

## BROWN UNIVERSITY 2000 EXCAVATIONS AT THE PETRA GREAT TEMPLE

*Martha Sharp Joukowsky*

### General Description

The Petra Great Temple is located in southwest central Petra, just before the Temenos Gate. **Fig. 1** shows the position of the precinct in central Petra. This precinct stands on a different axis but is roughly parallel to Qaşr al-Bint (قصر البنت). On the opposite side of Wādi Mūsā (وادي موسى) is the Temple of the Winged Lions. As the largest free-standing building in Petra, the Great Temple has dimensions of 35.5m east-west by 42.5m north-south (**Fig. 2**) and covers 1507 square meters.<sup>1</sup> The precinct comprised of a Propylaeum, Lower Temenos, Upper Temenos plus the Temple, totals more than 7560 square meters, or three-fourths of a hectare (**Figs. 1-4**). The Great Temple was built on bedrock, and whenever bedrock was absent, particularly in the Lower Temenos, fill and cryptoporticoes were constructed to level the area. The stratigraphy suggests that the building was built in the first century BC and was subsequently altered

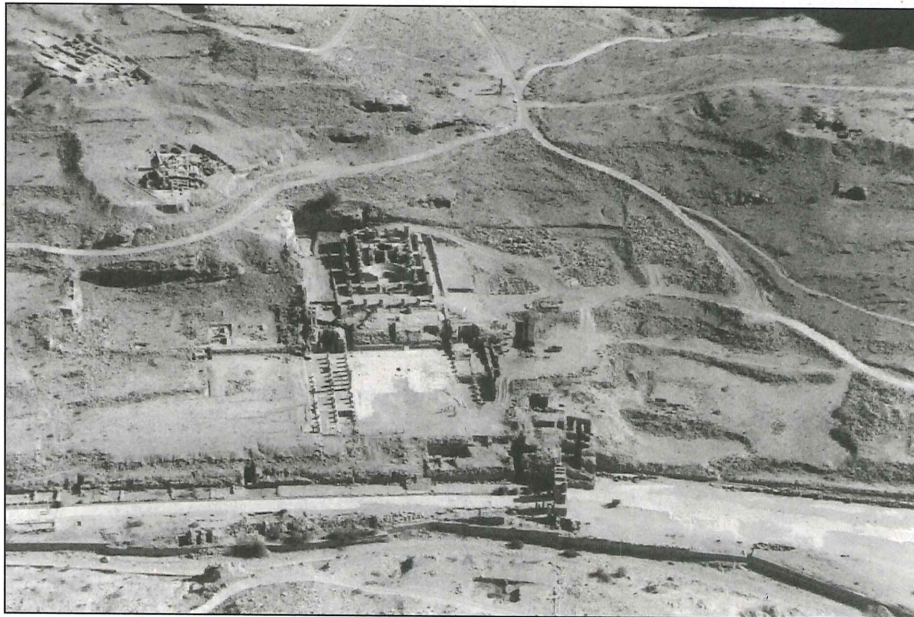
in the first century AD when the extraordinary theatron was added to the building's interior.

The eighth year of the Brown University excavations were undertaken in all areas of the site — the Propylaeum, Lower Temenos, Upper Temenos and in the Temple itself. **Fig. 3** shows the 2000 plan with the trenches excavated. An exploration of the Small Temple was also undertaken, which will be summarized at the conclusion of this report.

In 2000 Brown University sponsored these excavations with generous subventions from the Luther I. Replogle Foundation, the Halmos Family Foundation, the Manchester Growth Foundation, and Brown University Alumni Awards and Honoraria. Before discussing each of these excavations, credit must be given to the 2000 staff.

### 2000 Staff

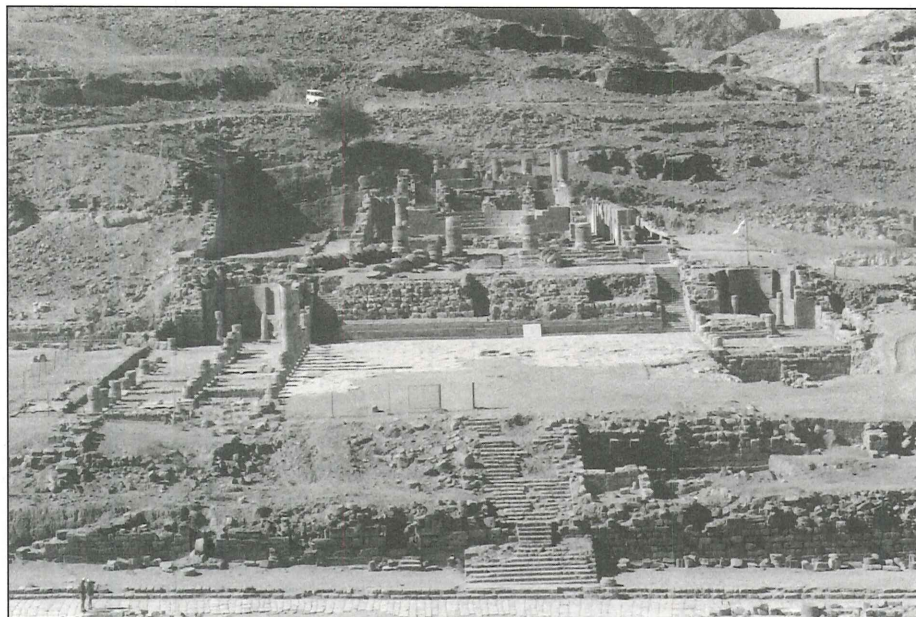
The Brown University Staff was comprised of Artemis A.A.W. Joukowsky, photographer and ad-



1. General aerial view of the Great Temple precinct at the end of the 2000 excavation season, looking south (photograph: A.A.W. Joukowsky).

1. The Great Temple building is therefore 23% larger than Qaşr al-Bint.





2. General view of the Great Temple, looking south (photograph: A.A.W. Joukowsky).

administrator; Brian A. Brown, assistant director, surveyor and archaeologist; archaeologists Adam M. Brin, Patricia W. Farley, Steven J. Larsen, Erin E. McCracken, Karen B. Stern; and John P. Hagen, artist, Deirdre G. Barrett, catalog and artifact registry, and Ueli Bellwald, wall painting and architectural fragment restoration. Sara G. Karz, senior archaeologist, not only excavated the Great Temple, but investigated the Small Temple complex, which lies to the west of the Great Temple.<sup>2</sup>

Our gratitude for the success of this season goes to Dr. Fawwaz Al-Khraysheh, Director-General of the Jordanian Department of Antiquities. Sami Al-Nawafleh ably served as the Jordanian Department of Antiquities Representative, and Mohammad Abdul Aziz al-Marahaleh, represented the Petra Museum. Dr. Talal Akasheh and Fawwaz Ishakat of the Hashemite University, and Pierre and Patricia Bikai of the American Center for Oriental Research were also instrumental to this season's research. For the seventh consecutive year, Dakhilallah Qublan served as our foreman and is in charge of the site's consolidation and preservation.<sup>3</sup>

### Surveying

Using the Total Station, we converted all of our data to Global Positioning Satellite technology. These data are presented in Universal Transverse Measurements grid coordinates. Our previously collected data, accurate within itself, have now been corrected with an addition of 19.556m to our previously published elevations. This shared data for the Petra Mapping Project, sponsored by the American Center for Oriental Research and undertaken by the Hashemite University, will allow researchers a plan of central Petra with sub-centimeter accuracy.<sup>4</sup>

### Propylaeum and Lower Temenos

Extending from the south side of the Colonnaded Street up to the Lower Temenos of the temple precinct is the Propylaeum or Propylaea Steps. Just above the Colonnaded Street are a row of stretchers, followed by a second row of sandstone headers, which were put in place after the street was constructed between 9 BC and AD 76 (Parr 1960: 124-135). Eight steps (built earlier than the street but later

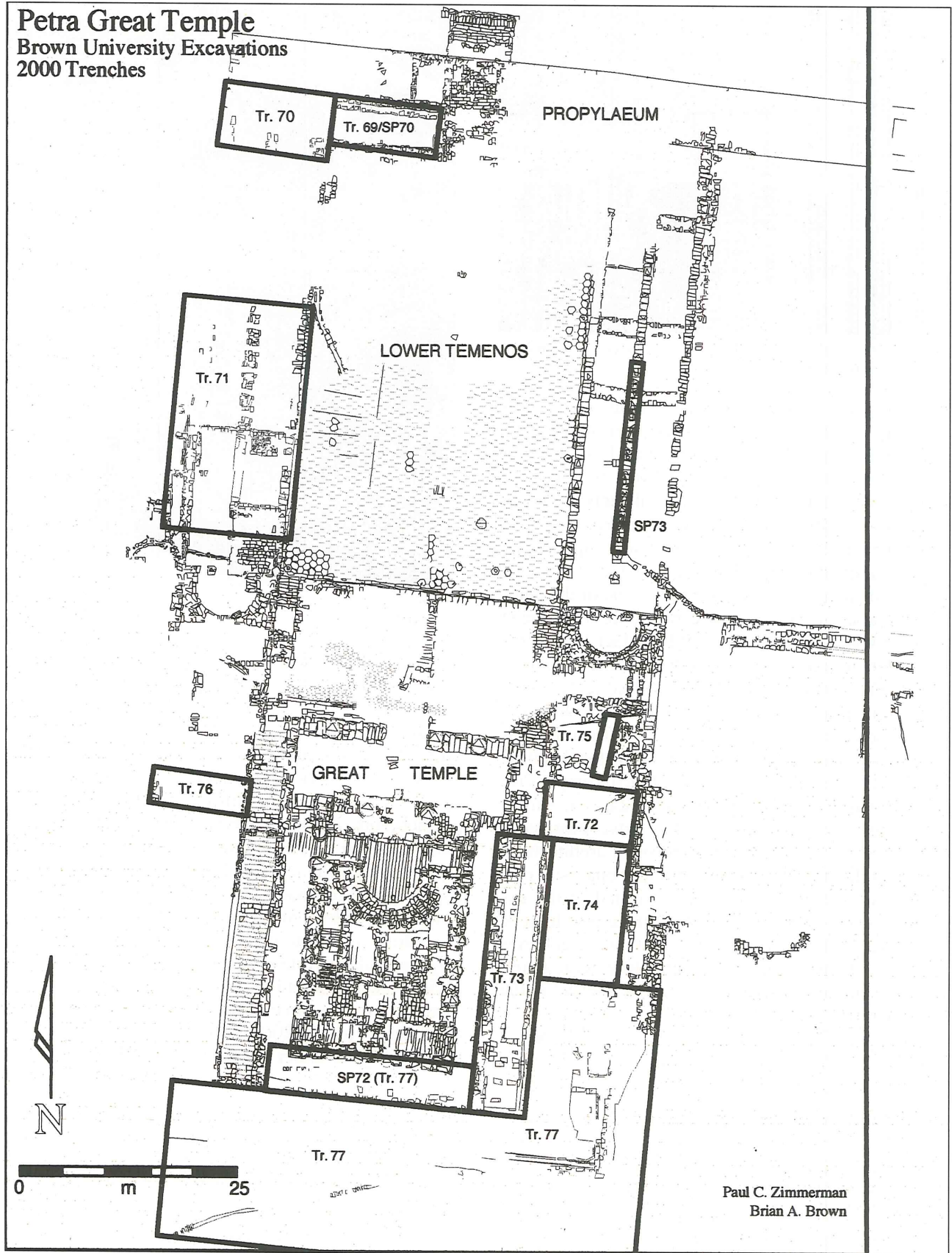
2. Volunteer archaeologists: Betsy and Pip Alderman, Francesca Bennett, Jared W. Farley, Kenneth P. Finely, Elizabeth Himelfarb, Michael and Jane Joukowsky, Myrna B. and Robert C. Karz, Emily Kessler, Andrea L. Leinberger, Milyae Park, Elizabeth Smolenski, Madelaine and John Telfeyan, Karey A. Trender, and Jennifer C. Wade.

3. We wish also to acknowledge the help and moral support of Suleiman Farajat of the Petra Antiquities Office and PRPC; Paul C. Zimmerman for his surveying expertise, as well as to Megan Perry, physical anthropologist; Jane Taylor, photographer; Ali Jabbri, artist, and Eileen L. Vote for her work on the Great Temple Shape, Archaeology, Pho-

togrammetry, and Entropy Laboratory at Brown University. The computer generated reconstruction in Fig. 4 is her "work in progress". Advisors who continued to serve the Great Temple project in 2000 include Judith McKenzie architectural historian, and Terry E. Tullis, geologist. Fatma Mari cleaned the coins and metal artifacts.

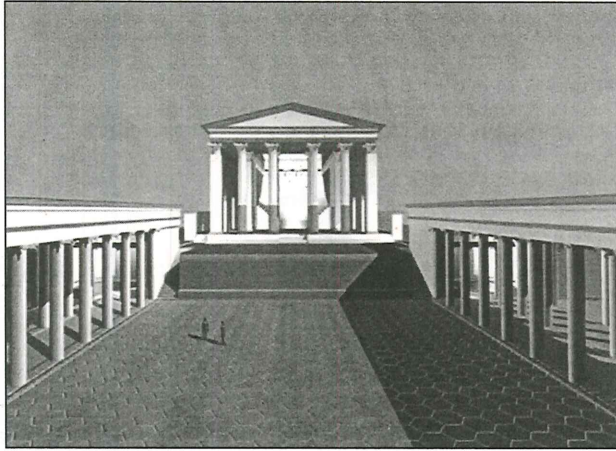
4. There also had to be an addition of 3356918.553 to each of our Northings, and for our Eastings 729533.590, and well as the rotation of all our coordinates 2 degrees, 22 minutes and 52 seconds. The greatest difference between distance points is less than 0.05m. Therefore within the site itself our measurements can be adjusted accordingly.





3. The 2000 Plan of the Great Temple, showing the position of excavated trenches (Paul C. Zimmerman and Brian A. Brown).

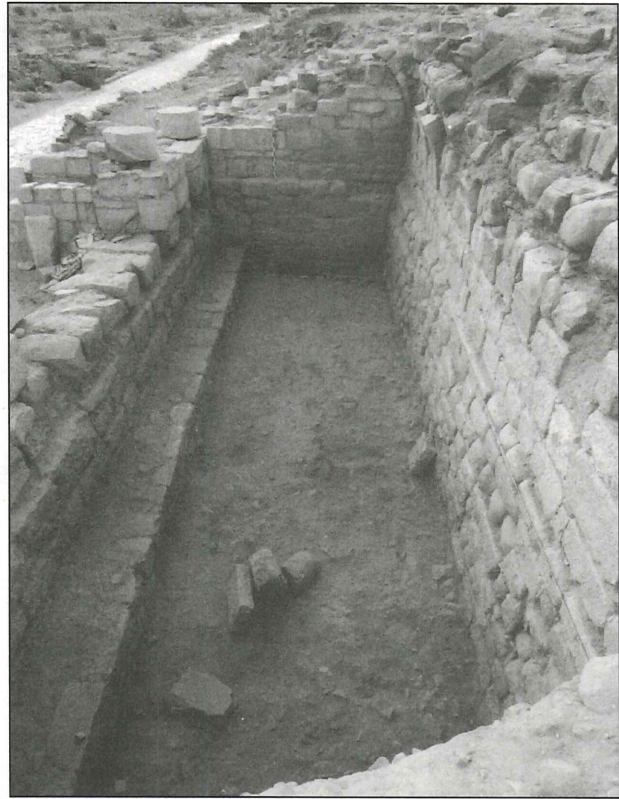




4. Computer generated reconstruction of the Great Temple, a work in progress (Eileen L. Votaw).

than the wall, which they abut) then lead to a mid-stairway landing, where the steps breach the east-west precinct perimeter retaining wall lying parallel to the street. In antiquity, this wall was modified, although the west section of this wall appears to be original — it shows less signs of disturbance than its eastern counterpart.<sup>5</sup> The landing also appears to have withstood multiple burnings, for the area is ash-coated. In an ash-filled pocket under one of the landing ashlar, a cache of first century AD Nabataean painted wares was recovered.<sup>6</sup> If in fact these fires burned in antiquity, we reason that an altar may have stood here. Above the landing are 18 additional brutally eroded steps leading up to the Lower Temenos.<sup>7</sup> As we see the Propylaea Steps today, it can be reasoned that their upper register, above the landing, were not the original egress to the Great Temple Precinct, for it is evident that they post date the earlier Propylaeum construction — they have been constructed with reused voussoirs and other architectural elements that were original to the early phases of precinct construction. What was confirmed in the excavations of 2000 was that *before* the upper flight of steps was constructed, vaulted east-west galleries (cryptoporticoes) were constructed to extend across the front of the Propylaeum, which lie parallel to the Colonnaded Street.

Two trenches, Trenches 69 and 70 and Special Project 70 (Fig. 5) were excavated from the west



5. Propylaeum excavations looking east (photograph: A.A.W. Joukowsky).

of the stairs to the cut left from the excavation of the so-called Baths. Under the supervision of Steven Larson, Brian A. Brown and Elizabeth Smolenski, the full east-west extent of this cryptoporticus was exposed measuring 24m. A sub flooring for robbed out pavers was found at an approximate depth of 4.53m on the east side of this trench, but further excavation here in 2001 will confirm if in fact this is the earliest flooring. It also remains unclear if the west cryptoporticus was at some point remodeled in a later period for shops along the Colonnaded Street.

Most spectacular have been the 2000 Propylaeum discoveries of limestone capitals sculpted with Asian elephant-heads. Over the eight years of excavation we have cataloged 328 elephant head elements,<sup>8</sup> and in 2000 we recovered two complete capitals lying under collapsed columns, clearly in-

5. During the excavations of this area, Peter Parr (1970: 325) identified this retaining wall as Wall K.  
 6. And at the west base of the lowest eight steps, a large amount of fine black ash had fallen between the abutting step wall and the lowest east-west retaining wall indicating that successive burning had taken place on this "landing".  
 7. Many of the ashlar appear to be reused blocks and some steps are composed of voussoir elements. The steps themselves appear to be a pastiche of different building periods, so it is not clear when their present form was put in place.

On the whole the propylaea steps leading from the Colonnaded Street are in a sad state of collapse.

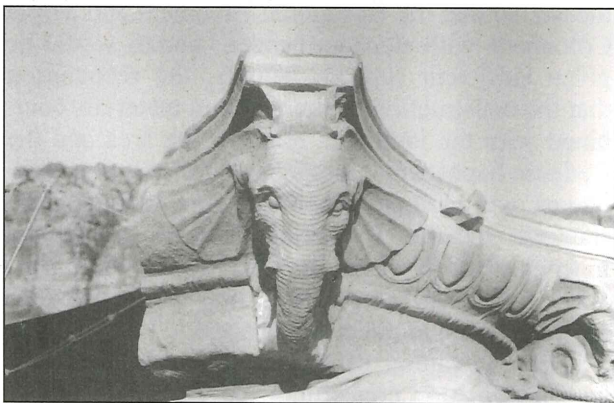
8. Of these 328 fragments, 83% or 269 were found in the Lower Temenos, 14% or 47 fragments were located in the Propylaeum, which is technically part of the Lower Temenos. Therefore, 96% of elephant head fragments are found in this lower area. Seven were recovered from Temple contexts and five fragments were found in the Upper Temenos; together these represent approximately 4% of the fragments found on the site.



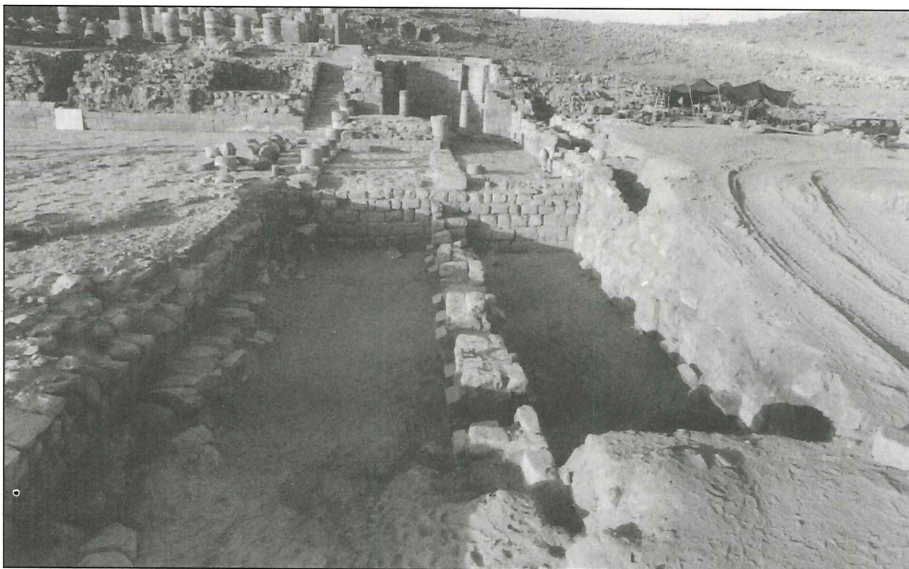
dicating that both the Propylaeum and the Lower Temenos colonnades were decorated with these elaborately carved capitals.<sup>9</sup> Several capitals were recovered and restored — one capital that adorned an engaged column is pictured in **Fig. 6**, as well as one with four heads — and was moved to the entry of the Petra site Museum. Also recovered from the Propylaeum during the 2000 excavations was a horned altar.<sup>10</sup> **Fig. 7** shows the altar *in situ*.

### Lower Temenos

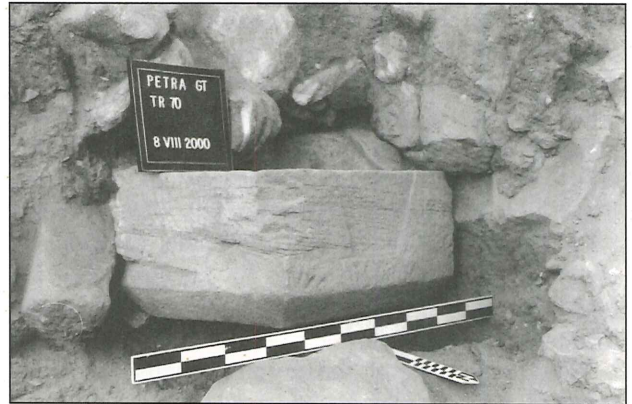
To the east and west of the Lower Temenos are triple colonnades on the east and west, with a total of 120 columns (60 on each side). These colonnades led into imposing east and west semi-



6. Elephant-headed capital after restoration by Ueli Bellwald (photograph: A.A.W. Joukowsky).



9. At the conclusion of the 2000 excavation season, these capitals were moved to the entrance of the Petra Museum.
10. This limestone altar, Seq. No. 70195, was found in Trench 70 Locus 1. It is characterized by having a beveled lower edge and carved out areas for the “horns” in relief at its four corners. Measuring 0.63m in width x 0.52m in width x 0.33m in height, its center is a shallow circular carved out bowl-shaped cavity.



7. Horned altar in the Propylaeum excavations, *in situ* (photograph: A.A.W. Joukowsky).

circular buttressed exedrae. Between the colonnades and coeval to them there is the sweep of an enormous plaza, approximately 55m in length and width, laid with large hexagonal pavers, constructed at the same time as the colonnades.<sup>11</sup>

In Trench 71 2000, measuring 26m x 13m, supervised by Martha Sharp Joukowsky, the upper levels were excavated of a double parallel vaulted cryptoporticus located below the West Triple Colonnade (**Fig. 8**). Here a double cryptoporticus has been exposed to extend north from a massive stepped east-west retaining wall found under the West Colonnade below the fifth column to the north of the West Exedra. We reasoned that the east-west Propylaeum cryptoporticus turns to the

8. Trench 71 cryptoporticus discovered in the 2000 excavation season. Only the upper levels have been excavated (photograph: A.A.W. Joukowsky).

11. Under the pavement there is also an extensive subterranean canalization system (Tullis in Joukowsky 1998), which with the use of ground penetrating radar supplemented by excavation, has been traced for 100m. It extends from the Great Temple rear to its forecourt, under the Lower Temenos, the Propylaea steps, and the Colonnaded Street — perhaps to flow into Wādi Mūsā.



south and extends under the triple colonnade — the visible decorative border of the Lower Temenos leading to the West Exedra. Although partially excavated, to an approximate 1.58m depth below the stepped east-west retaining wall, it can be projected that this western cryptoporticus measures some 44m in length x approximately 12m in width — the width of the Triple Colonnade. Further excavation will be necessary to confirm the relationship between the Propylaeum and the Lower Temenos architecture.

The west wall of the cryptoporticus was constructed with sandstone and sometimes limestone ashlar averaging 0.50-0.55m in length x 0.21-0.32m in width set with white mortar — well dressed arch springers and voussoirs extend from the parent wall itself. These connected with centrally placed piers with arch springers on both sides, which in turn connected with the east wall.

Found in the collapse of the trench were large rectangular limestone blocks (1.10m in length x 0.60m in width x 0.18m in thickness), which originally covered the cryptoportico arches. Other artifacts of interest discovered in Trench 71 comprise seven partial inscriptions (one is shown in **Fig. 9**) and a worn but complete elephant-headed capital, plus a battered smaller elephant-headed capital with a diameter of 0.48m; which originally may have been placed on one of the West Exedra entry columns. Most likely the exedrae entry columns were decorated in a fashion similar to the colonnades, but with smaller elephant-headed capitals.

### Propylaeum Lower Temenos Discussion

The discoveries made in 2000 have helped us clarify the relationship between the cryptoporticoes



9. Sandstone inscription recovered from the west cryptoporticus (photograph: A.A.W. Joukowsky).

and the West Triple Colonnade. Circumstantial evidence is in favor of assigning both of these building programs to the same but consecutive architectural design. Confirmation of the construction of the double cryptoporticoes — namely, the north-south piers and arch springers — run *underneath* the Lower Temenos Hexagonal Pavement constitutes a significant element in the solution of this building program. Also, the discovery that the stepped east-west retaining wall theorized in our earlier phasing exercises to be a later response to earthquake, in fact, represents one the earliest elements placed possibly *across the Lower Temenos*, and further strengthens the theory that this was part of the original plan to build up the Lower Temenos, so that the Hexagonal Pavement and Triple Colonnade with elephant-headed capitals would be given sufficient support. Finally, the recognition that the construction techniques and materials combined with the industrial reuse of the area and the Bedouin haphazard coursing and construction techniques over various parts of the area, including the staircase and the 'Byzantine Platform' positioned in front of the West Exedra (Joukowsky 1998: figs. 5.21, 5.10), further suggests that these activities represent later architectural phases.

The excavations of 2000 resulted in a wealth of new information concerning the enigmatic Lower Temenos installations. While no sealed deposit was found which might help us with phasing and absolute dating, there is a great deal of evidence relating to Phase I Great Temple construction. A number of discoveries were made which were of some significance including the interrelationship between the Lower Temenos Hexagonal Pavement, the Western Triple Colonnade and the double vaulted cryptoporticoes.

First and foremost, the upper level exposure of the extant West Triple Colonnade confirmed our hypotheses concerning the symmetrical arrangement of the Lower Temenos, and the extent of symmetrical influences in its design and construction. Also, theories regarding the relative phasing of the West Triple Colonnade as contemporary with the cryptoporticoes were confirmed. Of interest as well is that the build up of the Lower Temenos from the stepped east-west retaining wall to the Propylaeum was a massive undertaking for and part of a master Nabataean architectural plan.<sup>12</sup>

Lastly, the Trench 71 excavations of the 2000

12. Many questions arose as excavation was taking place. Among them, was the West Triple Colonnade constructed on a higher level so as to provide a barrier wall for access on the west side of the precinct? This may be difficult to

prove, but I think it might be given some consideration as excavation continues to the west. And what of egress to the precinct from the west, from the so-called "Bath" area? Where is it, and how does it function?



season contributed to our understanding of the later reuse phases of the Lower Temenos. Namely, the discovery of the massive burning activities show that later on the Lower Temenos west continued to be used in an "industrial" way, complementing previous evidence such as the lime kiln in the East Exedra of the Lower Temenos, which was recognized as early as 1995. Somewhat later Bedouin activities took place in the area, so its area use pattern was again modified. All in all, this area can be considered a prime candidate for further exploration and interpretation.

Also in the Lower Temenos east we undertook the removal of the late Inter-Columnar Wall of the centre row of the Triple Colonnade. Supervised by Sara G. Karz, there were two main reasons for the removal of nine of the ten Inter-Columnar Wall sections. First, by removing the wall obstructing the view of the easternmost row of the colonnade, it is now possible to emphasize the fact that this is a *triple* colonnade. Second, a number of architectural elements from earlier phases of the Temple such as the wreath panel, were reused in the Inter-Columnar Wall. Removing the wall made it possible to remove such important objects to safety.

### Upper Temenos

The 2000 excavations in the Upper Temenos saw a sondage on the west, beyond and to the west of the West Walkway Wall in Trench 76. On the east there was the removal of the balk to the west of the East Perimeter Wall, and the massive clearance of what we call the "plaza" surround of the monumental building to its east and south. After giving a brief description of Trench 76 in the west, we will move to the east with a description of the plaza excavation.

**Test Trench 76** was opened by P.W. Farley, J.W. Farley, and E.E. McCracken. The trench located immediately west and perpendicular to the West Walkway's western wall, measured 11.00m east-west x 3.00m north-south, to an approximate depth of 1.78m. The mission for initiating the excavation of Trench 76 was threefold: to locate, further expose, and delineate an outer west wall on the Upper Temenos; to locate and expose a western colonnade if one should exist; and to remove sequential horizontal layers of the trench in 0.25m increments until sterile soil was reached. It was projected that the potential depth could reach 7.00-8.00m.

Work began with the rediscovery of evidence of

canalization in the form of a plaster-enclosed pipe extending along that section of the far western wall. As excavation progressed the trench was filled with the collapse of many large boulders as well as many more ashlar. When it became obvious that the collapse wall debris would continue up to the western border of Trench 76, it was decided to close this sondage. What was determined from this deposit was that the West Walkway Wall had at one time in antiquity collapsed and had completely congested the area between the West Walkway and the far west wall with its canalization.

Artifacts included many Special Finds, including complete Nabataean ceramics — a small bowl, which can be dated to AD 100 (Schmid 2000: Abb. 97, Phase 3a-c, Group 8 Abb. 57 or 58) and a juglet (Schmid 2000: Phase 2a, Abb. 288, dated to 50 BC to AD 20). The head of a figurine of a bearded man was also cataloged. Lamps included those from the Nabataean, Roman and Byzantine periods. Large amounts of stucco and several architectural fragments were also found: a pine cone and acanthus leaf, a corner volute, and stucco egg and dart, wave patterns, acanthus leaves and vines, and multicolored segments. Larger amounts of tesserae appeared, along with a kohl liner/pin of worked bone. From the artifact repertoire, it would appear that at some point in the Roman-Byzantine period, this area saw wall collapse and also was used as a dump.

### The South and East Perimeter Walls and Plaza

In 2000, concentrating on the clearance of the east surround of the Great Temple in Trenches 72, 74, 75, and 77,<sup>13</sup> one of most remarkable and yet time-consuming excavations is that of Trench 77, supervised in different sectors by E.E. McCracken, A.W. Joukowsky, M.S. Joukowsky, and S.G. Karz. This area encompasses the southeast of the South and East Perimeter Walls, the doorway and arch in the East Perimeter Wall, the great east Plaza, a myriad of canalization systems, the revelation of a cult effigy, and burials. Three phases are recognized in these deposits, from earliest to latest: Phase I: bedrock preparation, the cult image is carved into the south bedrock; East and South Perimeter ashlar walls and subterranean canalization systems are built; "Plaza" pavement; and the arch and doorway of the East Perimeter Wall are constructed. Phase II represents the modification of the water canalization systems with the limestone channels. Piping, and a secondary canalization and basin near

13. Trenches 72, 74 and 75, a balk left in place after the 1999 season, will not be discussed in this report, because they were basically clearing operations and were overshadowed

by the compelling revelations in Trench 77. They will be covered in the site final report.



the East Perimeter Wall. Phase III is represented by fill and collapse above the Plaza and the burials. The specifics of each of these findings will be briefly discussed after we cover the mechanics of the excavation.

The purpose of Trench 77 excavation was to excavate along the Upper Temenos East Perimeter Wall to determine if it continued to the south. **Fig. 10** shows these excavations in progress. A secondary aim of the excavation was to gain a better understanding of the doorway in the East Perimeter Wall, which was first excavated in Trench 68 during the 1999 field season. We also wanted to determine the dimensions of the South Perimeter Wall of the Great Temple Precinct. Further, this excavation was to gain a better understanding of the canalization systems. What was the relationship of this portion of these systems to those systems uncovered in other areas of the Great Temple Precinct? When were these systems constructed and how did they relate to the building of the East Perimeter and South Perimeter Walls?

Trench 77 measurements are irregular. Originally, the trench on the east measured 18.40m north-south x 5.20m east-west. When the South Perimeter Wall was uncovered, we decided to turn to the south and west and excavate it and to follow the natural bedrock outcrop, which added some



10. Excavation in progress in the Upper Temenos Plaza area, looking south (photograph: A.A.W. Joukowsky).

14. Several Sub datum Points had to be established for the excavation of this enormous area. Point A was established on one of the ashlar of the East Perimeter Wall, to the south of the arch, at an elevation of 909.789m. Other Sub datum Points include Point B, also located on an ashlar of the East Perimeter Wall, above Point A, at an elevation of 911.735m, Point C located on the easternmost capstone of the Locus 14 canalization system was at an elevation of 914.624m, and Point D was located on the column drum in the South Perimeter Wall at an elevation of 913.357m. We also established Point E, located on the natural bedrock outcrop above the Locus 14 canalization system at an elevation of 915.494m, and Point F, located on the west-

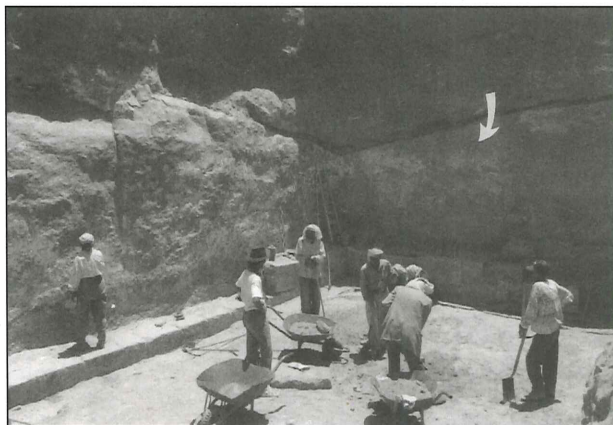
21.80m east-west x approximately 5.10m north-south. In an intensive survey of the slope beyond and to the south of the South Perimeter Wall, we then uncovered an aboveground canalization system, which was also included in the excavation of this trench.<sup>14</sup> There was a dramatic slope of the overburden in Trench 77 from south to north — approximately 7.30-9.00m depths were excavated in the south as opposed to 2.50m in the north. The areas along the East Perimeter Wall, including the burials, and the various canalization systems were excavated by hand. However, much of Trench 77, especially the large amount of overburden and fluvial deposit, was excavated with the aid of mechanical equipment. In summary, this trench extended from the East Perimeter Wall to the west where we assumed the east face of the East Walkway wall would be. In the north its boundary was from the line of bedrock uncovered in Trench 67, 1999 to the south bedrock escarpment. And with its extension, it ranged from the East Perimeter Wall on the south, across the rear of the temple in the west to the north-south line of the West Walkway Wall.

**Cult Relief** — In a high inaccessible location in the south wall cliff face a schematic cultic figure carved in bas relief was found just under a natural fissure in the sandstone escarpment of the southeast Upper Temenos.<sup>15</sup> Discovered during the course of the 2000 excavations, this frontal figure's position is shown in **Figs. 11, 12**. Measuring 0.91m in length x 0.28m in width, the votive figure was chiseled out of the bedrock before the fronting ashlar were put in place. It has the shape of a dagger or sword standing on or into a stone altar, which bears some resemblance to an anvil. The figure itself measures 0.65m in height. The arms or the dagger hilt are stubs that extend approximately 0.19m from the body. The altar alone stands 0.27m in height (measured on the east) by 0.28m width at the bottom of the base. In antiquity this relief would have been hidden under the great ashlar South Perimeter Wall of the temple surround.

ernmost capstone of the Locus 14 canalization system at an elevation of 914.702m. Sub datum Point J was established on a capstone of the Locus 25 bedrock canalization system at an elevation of 915.133m. Sub datum Point M was established on bedrock above the Locus 11 South Perimeter Wall soil at an elevation of 915.945m, and Sub datum Point N was located on the westernmost section of the South Perimeter Wall, Locus 23, at an elevation of 908.639m.

15. This cult image was recovered from Locus 96 of Trench 77 excavated in 2000. Its opening elevation was 908.62m, and its closing elevation was at 907.71m.





11. The cult relief in its setting against the south bedrock escarpment (photograph: A.A.W. Joukowsky).



12. The cult relief detail (photograph: Adam M. Brin).

Many theories can be hypothesized about this relief, because we know the Nabataean stone masons often chiseled reliefs onto quarry walls. In quarrying the bedrock, the Nabataean masons had to show respect to the deity (Dalman 1908: 244-245). The evidence suggests that the Great Temple was under the protection of a deity and was a place of veneration. The figure may represent an act of contrition to the rock — a metaphysical concept, as an effigy for forgiveness, the mason's tribute to Dushara for cutting away the rock — the embodi-

ment their principal god. Just above the relief there appears to be a natural passage for water — perhaps the effigy was carved in praise of the water? Yet another interpretation might have been that this relief was a Nabataean *nephesh*, or a memorial marker that commemorated a worker who suffered a fatal accident. We invite scholarly opinion for its interpretation.

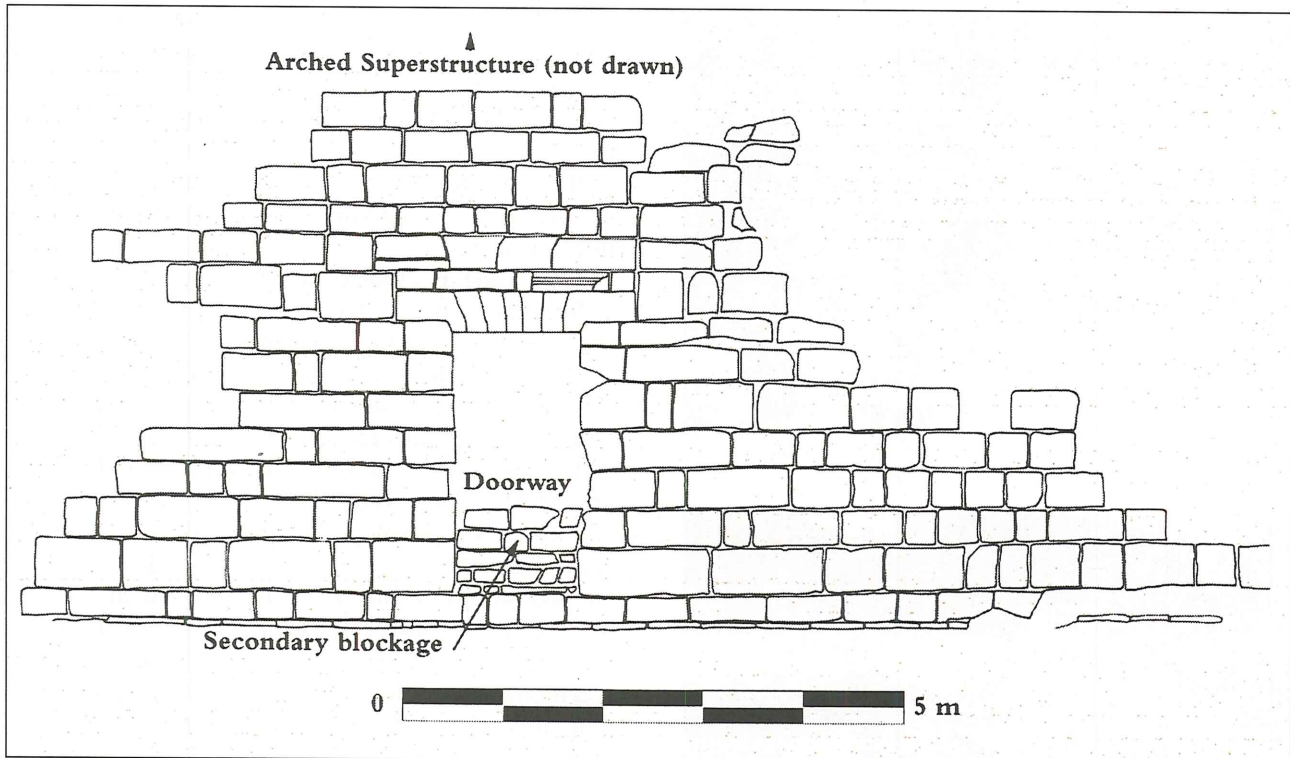
The East Perimeter Wall, shown in Fig. 13, defines the eastern perimeter of the Temple Precinct. The easternmost Eastern Wall is the highest architectural element of the Great Temple site and is where we had positioned our Site Datum Point which has a measured elevation of 915.036m, or just 2.73m above the point we started to clear this area during the excavations of 1999. At the inception of the 2000 excavations, we had to spend some time moving the architectural elements that we had stored in this area for the eventual restoration of the Temple. Before the 2000 excavations could begin, column drums and other architectural fragments were moved to the West Lapidary so that the east Upper Temenos was completely cleared.

The East Perimeter Wall with its arch and doorway saw continued excavation and documentation, but because the depth of deposit became significantly greater as we progressed to the south, additional time had to be allotted for soil removal and bulldozer support for the disposal of backfill. Additionally, because the soil was congested with cultural material, ample time had to be allotted for its processing. Yet another consideration was the eventual consolidation and preservation of these delicate walls that stand well over 10m in height and the upper portions of which had been exposed to the elements for 2000 years. This enormous undertaking has been completed.

Surrounded by a 10-11 meter high bedrock escarpment with an ashlar facing, the East Plaza must have been the venue for the celebration of special occasions. This Plaza measured 45m north-south x 14m east-west. During the excavations of 2000, the Plaza was cleaned completely to bedrock or to the few rectangular and square flagstone pavers that were excavated and left *in situ*. The total measurement from the north end of the East Perimeter Wall to the corner at the South end is 56.10m in length x approximately 10-11m in height x 9.53m in width. An illustration of this area is shown in Fig. 14.

The East and South Perimeter walls were two rows of facing ashlar built like a veneer to cover the bedrock. The innermost row built against the bedrock was comprised of large irregularly hewn sandstone blocks bonded together with a wet mud





13. Line drawing of the East Perimeter Wall with the arch and doorway (field drawing: A.A.W. Joukowsky, drafted by Martha S. Joukowsky).



14. The Plaza and East Corridor Wall Excavations, looking north (photograph: A.A.W. Joukowsky).

mortar. On the interior or visible from the plaza side were well-dressed ashlar which bore traces of plaster. Unfortunately all but two of the lowest courses and three or four of the upper courses standing well above the area had been dismantled or collapsed in antiquity and carried away.

This Plaza was paved, but just beyond the East Walkway Wall a number of these pavers had post-holes, which could be aligned with the post-holes

in the East Walkway and the east face of the East Corridor Wall. Because these pavers extended underneath the East Walkway Wall (see the discussion of Trench 73, *infra*), and predated this wall, it was suggested that the area served as a great open plaza before the East Walkway was constructed or re-constructed.

In 1999, Trench 68 Locus 4 was assigned to the **Doorway in the East Perimeter Wall** (shown in



**Fig. 11)** in its southern portion, which during that season was incompletely excavated. Its opening elevation was 906.69m, and its closing elevation was 905.337m. The excavated portion of its lintel opening stands 2.10m above the bedrock and pavement, and it underlies and is bonded to the upper courses East Perimeter Wall. Originally it rested on bedrock and pavement, but a later stone fill, which is not original to its construction, had been clumsily inserted to block up its base. In 2000 we uncovered the remainder of this doorway and found that it to be 1.3m in width.

This doorway is one of the most beautifully preserved architectural elements of the Great Temple. The top of its architrave is stepped, unlike any other architectural elements found heretofore in the precinct. As it was excavated the north doorjamb and the lintel were found to have been in excellent condition, so following the vertical line of the jamb, in 1999 we tunneled to a 0.30m depth into its interior to determine its character. Its interior is roofed with well preserved sandstone beams that are in an unusually excellent state of preservation. They are neatly and tightly laid and their expertly crafted blocks of variegated sandstone appear as if they had been just been put into place. It is not at all clear as to where this doorway leads — it may go under and through into the *paradeisos* or Pleasure Park to the east or it may lead to as yet unknown rooms that look out upon the west Temple Precinct.

The Plaza was also equipped with several types of **canalization systems**. In the main, the soils ranged from a Munsell strong brown 7.5YR 5/6 to red 2.5YR 6/6, and samples of both the hydraulic plaster which lined these systems and their fill-soils were taken for analysis. Already mentioned is a portion of an above ground system found on the slope above the southwest bedrock extending along the slope from the southwest to the northeast. This was a shallow slab covered canal that directed water into the Upper Temenos south. It has not been determined when this system was constructed or how it connects to other systems.

Within the Upper Temenos itself, the earliest system, which is coeval to the East and South Perimeter Walls, was cut into the parent bedrock, sealed with hydraulic plaster and set under the pavers that abutted the East and South Perimeter Walls and circumvented these walls. In the south this canalization is 5.69m in length x 0.48m in width. The channels themselves measure 0.20m in width x 0.51m in depth. Few artifacts were recovered from the system, but we did find a fragmented bone pipe with incised bands. Another, second canal, Locus

102, probably was an extension of Locus 93, for it too was located under the Plaza Pavement. It was excavated to 1.10m in length x 0.74m width, and its depth was 0.85m from the bottom of the capstone.

In the mechanical removal of earth, the Plaza pavement was disturbed. The pavers out of position were moved, and yet another channel was found extending to the northwest. This deposit has an unpleasant odor, which may indicate that it served for the removal of waste from the area. Hydraulic plaster 0.012m depth covered the walls. The capstone, which was positioned just below the pavement, was broken and collapsed, but we found that it had been supported on a ledge cut into the bedrock, which had eroded away.

In a later phase, there were additional modifications to the water canalization — for some reason additional systems had to be built into or above the Plaza pavement in the southeast. A series of limestone lined channels had been constructed with reused ashlar, which was bonded to the pavement with plaster. This was built of one course of 10 rows of segmented limestone ashlar measuring 0.67 x 0.60m. In the east there is another segment of six ashlar also measuring 0.67m x 0.60m.

A channel filled with ceramic piping was found to abut the bedrock subterranean canalization systems in the south and east. This system is makeshift having been placed originally to extend north-south, but for some reason at 2.1m from the south, it curves and then extends in a fairly straight line to the north. It may have served as a conduit for bringing potable water into the site, or as a rebuilding for the then defunct canalization system. It was backed by crudely cut ashlar that were wet laid and were bonded together with mud mortar and hydraulic plaster. Five ceramic pipes still remain *in situ*, each measuring 0.34m in length x 0.10m in diameter.

The latest of these systems and the most difficult to explain is in the extreme southeast, consisting of a crude basin and platform constructed against the East Perimeter Wall and overlying bedrock. The platform measuring 2.36m east-west x 2.65m north-south, and 0.76m in height, is a composition of small ashlar bonded together with hydraulic cement. To the north of this is a basin cut into bedrock, which possibly is associated with a drainage opening in the Southern Perimeter Wall. The basin has a diameter of 0.72m and a wall thickness of 0.05m — its depth is 0.40m. It is composed of a cement composition apparently typical of hydrological material. A small section of lead pipe was uncovered measuring 0.60m in length x 0.07m



in diameter. The limestone Plaza pavement at one time was set over this basin, but was damaged in antiquity. It would be of interest to know how these various systems interacted.

**Human Burials** — Excavated in a natural cavity in the east bedrock, south of the East Perimeter Wall, from an elevation of 911.14-910.34m was discovered the remains of two human partially disarticulated primary burials. The excavated bones were examined by physical anthropologist Megan Perry, and they were found to be the bones of a young male and an adult. The child was lying on its right side, and its general orientation was to the northwest with the skull oriented to the northwest, and the face was oriented to the west. Both were partial disarticulated primary burials. At the time of its excavation, it was determined that the bones present included skull bones, leg bones, arm bones, finger bones, and teeth. No burial containers were present. A fluvial deposit of sand surrounded these remains.<sup>16</sup>

The excavation procedure was to pedestal the burial, especially the cranium, in an attempt to maintain the integrity of the skeleton as it was found. However, the bones were in a very poor state due to their exposure to water and other environmental elements, and as a result, the cranium collapsed during excavation. We posited that these human beings may have been caught in a flood, as they were uncovered in a fluvial layer, which occurred after the East Perimeter Wall had collapsed.

Now we turn to the excavation results of the Great Temple. The 2000 excavations concentrated on the East Walkway and the South Corridor, but before we describe the results of these excavations, we will turn to an updated description of the Great Temple.

### The Great Temple

The temple was built as tetrastyle in antis. It was constructed of regularly cut ashlar, quarried locally from the Disi Sandstone with varying hardness (Paradise 1998). The temple building consists of north-south walkways, parallel east and west corridors that on the east and west border the theater in the center. The theater consists of a walled cavea resting on parallel barrel vaulted rooms and vaulted stairways. The rooms appear to constitute storage areas (but this remains a matter of conjecture) and the vaulted stairways give access to the higher upper levels of the theatron. We assume that the Great Temple served in a ritual capacity

until a fluvial deposit overwhelmed the area; the general robbing of certain elements, such as flagstones and stair treads followed this event. This occurred some time before May AD 363, but the cataclysmic AD 363 earthquake brought about the final destruction.

The Great Temple had its columns and walls adorned with painted stucco in reds and yellows, and white, which must have had a dramatic impact when set against its rose-red environment. Its porch is tetrastyle in antis with widely spaced central columns at the entrance (the intercolumnar space is some 7m), and a pair of interior porch columns located about 5m to the south. Beyond the columns are elongated anta walls, also resting on carved Attic bases of white limestone, standing 4.50m to either side of the interior porch columns. The façade columns are approximately 1.50m in diameter, and are constructed with squat sandstone drums resting on beautifully turned Attic bases of fine white limestone. Reconstructed as approximately 15m in height, these main porch columns and antae, plus the elements of the entablature and a (postulated) triangular pediment, hypothetically place the height of the facade to a minimum of 19-20m.

Although there are several building phases, two phases, early and later, are found in the Great Temple architecture. Entrance is gained to the Great Temple by east and west stairways that lead from the Lower to the Upper Temenos. There are then steps on the east and west that were intended to connect the temple forecourt with the walkways. To enter the edifice, a now restored stairway approaches the stylobate beyond which is a broad pronaos (entryway), 6.30m deep and shaded by the porch columns. In this earliest phase, in passing through the pronaos, the visitor would enter the cella of the structure, surrounded by an elaborate interior colonnade. Eight columns flank the cella walls, and six are at the temple rear; all have diameters of 1.20m and stand upon turned Attic limestone bases (mirroring those of the porch columns stylistically, but smaller in diameter). The two corner end columns at the Great Temple rear are double-engaged heart-shaped columns, measuring ca. 1.50m. Based on the evidence at hand, it seems that the structure was originally designed with an interior peristyle of freestanding columns enclosed by walled side corridors. Then in the later phase when the theater was created, casemate walls were built between the interior columns, a large

16. The soil was characterized as sand, with a size of 1/16-2mm. The color of the fluvial soil surrounding the burial

was a range of Munsell 2.5YR 5/3, reddish brown.



central arched area was constructed in the rear, and arched entryways and multiple stairways were also constructed.

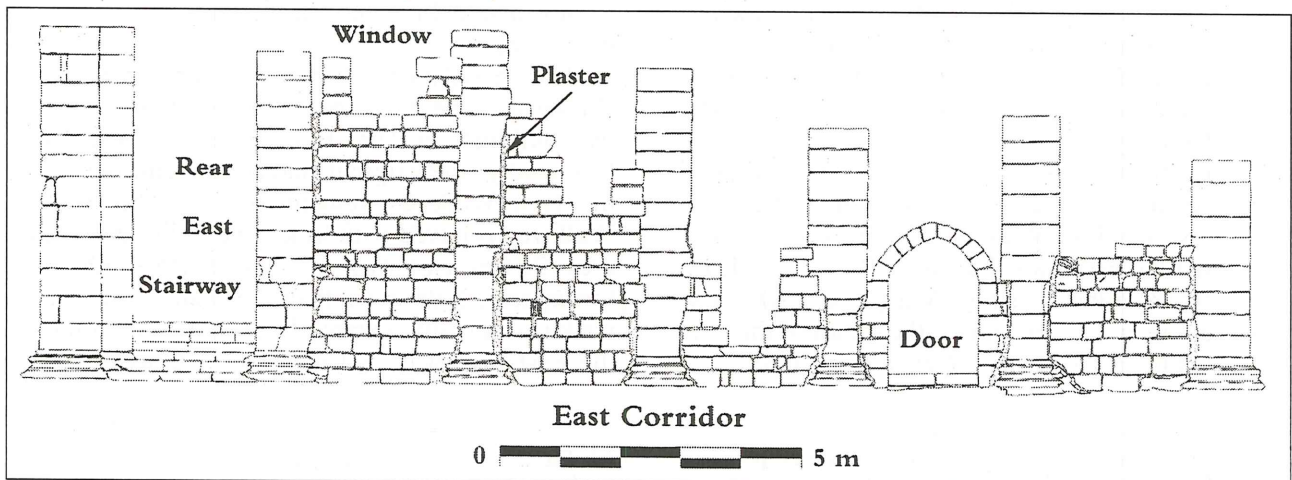
The temple walkways and corridors mirror each other and have a north-south axis. Although their outer walls are carelessly reconstructed, the walkways are part of the earliest architectural building plan and provide access points to the structure. From the walkways, the corridors are accessed by three doorways from the walkways on each side (or nine *in toto*) that lead into the east, west, and south corridors. These, in turn, provide a direct access to the cella in the earliest phase or, in the later phase, into the vaulted stairways leading to the theatron. Common to both phases, each corridor has a wooden door that opens inward into the corridor, through which processions entered the corridors.

The two parallel corridor walls have a maximum length of approximately 42.5 meters. The outer corridor walls are constructed of *opus quadratum* diagonally dressed headers averaging 0.36m x 0.33m and stretchers averaging 1.38m x 0.45m. These corridor walls, 1.85m in depth, were well preserved, particularly in the south where the overburden was deeper, and as many as 19 courses were left standing, measuring around 5m in height. Their inner surfaces were prepared for the colored wall murals and their exteriors were laid with diagonally chiseled ashlar, so worked to receive a stucco coating.

The inner corridor walls were, in effect, double casemate walls also built of *opus quadratum* diagonally dressed headers averaging 0.36m x 0.33m and stretchers averaging 1.38m x 0.45m, and their

widths are 1.30m. (Fig. 15 is a line drawing of the East Corridor Wall). They were constructed to enclose the columns and to provide arched windows, passageways, and on the interior to enclose the theatron. Most of the courses and rows are joined together with a stucco mortar. Bonding the two walls together was wet-laid mud, binding together roughly cut and hewn stones. Their foundations is of string courses lying immediately above a course of roughly cut small ashlar laid directly on bedrock — no foundation ditches were used for wall preparation. The same holds for the flagstone pavers that were either cut to be placed directly on the bedrock or there were flat stones to help level them. They were bonded together with gray-white mortar.

**Temple East Corridor and East Walkway** — Supervised by K.B. Stern and A.M. Brin, Trench 73, 2000, was located on the Temple east and extended from the southern end of Trench 64, 1999, to the South Corridor Wall of the Temple. The East Corridor Wall formed the western border of the Trench, and the eastern border extended along the East Walkway.<sup>17</sup> The basic dimensions of Trench 73 were approximately 21m north-south x 3.60m east-west. The depth of deposit ranged from 2.50m in the north to 9.00m in the south. Throughout the season, we used mechanical equipment to clear much of the fluvial layers and overburden in Trench 73. The northern 5.50m of the Trench, the three doorways of the East Corridor Wall, and the top and sides of the Wall itself were excavated carefully by hand. Until the last week of excavation, we maintained a 3.60m east-west balk to control the stratigraphy, 1.00m south of the North



15. East face of the East Corridor Wall (field drawing: A.A.W. Joukowsky, drafted by Martha S. Joukowsky).

17. To the north is Trench 64, excavated by M.S. Joukowsky during the 1999 season, which uncovered the first 7.10m

of the northern part of the eastern wall of the eastern Corridor.



Doorway.<sup>18</sup>

The primary objective for excavating Trench 73 was to uncover the eastern side of the East Corridor Wall and the doorways within the Wall. In addition, we sought to explore whether the East Walkway Wall continued south from its exposed area in Trench 64, 1999. By determining the dimensions of the eastern Walkway Wall, we believed we could calculate the dimensions of the eastern Walkway itself. During the excavation of the East Corridor Wall, we maintained four specific goals: first, to excavate the three doorways of the East Corridor Wall, which led from eastern corridor into the eastern walkway; second, to preserve any plaster still attached to the walls of those doorways; third, to recover any architectural fragments disarticulated by the temple's collapse; and fourth, to determine whether the architecture of the East Walkway paralleled that of the West Walkway. In addition, we attempted to identify cultural materials in sealed loci. The isolation of such artifacts would enable us to determine the different stages of use for the East Corridor Wall, as well as the *terminus post quem* for the abandonment, collapse, and possible reuse of the East Walkway area. Furthermore, datable artifacts might indicate the uses of the Walkway itself, as well as elucidate the relationship between the Walkway and other surrounding architectural elements.

The excavation of the 2000 season addressed each of our objectives for Trench 73. Areas of the East Corridor Wall, the East Corridor doorways were unblocked and the East Walkway, and East Walkway Wall were excavated. We recovered artifacts from the primary and secondary collapse of the Upper Temenos. Evidence was recovered for some of the secondary uses of the East Walkway and the southern portions of the Upper Temenos. Through the recovery of artifacts and architecture, and the understanding of a relationship between the East Walkway and east Perimeter areas, we established that the construction of the East Walkway area does not necessarily parallel that of the West Walkway. The East Walkway 3.67m in width, and the East Walkway East Wall is 0.60m wide. Measurements from the later East Walkway Wall to the East Perimeter Wall 9.53m — the width of the Plaza when the East Walkway Wall was in place.

The dating of the architecture of the East Corridor Wall and Doorways, the East Walkway Wall, and the East Walkway, are difficult to determine. Stratigraphy aids our understanding. Certain periods of the construction of the area are clear. Other stages of rebuilding or reuse, however, provide little evidence for the assignment of dates to building phases.

The architectural elements of the East Corridor Wall appear to have been built contemporaneously. The East Corridor Wall is comprised of two abutting walls. Like the West Corridor, these walls are built flush against one another with a 1.30m width. The eastern side was composed of large, finely dressed limestone ashlar. The western side was composed of more roughly hewn stones, as well as chinking stones. The poor quality of this western wall, in addition to the recovery of many stucco architectural fragments found in Trench 65, 1999, indicate that the western side of the wall was originally plastered. Layers of mud were applied between the two abutting walls to bond these two elements. Each side of the Corridor Wall depended on the other for support.

The three doorways within the East Corridor Wall were built at the same time as the walls themselves. They share similar construction to one another: the interior sides of each doorway bear evenly carved doorjambs on the east side of the doorway and attachment holes for the door. The east sides of the doorways have identical widths of 1.80m. The limestone thresholds of these doorways show similar, tripartite construction. In the Central and South Doorways, the middle register of the threshold includes two holes for drop locks. The ashlar surrounding these rectilinear doorways are evenly and deliberately spaced for the doorways themselves.

The installation of the pavement of the East Walkway appears to have followed immediately the building of the East Corridor Wall. Unfortunately, the original parameters and design of the East Walkway remain elusive. The existing Walkway is paved with limestone slabs, and measures 3.60m east-west x 21m north-south. Unfortunately, little more than one half of the paved walkway remains extant.<sup>19</sup> The relative dating of the East Walkway and the East Walkway Wall is

18. During the season, we assigned seven sub datum points in the Trench 73 area. The respective elevations of these points 907.715m for Sub Datum 73A, 908.640m for Sub Datum 73B, 909.380m for Sub Datum 73C, 909.946m for Sub Datum 73D, 912.501m for Sub Datum 73E, 909.054m for Sub Datum 73F, and 908.372m and for Sub Datum 73 G.

19. The 2.0m east-west x 18m north-south area of the floor, from the northeastern corner, has been robbed or removed. At one time, these pavers may have covered the entire walkway area. The present state of preservation, however, cannot verify this possibility.



also difficult to determine. Evidence for the relationship between the Walkway and Wall remain inconsistent — in the north, the pavers abut, but do not undercut, the extant portions of the wall. In the south, later walls are built on top of the pavers. In addition, four different stages of wall building are discernible. Possibly, the earliest version of the Walkway Wall may have been smaller, and may have only paralleled one portion of the East Corridor Wall. In this case, the pavers originally created an uninterrupted plaza, which extended to the East Perimeter Wall. Later, these pavers may have been removed, and the earliest version of a wall was built in the north. In this case, the earliest phase of the wall would have been built after the Walkway itself. Extant architecture, however, provides no evidence for this. At this stage of excavation, however, it remains difficult to posit a date for the building of the earliest East Walkway Wall. Possibly, the construction of the East Walkway may antedate that of the East Walkway Wall.<sup>20</sup>

Certain modifications of architectural features, however, appear to be contemporaneous. The walkway pavement, the facing of the eastern side of the East Corridor Wall, and the thresholds of the doorways all appear to have been altered simultaneously. Perhaps, a change in the use of the area precipitated a corresponding change in the architecture.

The outer face of the East Corridor Wall had a series of rectilinearly cut post holes, 0.20m x 0.15m, probably for the insertion of wood beams. These may have supported an awning, a wooden platform or both. Such socket holes were also cut in the flagstone pavement, the wall providing the angle of support required. These were not original to the earliest wall, but were inserted later. This could be reasoned from the fact that the sockets were not located in either wall or floor flagstones in a specific place, like the middle of the stone, but were cut in randomly. This sort of lean-to type structure may have served as a waiting area; it was an after thought dating probably to a later building

phase. It was definitely in place before the now existing East Walkway wall was put in place.

These roughly carved post-holes were positioned at regular intervals in the pavement of the East Walkway — they were placed either where two pavers join, or in the middle of a paver itself.<sup>21</sup> Corresponding post-holes are also extant on the eighth course of the East Corridor Wall, providing an east-west axis for the placement of the holes in the floor. Some of these holes have broken, or eroded away, while others, which surround the South and Central Doorways, are incised more deeply and evenly. Each hole in the southern section of the East Corridor Wall corresponds to two, evenly placed holes in the walkway. These two holes are also placed at an even distance, on a north-south axis, from each other. Some evidence for the continuation of these post-holes along the east-west axis also exists in the Plaza beyond the East Walkway Wall. These correspondences between the post-holes in the wall and those in the floor, therefore, also might indicate the placement of a canopy and possibly a platform, covering this area. The placement of the post-holes by the south doorway, and the continuation of these post-holes in the Plaza towards the East Perimeter Wall, may indicate the existence of a covered passageway, which led from the South Doorway into the Plaza. Corresponding passageways may have existed further to the north, but the robbing of the north pavers prevents any verification of this possibility.<sup>22</sup> The exact reason for the post-holes of the East Corridor Wall and the East Walkway remains obscure. The existence of such holes in Trench 77 Plaza, however, provides evidence for contiguous use of these two areas, and for the flow of traffic to and from the Upper Temenos to the East Walkway and the Plaza.

Evidence for the abandonment and destruction of the area remain inconsistent. The central and north walkway, and doorways, appear to have fallen out of use earlier than did the area of the south doorway. After abandonment, soil deposits, with

20. Careful excavation of soil deposits on the extant wall, indicated that one portion of the wall belongs to a pre-destruction phase of building. During the cleaning of the top of the wall, a hard, brown clay layer, with pellet-like charcoal inclusions, adhered strongly to the top course. This section of wall is 4.70m in length x 0.60 m in width, and opposes Locus 4 in the East Corridor Wall. The section is only one course high, and is comprised of smoothly dressed sandstone and limestone blocks. The average size of these blocks measures approximately 0.50m in width x 0.28m in height. The presence of this layer suggests that this wall was built (and destroyed) before the abandonment and destruction layers were deposited.

21. Some of the pavement around the holes appears to have broken away during their carving. Presumably, if such post holes were originally planned for the area, they would have been more carefully carved before their placement in the floor.

22. The thresholds of the East Corridor Wall doorways may have also been built up at this time. Pavers were added to the eastern register of the threshold. Additionally, well cut stones may have been added to the upper, western register of the thresholds of the central and south doorways. This may account for the stepped threshold in the south doorway. The lock holes in the middle register of the threshold may have been added at this time.



charcoal inclusions, were found in these areas. Instead, no abandonment or general destruction deposits are present in the area east of the south doorway, which indicates it continued to be in use. During the third period of activity in the south, the south doorway was blocked. The walkway south was also sealed. After this time, extensive burning appears to have occurred in the south where there is a massive deposit of tiles, mixed with ash, possibly resulting from a burning of the extant canopy in the south.

What does remain clear, however, is that the periods of reuse of the East Corridor Wall, East Walkway, and East Walkway Wall, occurred in rapid succession. All of these areas, including the four stages of reuse of the East Walkway wall, fell out of use before the initial collapse of the Upper Temenos.<sup>23</sup> Nonetheless, major activity in the Temple appears to have been terminated before the major collapse caused by the earthquake in AD 363.

### Temple South

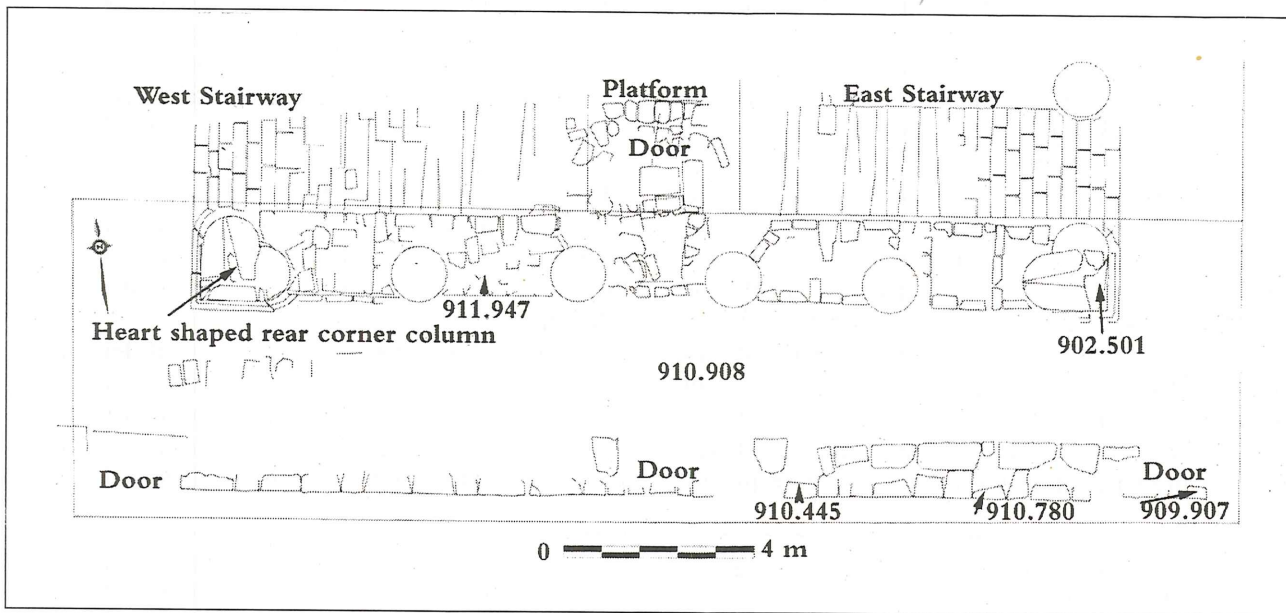
Special Project 72 in Trench 77 was devoted to the South Corridor of the Great Temple. The plan is shown in Fig. 16. Its purpose was to excavate the South Corridor and link it to the East and West

Corridors as well as to bring the access outside the South Corridor down to the level of the Corridor and determine if there had been a South Walkway. The rationale was to excavate the heavy overburden that covered both the Inter Columnar Wall of the Temple south and the Southern Corridor.<sup>24</sup>

Originally the project measured 6.00m east-west x 3.10m north-south, but was expanded to uncover the upper courses of the south wall and its south face, the South Corridor Wall and its north face and to remove the collapse debris from the South Corridor. The area was congested with the tumble of enormous ashlar, some as large as 1.23m x 0.80m. The final measurements for the project were 21.80m east-west x 4.50m north-south. The depth of deposit removed was 3m on the inside of the corridor (this corridor has yet to be completely excavated — there is an approximate 4m of deposit remaining). What was found was that the South Corridor Wall had three rectilinear doorways (east, central and west) which had been blocked in antiquity. It was not clear if these doorways accessed a paved south walkway, but future excavations will reveal if they do.

### Artifacts

Eighty one additional elephant head elements



16. Great Temple South Corridor, Plan (surveyed by Brian A. Brown, annotated by A.W. Joukowsky, drafted by Martha S. Joukowsky).

23. Certain loci indicate subsequent secondary uses in the area. Locus 12, which intersects a major fluvial deposit, indicates some reuse of the area in the north. Large deposits of camel bone recovered in Trench 65, 1999 indicate that the western side of the West Corridor Wall may have been used to keep animals after the secondary collapse of the

temple.

24. E.E. Payne previously had undertaken excavation in this area in 1996 when Trench 27 was excavated. That trench, however, was only an exploratory effort (4.75m x 3.50m) and it had to be abandoned due to the heavy overburden and collapse of large architectural fragments.

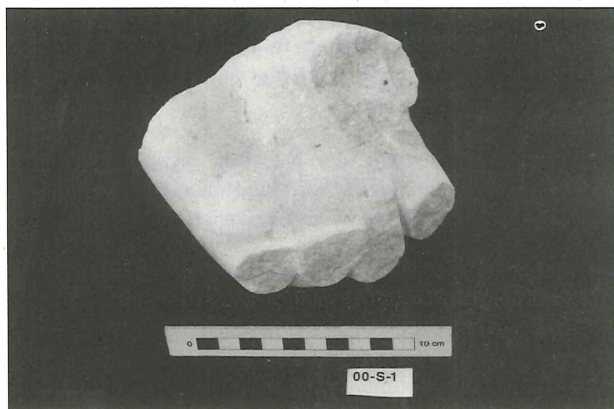


were found in the Propylaeum and in the West Triple Colonnade. Although architectural fragments numbered 875, there were some extraordinary elements added to the repertoire, not the least of which were the elephant-headed capitals (Fig. 6), the Nabataean horned altar (Fig. 7) found in the Propylaeum, and a portable betyl found in the East Corridor.<sup>25</sup> In the collapse and fill of the South Corridor, an oversized marble left hand was recovered (Fig. 17).<sup>26</sup>

Also in the West Triple Colonnade cryptoportico area some fragmentary inscriptions were discovered: PROVI [NCIA] could be read on one (Fig. 9). Other artifacts include partial ceramic human and animal figurines, small Nabataean bowls and one ostracon fragment. Several bone pins and complete lamps (the majority was Nabataean) were catalogued, and there were 24 coins as well as part of the drapery of a figure. Metal artifacts were few — the only one of note was half of a knobbed bracelet. In our artifact database (pottery, glass, bone, metal, stucco), 48,294 items were reported during the course of the 2000 excavations, with 82% of these being pottery. This database now contains some 219,408 items registered from the beginning of our excavations. As usual our surveying and object databases continued to serve us well for the recording of all architectural elements.

### 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. Phase I is devoted to the quarrying of the bed-



17. Oversized left hand found in the South Corridor (photograph: A.A.W. Joukowsky).

rock and the cult image was carved. Site Phase II, dated to the last quarter of the first century BC, is the first major Nabataean construction phase and includes the building of the major canalization systems and the Perimeter walls. In the Lower Temenos this phase includes the building of the Propylaeum cryptoporticoes, the Triple Colonnades, Exedrae, the Hexagonal Pavement, and the Central and Lateral Staircases. The temple columns were erected along with the corridor walls and the walkways. In Phase III there is the redesign of the 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 AD, Nabataean-Roman Phase IV follows a minor collapse when the Propylaea Stairs were built to provide access to the Lower Temenos, the Lower Temenos cryptoporticoes collapse and are filled in. Phase V in the Temple sees the reuse of large ashlar with the building of the Pulpitum, the 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 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 the corridors. The corridor doors are blocked. 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 stairways. In Phase XI there is a series of major collapses, and Phase XII encompasses the modern era when the Lower Temenos was used for Bedouin farming and a dump was dug between the fallen East Porch Columns.

### Conservation and Consolidation

Ongoing is our consolidation of the various Great Temple elements. Between excavation seasons, consolidation has included the re-erection of columns in the East Triple Colonnade, and the Temple south heart-shaped columns, the Theatron,

25. This betyl, Seq. No. 73138, was found in the East Corridor, Trench 73, Locus 22, in Phase VIII of secondary collapse at a 908.78m elevation. It measures 0.34m in height x 0.21m in width x 0.15m in thickness.

26. Measuring 11.9cm in length x 12.5cm in width x 7.3cm in thickness, this artifact (Seq. No. 77225) was recovered from collapse and fill in SP 72 of Trench 77 at an elevation of 911.21m in the most east sector of the South Corridor.



the West Corridor Walls and the six stairways. The construction of the Hexagonal Pavement from the top of the West Stairway to the West Walkway Steps was also completed<sup>27</sup> as was the repair of the bases of the West Walkway columns, the rebuilding of the West Walkway Wall to one height, and the West Corridor Wall, East face had to have cleaning around the stone ashlar and fill interstices with snecking stones for stabilization before the re-erection of the decorative stucco could be undertaken.

Work also continues to restore the West Corridor murals to show how the corridor was embellished in antiquity. In 2000, unobtrusive informative bilingual signs were put in place to identify the major components of the Great Temple precinct for the visitor. Additionally, reconstructed elements were delineated with bold lines to demarcate the excavated *in situ* remains from the present level of consolidation.

Consolidation and conservation measures included increased fencing around the site to incorporate the areas excavated in 2000. The construction of a dam to the south to prevent the Great Temple from being affected by flash floods and eroded soils. In the Propylaeum, the double arch system piers were consolidated. Also undertaken was the pointing of the recently excavated walls in the cryptoporticus of the Lower Temenos. Three columns were re-erected in the West Colonnade (columns 2, 3 and 4 from the north) with the mounting of the fragmented elephant headed capital (excavated in Trench 71, 2000) on top of one of the columns. In the Upper Temenos Temple Forecourt, the hexagonal pavement was rebuilt for a walkway to the front entrance of the Great Temple and the front steps were rebuilt at the entrance. Pointing and the consolidation of the East and South Perimeter Walls has been a major project. The East Perimeter Arch was in a state of collapse and the highest southeast perimeter ashlar were precariously about to fall from the top of the wall. They were consolidated. Also the pointing and consolidation the East and South Temple Walls had to be undertaken. And finally, the East Corridor Wall was rebuilt to one height to correspond with the West Corridor Wall.

### A Note about the Small Temple Survey

To the east of Qasr al-Bint and west of the Great Temple is a structure identified by Bachmann and Wiegand (1921) as the Small Temple. This structure was cleared of overburden, and two test trenches were excavated for four days under the supervision of Sara G. Karz. The building was found to be 13.3m in east-west width x 7.7m north-south. *In situ* blocks were surveyed, and all architectural elements were recorded, including gray and white marble wall decoration. The function and chronology of this building will be elucidated in the future.

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27. This was accomplished through the placement in cement of newly cut hexagonal pavers (created by cutting of an-

cient blocks found on the site). Thus the stones will be originally from the Great Temple complex.