excavations also contributed to our understanding of the later reuse phases of the Upper Temenos. Namely, the discovery of the “stockpile” of ashlar, arch stones, and door jambs in the orchestra of the disused theater suggests that

15. Some of the discoveries made in 1999 may help us clarify the relationship of Phases III and IV of the main building. Circumstantial evidence in favor of assigning the Pulpitum to a later phase than the *cuneos* seating of the theatron continues to mount. Confirmation of the observation that important elements of the orchestra and *adytus maximi* floors—namely, the limestone curbs or strips that run north-south, abutting the *cuneos* installation extending *underneath* the Pulpitum constitutes a significant piece in the solution of this puzzle. Also, the discovery that the low walls originally considered to be the north retaining walls of the Theatron fill in fact represent a later curb placed *in front of* a previously existing retaining wall and

later on the Great Temple complex continued to be used.

Joseph J. Basile poses several questions in his final report:

As evidence suggesting that the Pulpitum installation represents a later architectural phase than the *cuneos* feature of the theatron continues to mount, the implications of this suggestion must be examined. Did the Theatron, installed in the “cella” of the Phase II building, once function *without* a Pulpitum? If so, what does this mean? If not, where is the evidence for a contemporary Phase III Pulpitum or bema, or a podium of any sort?

While some more work needs to be done in the Temple North to clarify relationships between the [Site] Phase II, III and IV architectural components, it is the contention of this excavator that there is *no* extant evidence for a [Site] Phase III Pulpitum, and that the [Site] Phase III Theatron in fact functioned without one. This contention has several ramifications in the formulation of hypotheses regarding the function of the Phase III installation. While initially the idea of a *cuneos* without a traditional Pulpitum may seem strange, in fact there are several important comparanda; significantly, almost all of them occur in the Hellenistic-Roman Near East and some of the most important occur in Syria and Jordan, in the Nabataean sphere of influence. Attached to the Nabataean temple at Sahr, for instance,

on top of the adytus maximi floors further strengthens the theory that a Phase IV architectural component exists in the main building, complementing the earlier Phase II and III structures. Finally, the recognition that the construction techniques and materials of the Pulpitum itself differ from and are perhaps later than the *cuneos* installation (reuse of huge limestone blocks perhaps belonging to the building entablature, reuse of other architectural fragments in the Pulpitum fill, haphazard coursing and construction techniques in the retaining walls and staircases of the Pulpitum) further suggests that the stage installation represents a later, third architectural phase within the main building.

was a small theatron with high orchestra wall, but lacking a fully developed Pulpitum. The Nabataean theater at Wādī Ṣabra, also, is of unique design and lacks a traditional stage building. At Jarash, the so-called "Festival Theater" at Birketein was designed so that the attention of the seated spectator was not drawn so much to the small stage as to the sacred pool beyond. At Dura Europos, the Temple of Artemis Nannaia consists of a small square building enclosing a horseshoe-shaped seating area, without a Pulpitum. What function did these, "non-traditional" theatra serve?

According to some scholars-most recently, in Arthur Segal's *Theatres in Roman Palestine and Provincia Arabia* (1995)-such theatra represent so-called "sacred theaters". These were places where sacred pageants, ceremonial banquets, and rituals that required mass audiences were held. The major requirements of such theaters were that they have no stage building (or a small or "underdeveloped" stage) and that they have an unobstructed view to a landscape or sacred feature. If the later screen wall across the façade of the Great Temple did not extend to a great height - or if it postdates the Phase III Theatron - our theater would possess both of these key features: no traditional Pulpitum, and a view to the Lower Temenos and Wādī Mūsā beyond.

The fact that the Pulpitum is constructed in a different (and, qualitatively, inferior) technique, incorporates a significant number of architectural fragments from the Temple building (including huge limestone blocks which may be from the architrave), and must be phased architecturally *later* than some important elements of the orchestra and *adytus maximi* floors, suggests that it was built at a later date than the *cuneos*, after a destruction event which resulted in the collapse (and subsequent reuse) of some architectural features of the main building. This might mean that the Pulpitum is *significantly* later than the *cuneos*, perhaps dat-

ing to one of the late earthquakes, and that the Theatron functioned as a sacred Theater for several generations.

And what of the function of the Site Phase II building? While no evidence *directly* relating to the function of the Site Phase II structure was recovered, some inference can be made in light of the theories advanced above. Namely, the idea that the original building was a temple cannot be immediately dismissed because a Theatron was installed in Site Phase III - the shift from temple to sacred theater would not result in any significant "desacralization" of space. The presence of no fewer than *seven* doors in the west, east, and south screen (exterior) walls of the Temple (and not even taking into account the open Temple Forecourt in the north) might suggest an open, hypaethral temple with a small shrine in the center of the "cella" (dismantled with the construction of the Site Phase III theatron), or, alternately, a Site Phase II Nabataean "theatron" with simple bench seating around a colonnade, like that in the forecourt of the Nabataean temples at Si'a and Sur in the Syrian Ḥawrān (*specifically* called theatra in inscriptions; the bench seating in the temenos of Qaṣr al-Bint might also be considered such a "theatron"). As for the objection that sacred theaters are usually located near, attached to, or appended to separate and previously existing temple structures or shrines, the Great Temple Theatron is located in the sacred heart of the main city at Petra, connected to the sanctuary of the Temple of the Winged Lions by a major bridge over the wadi (note that this temple would even have been visible from the seats of the Great Temple *cuneos*), and adjacent to the temenos of Qaṣr al-Bint. For this excavator, the evidence continues to point to a sacred function for the Great Temple complex, after seven seasons of excavation.

More work should be done in the Temple north, however, in order to test these the-

ories and, hopefully, recover primary contexts and evidence which can aid in creating an absolute chronology and answering questions regarding the functions of the Phase II, III, and IV buildings. Specifically, Site Phase IV and later structures need to be probed and removed, to get to the Site Phase II and III architecture underneath and to establish firm relationships and absolute dates. Parts of the *proscenium* wall must be removed, to trace the limestone curbs of the orchestra floor which extend underneath, and to establish the relationship between the orchestra, *adytus maximi*, and Pronaos floors. Sealed areas of the Pulpitum (i.e., under extant patches of pavement) should be excavated and sifted for materials, so an absolute date for the stage building can be established. The same should be done with sealed areas of *cuneos* bedding and fill; any consolidation of the *cuneos* should be made *without* the use of mortar, so that such probes can be executed. Finally, areas of the orchestra, *adytus maximi*, and Pronaos floors should be excavated to recover materials useful for dating. The net result of all this, hopefully, would be the establishment of an absolute chronology that would once and for all demonstrate the real chronological relationships between Site Phases II, III, and IV of the main Temple building, and perhaps shed light on the function of the building in each of these three phases. Finally, then, we would be able to speak with confidence on the building history of the Great Temple, prior to its abandonment in Late Antiquity and the decline of Petra in the Islamic period.

It is possible to create a relative chronology based on stratigraphy and architectural phasing, from oldest to youngest, for most of the contexts excavated. Stage 1 of Site Phase II the Interior Colonnade and Exterior Wall were constructed, which pertains to the original architecture of the earliest Great Temple building - columns, engaged columns, and antae, as well as the

east exterior wall of the Temple. Stage 2 Site Phase III, the Theatron architecture phase, pertains to the redesign of the Temple and the addition of the Theatron with its cavea and orchestra. Stage 3 (Site Phase V) pertains to the addition of the extant Pulpitum. The fact that important orchestra floor elements extend under the Pulpitum suggests that this structure postdates the Theatron architecture to the south. Stage 4 (Site Phase VI) is a phase of floor robbing and first abandonment and the accumulation of fluvial soils on the floor and floor bedding surfaces of the Temple. Many floor surfaces were robbed in the building prior to the accumulation of the fluvium, as were other architectural elements. Stage 5 (Site Phase VIII) is the time for the first reuse with rows of stones or reoccupation of the Theatron area after abandonment; namely, the stacking of ashlar and doorjamb blocks in the east half of the orchestra. The architectural blocks were almost certainly being prepared for reuse. Stage 6 represents a second reuse and burning with a later reoccupation of the Theatron; namely, a squatter settlement or industrial installation just above the diazoma and east of the Theatron staircase.

Remains of ash and burnt mortar were recovered, suggesting reuse after the burial of the stone storage area of the preceding phase. A second abandonment is stage 7 with the deposition of fine, rubble-free soils, especially in the East Corridor, after the abandonment of the reuse horizons. It is from these deposits that most of the artifact material was recovered. Stage 8 (Site Phase IX) is collapse of the upper architectural elements: walls, columns, capitals, and entablature elements. There is ample evidence of this collapse (i.e., ashlars, column drums, capital fragments) throughout the trench, which caused substantial damage to the Theatron architecture. Stage 9 (Site Phase XII) pertains to modern fills above the collapse layers.

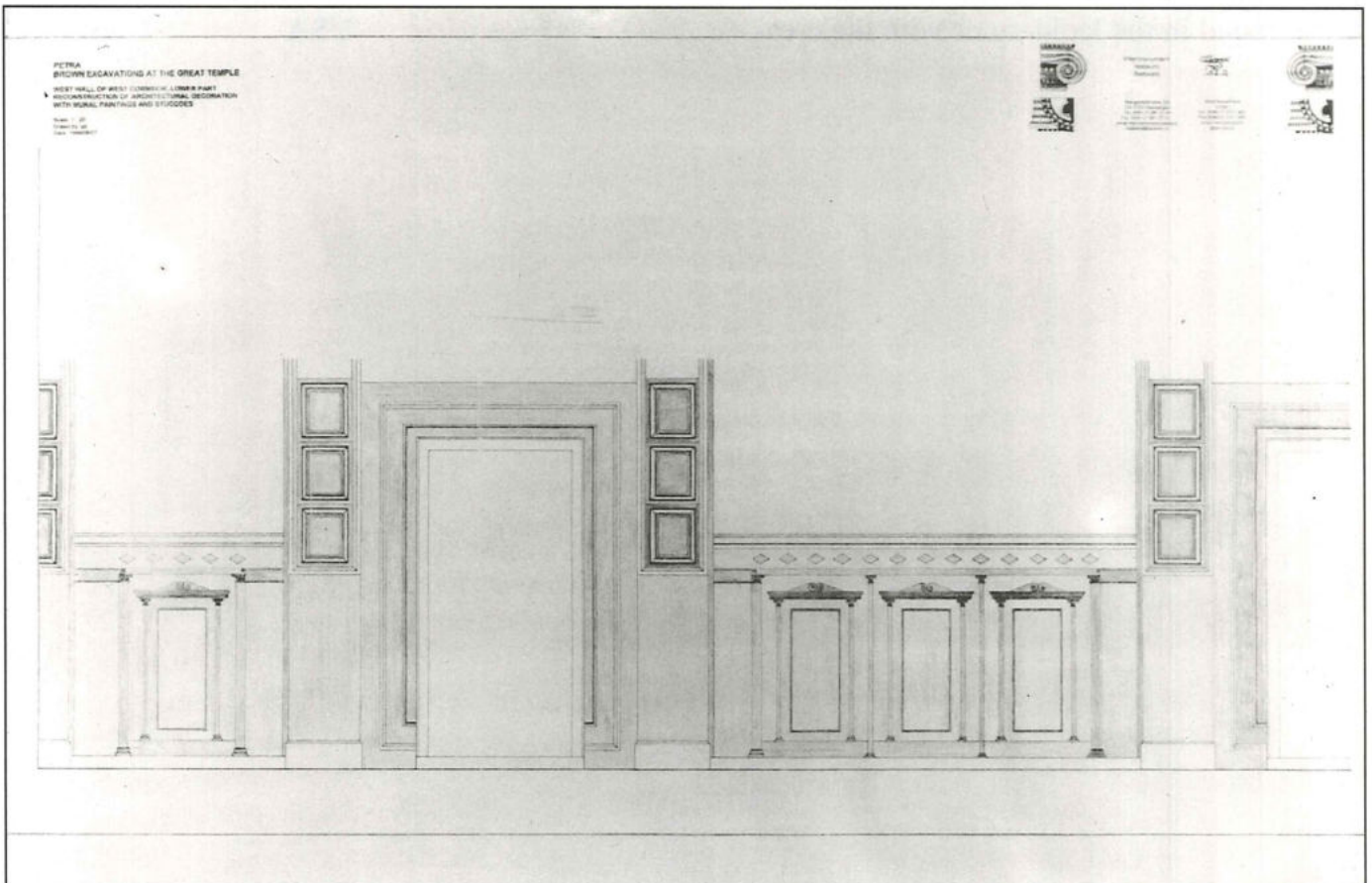
Artifacts

Other than the complete elephant head and the inset pilaster of Fortuna an additional relief pilaster of an Amazon was recovered as well as numbers of painted stucco fragments, several with gold leaf still adhering to their surfaces. Also unearthed were fragments of several figurines, the deity block from the East Corridor, and large amounts of Nabataean pottery dated from the first century BCE to the early second century CE. Small artifacts included 34 coins, several lamps, glass, a bone cosmetic spoon and a needle. The Grosso Modo Database has evolved extensively over the past few years and has been used to account for approximately 135,000 entries. A total of 7267 Great Temple architectural fragments have been analyzed. The significance of these finds, however, takes on an added interest, because they throw the Temple's architectural importance into relief.

Consolidation 1999-2000

Although our architectural remains are remarkably well preserved, annual consolidation measures have been put in place. During the inter-excavation season the following projects have been undertaken under the supervision of Dakhilallah Qublan. In the Lower Temenos there was the re-erection of six columns to different heights in the East Colonnade - the northernmost stands to a height of seven meters and includes an elephant headed capital (see Fig. 4). In the Upper Temenos Temple Forecourt, there has been the construction of a walkway of hexagonal pavers from the top of the West Stairway to the West Walkway Steps. This has been completed with the re-cutting of ancient blocks found on the site.

The West Corridor Wall, east face required stabilization before the restoration of the stucco decoration. Figure 13 shows its decorative scheme as proposed by Ueli



13. Reconstruction of the decorative scheme of the West Corridor Wall, east face (Drawn, drafted and restored by Ueli Bellwald).

Bellwald. Cleaning around the stone ash-lars and the use of snecking stones to fill the interstices was integral to this project. Once completed, Ueli Bellwald continued to consolidate and reconstruct the frescos on the east face of the West Corridor wall. Among other projects in the Temple, was the re-erection of the northernmost Temple West Corridor doorway, the repair of the bases of the West Corridor columns, and the re-building of the West Walkway Wall to one height. The rear west heart-shaped column also has been restored to a seven meter height using its original components.

Among the projects now being consolidated in the Temple Theater is the restoration of the top wall of the *cavea* (north of the *diazoma*). The consolidation of the stairs of the staircases, the restoration of the walkway of the lowest aisle (*diazoma*), the replacement of the missing seats and the consolidation of those *in situ*, and the replacement of the missing ash-lars with either those found in the lapidary or with the crea-

tion of substitutes is presently underway. In the Temple East Corridor the excavated doorway arch was found in good condition, however, we are undertaking some consolidation of the arch ash-lars (*voussoirs*). Ueli Bellwald has consolidated and reconstructed the frescos on the exposed face of the East Corridor column with yellow stucco removed from the column. Now that the East Corridor has been excavated in its entirety, the east west rear staircase has been restored. This is a convenience for the flow of visitors. To serve for protection, additional fencing has been placed around the perimeter of the site.

In conclusion, the Great Temple excavations give us pause to reevaluate and reinterpret what is known about the urban design of Nabataean Petra.

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