

BROWN UNIVERSITY ARCHAEOLOGICAL RESEARCH AT THE PETRA GREAT TEMPLE, 2004

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Archaeological research at the Petra Great Temple is supported by the Luther I. Replogle Foundation, the Brown University Exploration Fund, the Joukowsky Family Foundation, and several private donors. The 12th excavation season by Brown University archaeologists took place from June 5 until August 5, 2004, under my direction. To better understand its stratigraphic development and phasing, excavations continued in all sectors of the Great Temple — Propylaeum, the Lower Temenos, the Upper Temenos and in the Great Temple proper.

This campaign would not have been possible without the generous assistance of the Jordanian Department of Antiquities, Fawwaz al-Kraysheh, Director, and Suleiman Farajat Director of the Petra National Park, Sami al-Nawafleh our Department of Antiquities Representative and the American Center of Oriental Research, Pierre M. Bikai, Director. We would also like to express our thanks to Brown University for making this season possible.

Brown University archaeologists included Martha Sharp Joukowsky, Director, Artemis A. W. Joukowsky, Photographer, and 11 supervisors served as most valued staff members, including Joseph J. Basile, Brian A. Brown, Emily Catherine Egan, Emma Susan Libonati, Christian F. Cloke (Surveyor), Eleanor A. Power, Tarek M. Khanachet, Monica Sylvester, Sara Karz Reid, Michael S. Zimmerman, Christopher A. Tuttle, Deirdre G. Barrett (Cataloguer), Ulrich Bellwald (Baroque Room Stucco Restorer), and Shari L. Saunders (Residential Quarter Pottery). Megan A. Perry, physical anthropologist, analyzed the bones from the "Tot in the Pot", discovered during the 2002 campaign¹.

We were supported by a work force of 50 devoted Bedouin, directed by Dakhilallah Qublan, Foreman. The American Center of Oriental Re-

search in Amman, to whom we are most grateful, also provided additional support.

Introduction

The Petra Great Temple occupies the site on a south slope south of the Roman Street just before reaching the Temenos Gate of the Qasr al-Bint. Founded in the last quarter of the first century BC, the Great Temple is the result of the construction of a great urbanization program undertaken by the Nabataeans. Located in the heart of the city, the Great Temple served as one of the centers of Petra, and because it houses a theater in its center, it appears to have had a civic as well as a religious function. As seen today, the temple is a free-standing tetrastyle in antis building in the open Upper Temenos.

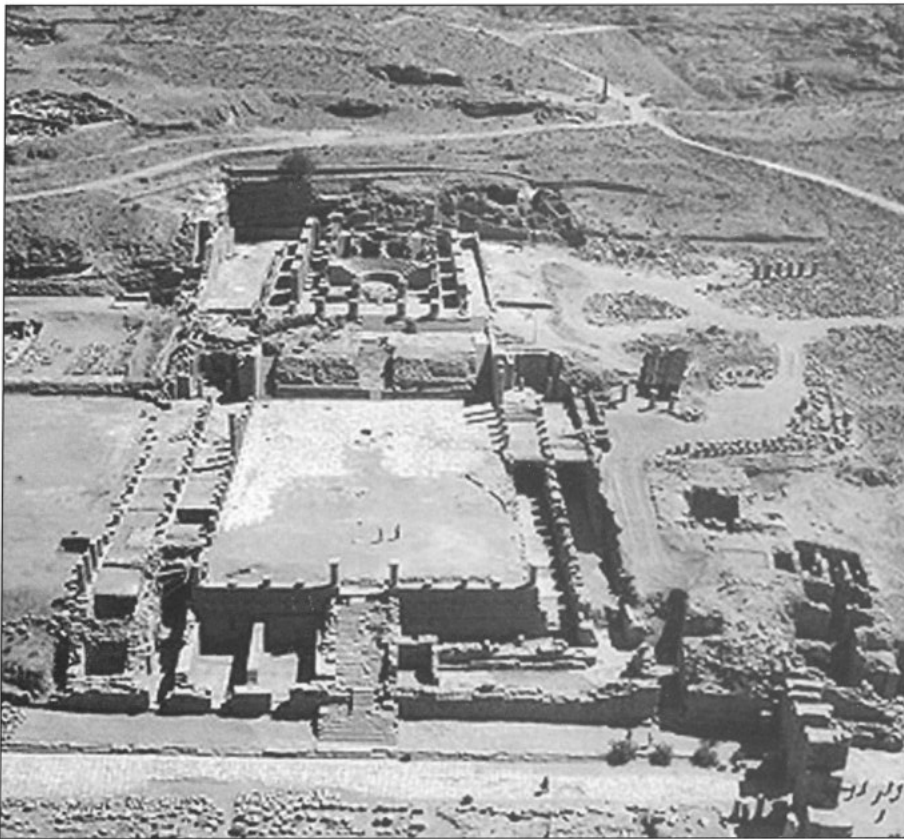
Large-scale annual excavations carried out by Brown University archaeologists since 1993 have exposed the architecture of the Great Temple, and our research has concentrated on recording the site plan (Zimmerman 1996, 2000), the conservation of the site (see Joukowsky annual reports in *Annual of the Department of Antiquities of Jordan*), the restoration of the Baroque Room ceiling (Joukowsky 2003: 400-401), sculpture (Basile 1997, 1999, 2002a, 2000b, 2003 and Schluntz 1997, 1998, 1999) and the subterranean water system (Joukowsky 1997, 2004; Payne 1998; Tullis 1998; Cloke 2004). The excavation of the site is nearing completion and is scheduled for 2006.

Fieldwork 2004

The site as excavated in 2004 can be seen in **Figs. 1. and 2** illustrates the four divisions of the precinct: the Propylaeum; the Lower Temenos; the Upper Temenos, and the Great Temple proper. The site plan with the trenches excavated in 2004 are indicated in **Fig. 3** where it is shown that the 2004 excavations were undertaken in all areas of the pre-

1. Perry reported that the bones were of a newborn infant ± two months of age of indeterminate sex and the pathology

was "active cribra orbitalia within the eye orbits," which may indicate anemia, malnutrition or an infectious disease.



1. 2004 Petra Great Temple aerial to south at the close of the 2004 excavations (Artemis W. Joukowsky).

cinct. In total, five large trenches were excavated and nine special projects were directed to specific stratigraphic problems we wanted to tackle. Each area's excavations will be discussed with the trenches and Special Projects that elucidate key issues of the Great Temple's stratigraphy. In a previous report (Joukowsky 2004: 155-170), the phasing and dating of the site was suggested which we will follow here², but will be employed in our discussion of each 2004 trench or special project's development. This 2004 report discusses the excavations and the artifact repertoire, then we will turn to cover each excavation's phasing, and we will conclude with a discussion of consolidation and restoration measures undertaken for the site.

PROPYLAEUM

Propylaeum East

Two large trenches, 99 and 100, were undertaken in the Propylaeum East to define and analyze the northeast perimeter of the precinct and the rea-

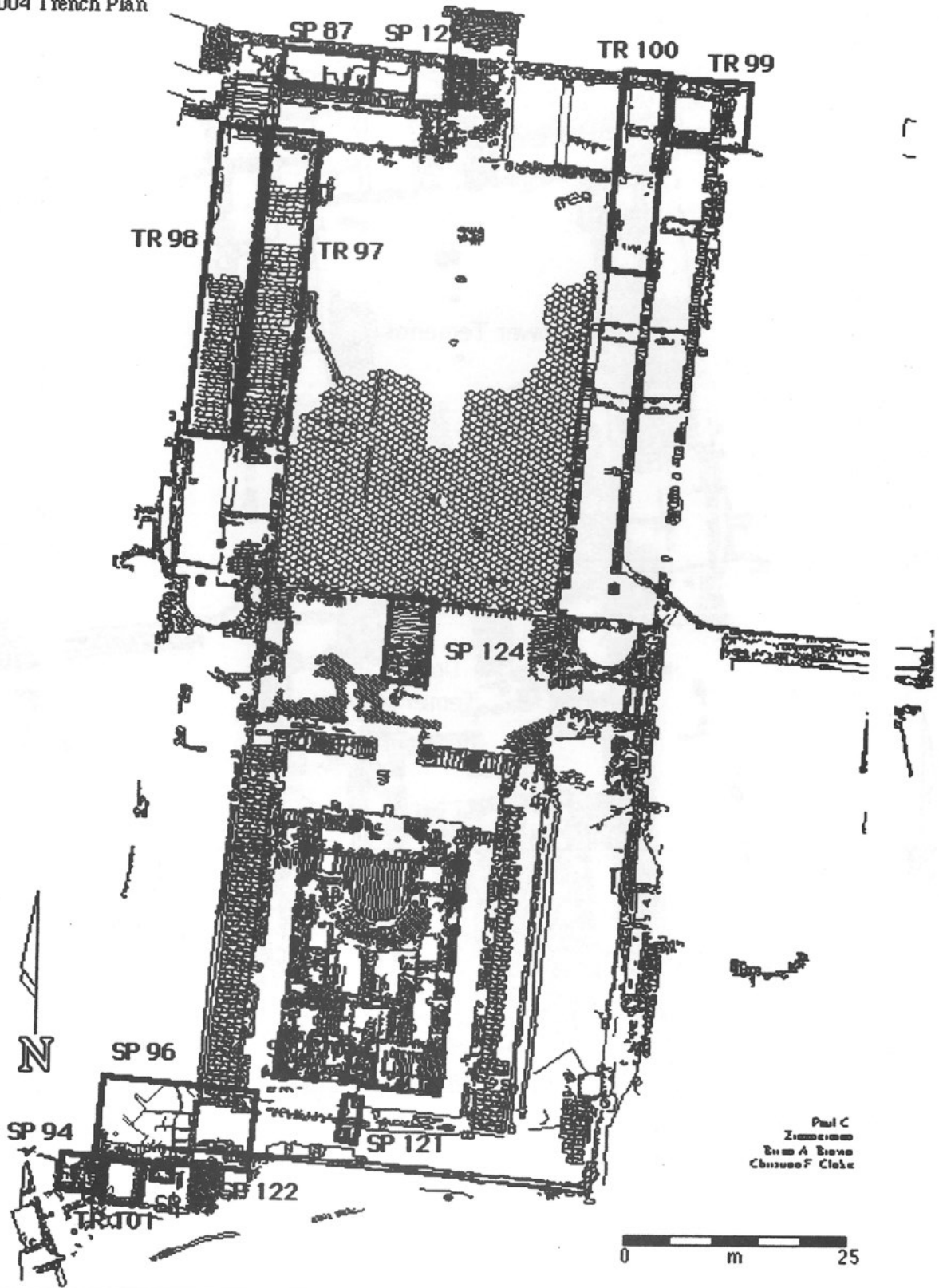
sons why the East Propylaeum is so different in its architectural program from the Propylaeum West. The Propylaeum Portico Wall was originally built in the first century BC. The Grand Design building of the Propylaeum West at the end of the first century BC retained its original configuration parallel to the Roman Street whereas the Propylaeum East, was reconfigured in the second century AD perpendicular to the street, into two rooms flanked by a passageway into the East Cryptoporticus, and a series of rooms to the east.

On the northeast precinct perimeter of the Propylaeum East, Trench 99, supervised by Joseph J. Basile, was comprised of two rooms and lying to the east with what appears to be a hexagonally paved passageway which probably, technically, belongs to the Garden-Pool lying to the east of the Great Temple precinct (these gardens embellish the Great Temple but have been excavated separately). Trench 99 measured approximately 8.00m east-west by 5.50m north south.

2. We cannot fix the architectural events to absolute dates — thus our chronology is relative. The Petra Great Temple Site Phasing is comprised of 14 phases, as follows: Phase I-Early to mid-first century BC; Phase II-first century BC; Phase III-Minor damage; Phase IV-the "Grand Design," last quarter of the first century BC to AD first century; Phase V-late AD first century; Phase VI-AD second century; Phase VII-AD mid second century, Roman

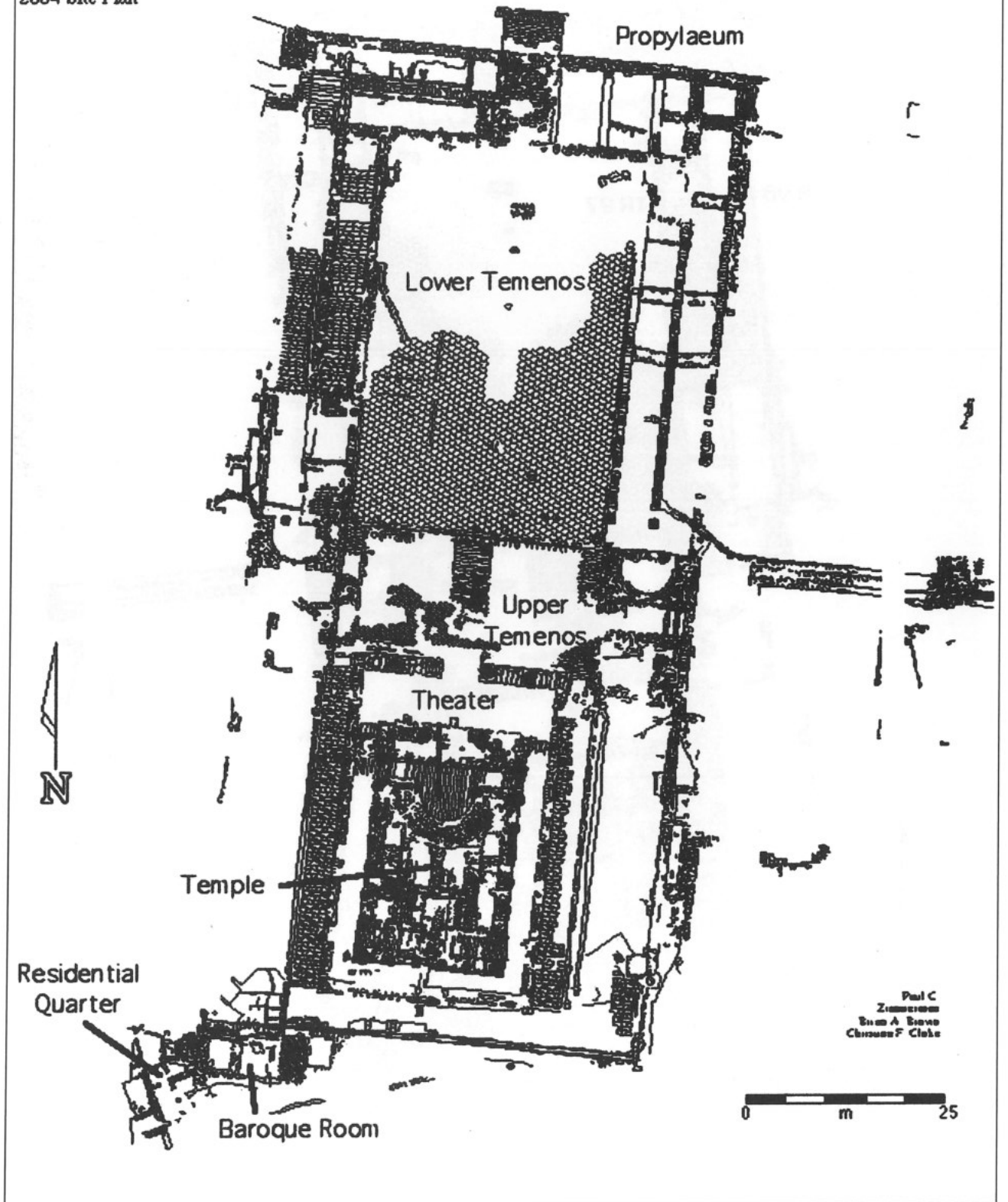
period; Phase VIII-abandonment and robbing; Phase IX-363AD earthquake; Phase X-abandonment, Byzantine period, AD late fourth through fifth centuries; Phase XI-post AD fifth century, perhaps result of 512AD earthquake? Phase XII-robbing and abandonment; Phase XIII-major collapses that continue into the Islamic period; Phase XIV-modern period, Bedouin activities and accumulation of debris.

Petra Great Temple
Brown University Excavations
2004 Trench Plan



2. Petra Great Temple Site Plan with Precinct Areas identified (Christian F. Cloke and Brian A. Brown).

Petra Great Temple
Brown University Excavations
2004 Site Plan

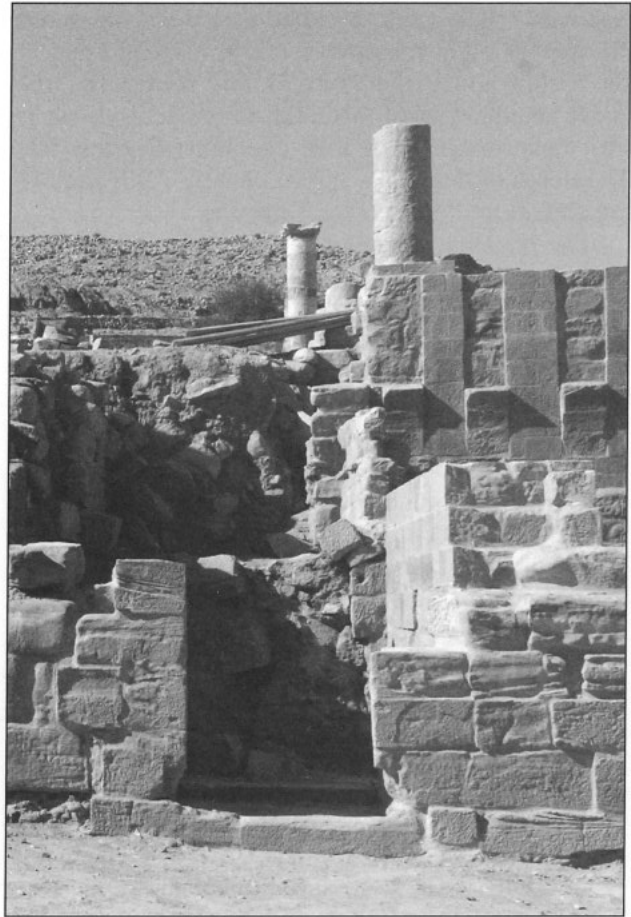


3. Petra Great Temple Plan of the 2004 Trenches Excavated (Christian F. Cloke and Brian A. Brown).

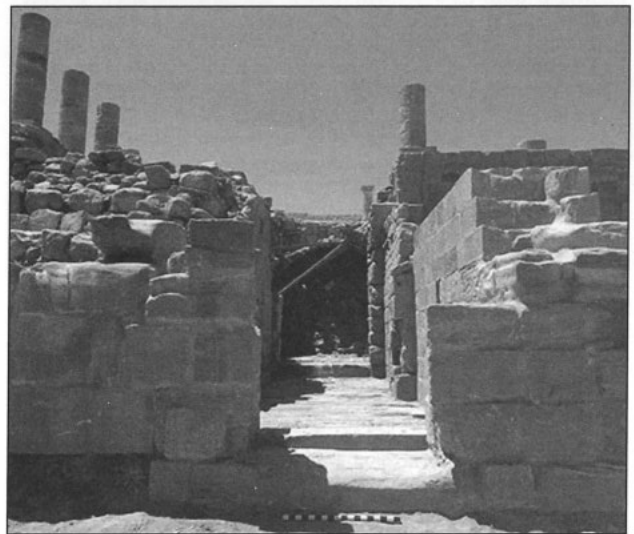
This area is crucial in that it represents the northeast limit of the Great Temple precinct, and it is also potentially an area accessing both the Great Temple and the Garden. It must contain clues as to the relationship of the Great Temple with the Garden Pool site, and important architectural/structural data (specifically, how “corners” were constructed where north south oriented cryptoportici met east west oriented cryptoportici). Nearly all architectural features in this area were exposed, including original Nabataean foundations and walls, Nabataean floor bedding and floor material, a newly discovered door threshold representing access to a partially excavated room (outside the Great Temple east wall and technically part of the Garden Pool site), later cross-walls (forming a square “room” in the northeast of the Great Temple complex with no access), and meters of purposeful fill.

In Trench 99 there is little evidence of the massive collapse of column drums and capitals as seen in areas of the Propylaeum to the west. Obviously, with this feature filled-in in the second century AD, collapsing columns would have fallen on top of the earlier deposits and have been dropped more or less on the surface, subsequent weathering would have worn away many of the sandstone columns or washed them down onto the Roman Street. Was there a full complement of colonnades in the Propylaeum area, or just one or two rows of columns fronted by a wall? The answer to this question eluded us. On the whole, however, excavations in Trench 99 served to answer many questions regarding the important area where the North Cryptoporticus of the Propylaeum and the East Cryptoporticus of the East Colonnade met to form the northeastern-most corner of the Great Temple precinct.

Adjacent to Trench 99 is Trench 100, also known as the Propylaeum East Room 3, with pairs of projecting buttresses separating each section of a long narrow corridor comprised of three chambers (Chambers 1-3) from north to south.. **Figure 4** shows Propylaeum East Room 3 before excavation and **Fig. 5** Propylaeum East Room 3 after excavation. The overall Trench 100 measurements before excavation were approximately 17.34m north south by 3.80m - 4.30m, depending upon the architectural divisions of this corridor. Although they appear to be homogeneous, each chamber has different internal dimensions. Chamber 1 is the entryway to Room 3 and includes the north set of entry piers, East and West Piers #1 and East and West Buttresses #1, internal measurements: 4.16m north south by 3.43m east west. Chamber 2 lies between East and West Buttresses #1 and East and West



4. Propylaeum East Corridor Room 3 before excavation to south (Artemis W. Joukowsky).



5. Propylaeum East Corridor Room 3 after 2004 excavation to south (Artemis W. Joukowsky).

Buttresses #2 with internal measurements of 4.34m north south by 3.23m east west. Incompletely excavated, Chamber 3 extends from East and West Buttresses #2 and includes an *in situ* vault and the south balk measuring 5.30m north south by 4.13m

east west³. The vault, oriented east west, measures 30 degrees eight minutes is 1.25m in height and is set 5.20m above the floor of this room. The reconstructed extent of this vault is conjectural, but it may have extended to East and West Buttress #2. The depth of deposit is approximately 7.00m below the elevation of the Lower Temenos.

The phasing of Trench 100 is difficult to assess because each architectural element has two to three phases of rebuilding, repair and reconstruction. These chamber walls, given a single locus description may be placed in two or occasionally three distinct construction stages. These distinctions are marked by differing masonry — hewn ashlar wet laid with mortar that are different in their dimensions and construction styles.

From earliest to latest, the site phasing of the East Corridor Trench 100 is best assigned as follows: In Site Phase II, the Portico Wall⁴ is constructed after which Wall K is assumed to have been put in place in Site Phase IV. In Site Phase VII or the mid-AD second century the entry door-

way #3 is inserted in the Portico Wall along with internal buttresses #1 and #2. The walls are rebuilt for the vault construction in Chamber 3, the floors of Chambers 1-3 are laid with limestone pavers after an interior step threshold between Chambers 2 and 3 is built as well as the side walls of Chambers 2-3. In a fourth construction, the chambers are still in use, but a secondary entry threshold from the Roman Street is built up and appointed with ten threshold iron bars inserted across the entrance, as is the case with Rooms 1 and 2 to the west. Thereafter in Site Phase VIII Chambers 1-3 limestone floors are robbed out. In Phase IX (before the AD 363 earthquake) and thereafter burning of (?) incense and large animals takes place. This is followed by the first major earthquake collapse of architectural elements, followed by massive accumulation of debris⁵.

Propylaeum Steps, Special Project 125

Special Project 125, the investigation of the Propylaeum Steps supervised by Michael S. Zimmer-

3. Continued excavation was too dangerous due too the possible collapse of the vault in Chamber 3.
4. In the Propylaeum East and West, the Portico Wall fronts the precinct on the north separating it from the Roman Street. Wall K is parallel to the Portico Wall and divides the Propylaeum West into north and south galleries. South of Wall K is the parallel Propylaeum Retaining Wall. In the Propylaeum East, Wall K was dismantled to construct Rooms 1 and 2, which are oriented perpendicular to the street.
5. Many questions remain about the interpretation of site phasing for Trench 100. Although the structural developments taking place in the east corridor appear to be straightforward, they cannot be confirmed to be securely aligned with our site phases. Many discussions between Eleanor A. Power and the writer have been devoted to the stratigraphy and structural development of the East Corridor. We have agreed to assign these developments to mid-second century Phase VII until we have more evidence for an earlier placement in the site phasing.

The alternate schema, however, may be proposed as follows: The Propylaeum Portico Wall is assumed to have been constructed in Site Phase II, and changes to it can also have been proposed to have taken place in Site Phase IV when we also posit Wall K is built across the East Propylaeum, for vestiges of it remain and can be seen in the adjacent Room 3 Trench 100 Corridor, Propylaeum East Rooms 1 and 2 Lower Temenos Retaining Wall (and Wall K remains extant in the Propylaeum West).

This alternate phasing suggests that Trench 100 Stages 2 and 3 also took place at this time resulting in the Portico Wall being breached and the corridor entry was re-configured and reconstructed along with the installation of its entry threshold. At the same time, the lowest courses of the north south corridor walls in Chamber 3 are put in place as well as internal buttresses, which provide support for the vault — assuming that it too is constructed at the same time and the buttresses serve for its support. The internal step threshold between Chambers 2 and 3 is also built and the limestone pavement floors are laid. As there also had to be additional support and reinforcement for the Lower Temenos Hexagonal Pavement, thus the wall also is reconstructed on the corridor west. In order to complete the

corridor had to be rebuilt (although the rebuilding extant today may have occurred at a later time or site phase as well). This also may be the case for east and west walls. Essentially this phasing assumes that all these modifications are synchronous developments taking place in the Great Temple Phase IV.

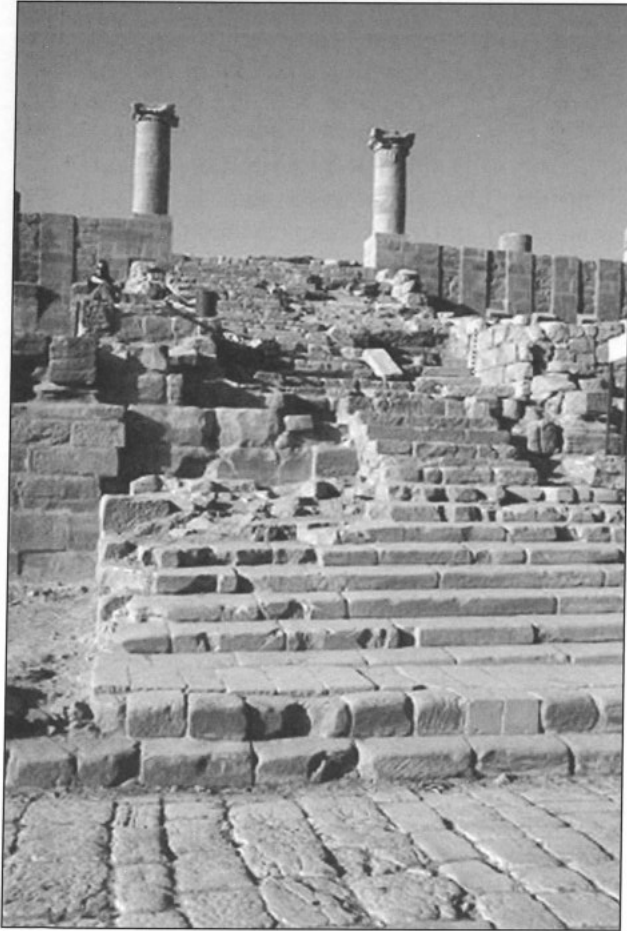
In short, this alternative phasing scheme assumes the Corridor is constructed along with the other elements in the Great Temple Grand Design, which is the re-design of the precinct in Site Phase IV instead of where we have placed these activities — in Site Phase VII.

The clarification of this East Propylaeum component presents many problems, as does this phasing placement in Site Phase IV because it assumes that Wall K topped with its elephant-headed capitals either did not further extend to the east (no traces of it remain), and initially was not constructed over this area which would have thrown off the symmetry of the Propylaeum. Or, should Wall K have been in place before the corridor was extended, it may have been completely razed to provide for the construction of this passageway. Clearly there are modifications to this corridor-passageway and we cannot state with assurance if its components were put in place in Great Temple Phase IV at the end of the first century BC or ca. 175 years later in Phase VII dated to the mid-second century AD. What is clear is that the corridor was in use until its floor was ransacked and the earthquake of 363 took place resulting in the collapse of the elephant headed capitals adorning the colonnade adorning the Propylaeum Retaining Wall.

In conclusion, the later phasing of the Trench 100 construction as represented in Phase VII remains conjectural, however, we have reasoned that it seems more appropriate to the overall site phasing, although the relationship of the chambered corridor to the Propylaeum East and the precinct as a whole remains unclear. As it stands now, the evidence emphasizes the need for the East Propylaeum to be archaeologically re-investigated. We hope to shed more light on this seeming architectural enigma with excavation beneath the piers, corridor walls and the plaster under bedding of the floors to provide some evidence and further confirm these developments and their placement within the site phasing.

man and assisted by Sara Karz Reid, was located at the western edge of the central Propylaeum Staircase between the West Portico Wall of the Propylaeum and Wall K (the southern wall of Room 1 of the Propylaeum West). This sondage measured north south 6.35m by 1.20m east west. Its purposes were to chart the extent of preservation of earlier steps underneath the later steps and if the earlier steps terminated at the north face of Wall K. And did they relate to the east doorway of Room 1 of the Propylaeum West? The west side of eight steps between Wall K and the Portico Wall were exposed. **Figure 6** captures the Propylaeum Steps as they appear today and **Fig. 7** shows the recovery of the earlier Propylaeum Stairs.

At the bottom of the earlier steps were found ceramic floor pavers oriented towards the threshold of Room 1, abutting both the threshold and the earlier stair treads, indicating that this particular floor surface was placed after both of these features were installed. The removal of a floor paver abutting the north side of the bottom tread of the



6. Central Propylaeum Stairs to south (Artemis W. Joukowsky).

6. Previously excavated in this area were Trenches 51, 87, and 88.

early staircase clarified this issue and revealed the landing was coeval to the staircase.

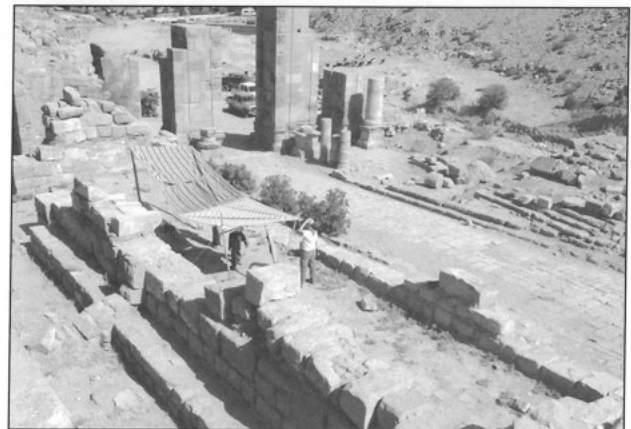
The presence of earlier steps was confirmed, and it can be assumed they belong to Roman period Site Phase V. The fact that architectural fragments from the main collapse of the Great Temple were found beneath the later steps suggests that they were built after the earthquake of 363AD.

Propylaeum West, Ballista Balls, Special Project 87

One of our 2004 objectives was to better understand the stratigraphy related to the 55 ballista balls found in the north gallery of the Propylaeum West in 2002. Sara Karz Reid supervised the Propylaeum West excavations of Special Project 87 in the sub floor of the north gallery area west of Room 1 in the Propylaeum West (**Fig. 8**), and between the Portico Wall to the north, and the bench abutting the north side of Wall K to the south.⁶ SP87 measures 1.96m north south by 7.66m east west. The goal was to clarify the relationship be-



7. Central Propylaeum Earlier Stairs to northwest (Artemis W. Joukowsky).



8. West Propylaeum North Gallery Before Excavation to northwest (Artemis W. Joukowsky).

tween the ceramic floor tile surface and the deposit of ballista balls discovered during the excavation of Trench 87 in 2002.

A series of shallow test trenches clearly indicated that this area was the staging for a conflict, for 363 additional ballista balls were recovered as well as 162 arrowheads and two bronze cheek pieces. **Fig. 9** illustrates the ballista balls numbered *in situ*, and **Fig. 10** shows the sondages where they were recovered. Each ballista ball was weighed and presently is in the process of being analyzed. The total number of ballistas from Great Temple deposits is 423 missiles. One of our many queries is if these missiles were stored in the Propylaeum West in preparation for an attack (Joukowsky 2003: 396) or were the result of an attack. Clearly some sort of offensive action was anticipated or had taken place. Many questions remain for the interpretation of this weaponry.

A tentative historic reconstruction of the Propylaeum West now can be outlined. Site Phase I is an early major wall construction in the Propylaeum West preceding the construction of the Portico Wall in Phase II in the first century BC. In Site Phase IV of the Nabataean Grand Design the full Propylaeum West with Wall K and the Propylaeum Retaining Wall is constructed. The north gallery (between the Portico Wall and Wall K and the south gallery and between Wall K and the Propylaeum Retaining Wall), the West Entry Steps, and Room 1 are also put in place. The large ballista repository was found embedded in the floor and the fill above it. This is assigned to Site Phase VI the Late Nabataean period when there are a number of collapses probably as a result of Roman



10. Propylaeum West Ballista Sondages to north (Artemis W. Joukowsky).

aggression, this phase we date to ca. 106AD. In Roman period Site Phase VII assigned to the AD mid second century, is a time for repairs and rebuilding including the building of the betyl niche and the betyl installation (Joukowsky 2002: 317-318). At that time, the new ceramic flooring is placed in the north gallery with its sub floor containing the majority of ballista balls. The entire Propylaeum West succumbs to the 363AD earthquake, with the collapse of the Lower Temenos-Propylaeum colonnade with elephant head capitals after which it is buried by falling architectural elements and massive debris.

LOWER TEMENOS

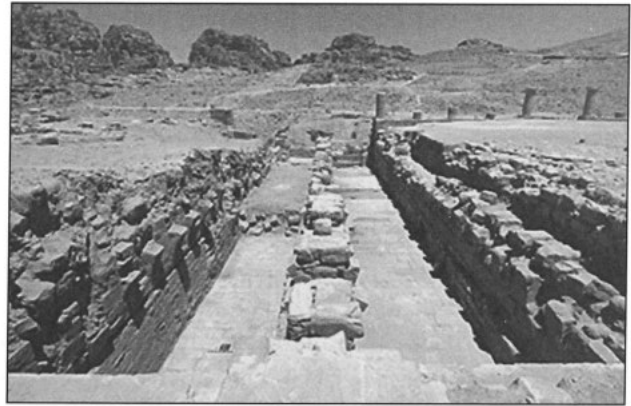
In the Lower Temenos two large trenches, Trenches 97 and 98, were excavated to uncover the parallel north south subterranean cryptoporticoes constructed under the west triple colonnade. Together measuring 32.80m north south by 12.20m east west by 3.25m depth, these two enclosed galleries terminate at the north in the Propylaeum



9. Propylaeum West Numbered Ballista Balls *in situ* (Sara Karz Reid).

West⁷. Trench 97 was supervised by Christopher A. Tuttle Parallel to Trench 97 is Trench 98 the gallery of the West Cryptoporticus West. Trench 98 was supervised by Eleanor A. Power and Tarek M. Khanachet (Trench 98's excavations were not quite completed by the end of the season). **Fig. 11** illustrates the West Cryptoporticus before excavations and **Fig. 12** illustrates the West Cryptoporticus after trenches were cleared.

The interpretation of the stratigraphy is fairly straightforward. The lowest layer is associated with Site Phase IV Grand Design when the West Cryptoporticus is constructed with the insertion of vaults. In Site Phase V, the vaults are blocked when the floors of the cryptoportici were laid and there was discovered a repair of the center cryptoporticus wall that supports vaults extending both to the east and the west. In the Roman period of Site Phase VII, there is an early collapse and the addition of new ashlar in the center wall, and benches are constructed along the south and east walls. With the AD 363 earthquake there is major collapse and destruction, upon which, in Site Phases IX and X, sedimentation, fill and an ash layer collects over the collapsed architecture.



12. Lower Temenos West Cryptoporticus after excavations to north (Artemis W. Joukowsky).

Architectural elements comprised the largest percentage of non-fill material found in Trenches 97 and 98. Due to the collapse event(s) that destroyed the surmounting Triple Colonnade and the cryptoporticus arch system, 1732 architectural fragments were excavated and recorded, including numerous voussoirs, wall ashlar, column drums, arch slabs, and several stylobate blocks. In addition, there were pieces of the hexagonal paving from the Lower Temenos, and from several different styles of cor-



11. Lower Temenos West Cryptoporticus before excavations to south, 2002 (Artemis W. Joukowsky).

7. The actual interior measurements of the West Cryptoporticus are 32.80m north south with each gallery measuring 4.30m east west, respectively. The 2004 excavated di-

mensions of Trench 97, however, were ca. 25.77m. north south by 6.10m. east-west: since the south area of the West CP East had been cleared to the floor as Trench 79 in 2001.

nice, as well as numerous limestone Ionic capital fragments were uncovered. In Trench 97, the most remarkable finds were four elephant-head capitals. An additional head from a third capital was identified and restored in the field. **Figure 13** illustrates the elephant head before restoration. Moreover, for the first time since the inception of the Great Temple excavations, pinecone bosses were found preserved on two of the elephant-head capitals. This unprecedented discovery of four well-preserved capitals in Trench 97 provided the opportunity to place two capitals on the reconstructed columns flanking the Propylaeum steps.

These excavations also yielded a range of small finds consisting of pottery, metal, bone, shell, stone, glass, shell, stucco, and vegetal remains. Of these, the most notable were the extensive finds of metal artifacts in Trench 97 near the floor level, much of which appears to be martial in nature. This selection included significant numbers of iron artifacts, including 105 arrowheads, a helmet cheek piece, several possible javelin points, a scabbard tip, buckles, rings, possible harness plates, as well as nails, spikes and knobs. Besides the iron, a significant amount of bronze artifacts were also found, including a scabbard tip, pins, tacks, rings, fragments of a bracelet and toggle pin, as well as four crescent shaped pendants with associated pieces. These artifacts also may be associated with the ballista deposit found just to the north in the Propylaeum West (*supra*). Trench 97 also yielded 20 coins (there were 5 in Trench 98), fine examples of decorated glassware, worked bone and/or ivory artifacts, as well as 48 lamp fragments and two complete lamps.

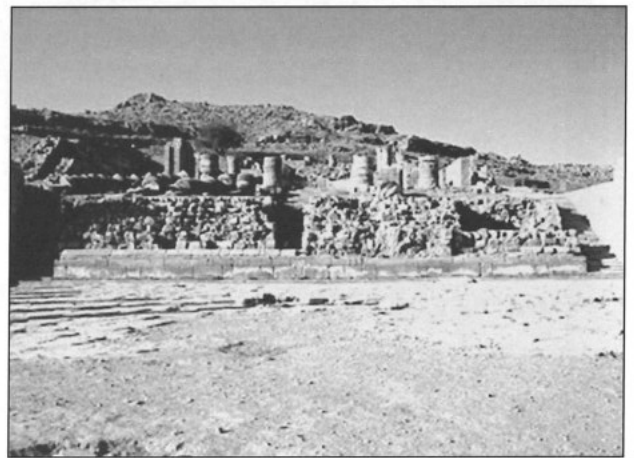


13. Elephant head from the West Cryptoporticus excavations (Artemis W. Joukowsky).

Lower Temenos to Upper Temenos — Central Stairs, Special Project 124

The central stairs leading from the Lower Temenos to the Upper Temenos were investigated by Emily Catherine Egan and Emma Susan Libonati in Special Project 124, 5.90m north south by 4.56m east west and 3.98m in depth, and its goal was to fully expose the central staircase between the Upper and Lower Temenos which is blocked by the construction of the Lower Temenos Retaining Wall, as well as to expose the earlier building stage of the precinct⁸. Additionally, it was determined that this excavation was necessary for a consolidation project above the Lower Temenos Retaining Wall to hold back the spolia and to prevent further damage to the Lower Temenos' hexagonal pavement. Upon examination of the Lower Temenos Retaining Wall, the remains of the Central Stairs east and west staircase façade walls had been evident for some time. These loci provided the boundaries for the excavation in the east, west, and north. The southern boundary was determined by the three fully exposed top treads of the staircase previously excavated. **Fig. 14** shows the Central Stairs before excavation and **Fig. 15** illustrates how they appear today, after excavation.

The stair bedding in the original phase of construction, Site Phase I, was covered with a fine white stucco which is far more intact on the lower treads and to some extent on the lower courses. This suggests that the cladding of the staircase and possibly the walls was marble or limestone veneer that was removed when the architectural plan was altered. The structural integrity of the bedding and extant façade wall clearly suggest the choice to fill



14. Lower Temenos to Upper Temenos Central Stairway before excavation to south (Artemis W. Joukowsky).

8. Special Project 4 in 1994-5 had investigated the Central Staircase and the central artery of the canalization that lay

beneath it. Special Project 124 fully exposed the staircase and its relationship to the Lower Temenos Retaining Wall.



15. Lower Temenos to Upper Temenos Central Stairway after excavation to south (Artemis W. Joukowsky).

in the Central Staircase was one not of necessity brought about by the Site Phase III destruction but of one of design when the temple precinct was expanded in Site Phase IV, and the steps were

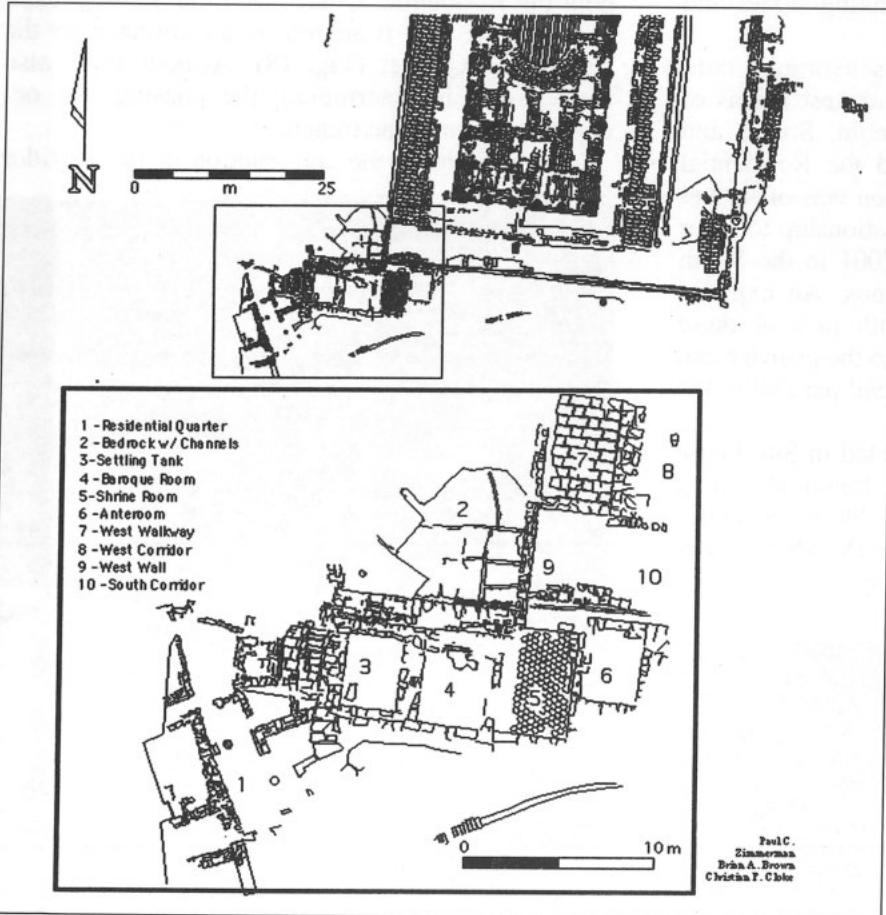
blocked off by the Lower Temenos Retaining Wall of the Grand Design. This excavation provides both academic visitors and tourists with a more informed architectural picture of the evolving stages of the Great Temple's development⁹.

UPPER TEMENOS

Here there was a great deal of activity for one trench and five Special Projects were undertaken in the Upper Temenos, including the Settling Tank, the Residential Quarter Steps, the South Passage-way, the Shrine Room floor, the Baroque Room door, and the removal of the ramp and West Wall of the temple precinct. In the following paragraphs, the discussion will progress in that order. **Fig. 16** gives the plan of this area.

The Settling Tank, Trench 101

Excavated by Emma S. Libonati and Tarek M.



16. Sureyed plan of the southwest rooms and the Residential Quarter (Christian F. Cloke and Brian A. Brown).

9. These footprints of the pre-Grand Design Temple could be examined in more depth in order to establish answers to more ephemeral questions about the changing socio-economic and cultural status of the Nabataean kingdom in the Hellenistic world. A specific project which relates to the area requiring minimal effort would be to mathematically determine where the staircase's base would have fallen underneath the existing Lower Temenos and examine the re-

mains of the landing. From calculations from where the stair treads are truncated by the Lower Temenos Retaining wall the stairs should have a landing 2.27m from the north face of that wall. These calculations are based on the supposition the Lower Temenos' original height is close to the level it is today. A 2.00m north south by 2.00m east west sondage on the Lower Temenos might help to answer these questions.

Khanachet, Trench 101 is located in the southwest corner of the temple precinct adjacent to the south retaining wall of the Upper Temenos and the Residential Quarter excavated in 2002. The excavation goal was to expose the remaining southwest area left unexcavated in 2002 in order to protect the Baroque Room's decorative stucco. In Trench 89 (2002), the room had been excavated to the top of its walls with thick hydraulic plaster adhering to at least three of the walls; it was hypothesized that the room likely had a hydraulic function and it was posited in 2002 that the room was utilized as a cistern, however, because of its limited depth of 1.96m, it now is identified as a settling tank for the collection of water either as run-off from the hillside above and/or for rainwater collection. The settling tank (Fig. 17) internal dimensions are 4.96m north south by 1.14m east west. It is comprised of six to seven courses of diagonally dressed Nabataean ashlar stabilized with chinking stones and coated with hydraulic plaster.

Of primary importance is this hydraulic construction's relationship to the southwest rooms of the Upper Temenos (i.e., Anteroom, Shrine and Baroque Rooms) to the east and the Residential Quarter to the west. The excavation was of further importance in determining the relationship to other water installations identified in 2001 in the South Passageway of the Upper Temenos. An exposed edge of a lead pipe on the south face of these southwest rooms likely connects to the primary and secondary water systems that extend parallel to the south façade wall.

The settling tank was constructed in Site Phase V after the construction of the South Retaining Wall in the Grand Design of Site Phase IV, and it ceased to function in Site Phase IX when it was filled in with overburden and collapse.



17. Upper Temenos Settling Tank to east (Artemis W. Joukowsky).

Residential Quarter Steps, Special Project 94

Special Project 94's upper layers had been cleared along with the Residential Quarter and Baroque Room in 2002 to the extant levels of the South Perimeter Wall. This project was excavated by Tarek M. Khanachet, and the rectilinear area measured 4.90m north south by 1.66m east west. The purpose of Special Project 94 was to establish what connections, if any, existed between the Residential Quarter and the Upper Temenos. Located outside of the temple complex proper, it is delimited on the south by the South Perimeter Wall and the south wall of the Residential Quarter on the east. On the east side, the trench was bounded by the West Walkway wall and the Settling Tank. On the west it was bounded by a wall, separating it from the rooms of the Residential Quarter. There was no wall on the north side of the trench. These steps were connected by walls and architecture to both the Residential Quarter and the Settling Tank and indicate that it served as an entrance to the Residential Quarter (Fig. 18). Artifact finds also were useful in determining the phasing and occupational use of the trench.

Phasing places the construction of the corridor



18. Residential Quarter Steps to south (Artemis W. Joukowsky).

and steps to Site Phase V or to the Late Nabataean redesign and repair of the precinct before AD 100 when the Residential Quarter expansion was constructed. In Site Phase VI was the construction of the west wall and thereafter modifications were made to this entryway. Extending from Site Phase IX to Site Phase XIV burn layers and successive deposits indicate destruction and then wash down and sedimentation from the high rock face directly south of the trench.

South Passageway, Special Project 121

Special Project 121 was excavated by Michael S. Zimmerman. Two sondages were opened in the center of the South Passageway of the Upper Temenos, between (and adjacent to) the South Corridor Wall of the Great Temple, measuring 4.60m north south by 1.50m east west. The trench's west edge was set 13.60m east of the west edge of the temple's South Corridor Wall, while its east boundary was set 12.24m west of the east edge of the South Corridor Wall. The primary goals for SP 121 were twofold: first, to determine if the four channels cut into the bedrock in the center of the South Corridor continued north, extending under the South Corridor Wall and into the South Passageway, and, secondly, to determine if the channels connected to any other water systems extending east west, adjacent to the South Perimeter Wall. Artifact recovery also might date their latest use.

Excavation was initiated with a 1.50m north south by 1.00m east west sondage, positioned directly south of the channels cut into the bedrock of the South Corridor, on the opposite side of the South Corridor Wall of the temple. After finding the channels continued into the South Passageway, a second 0.50m north south by 1.00m east west sondage was then opened opposite the channels, against the north face of the South Perimeter Wall, to determine if the channels continued south or possibly met up with the ceramic pipe which was a part of Trench 83 in 2001. This sondage, excavated to bedrock, a total depth of 0.50m from the floor of the South Passageway, uncovered no such evidence. As a result, the excavation of the original sondage was extended approximately 0.50m south but stopped short of the preserved paved surface of the floor of the South Passageway. At an approximate depth of 0.35m, the channels ended abruptly approximately 1.50m from the south face of the South Corridor Wall. The plaster that filled the channels was then removed from the westernmost channel, yielding no artifacts, but revealing the bedding for a lead pipe. The sondage was then extended 0.50m to the west, in order to

determine if any additional water systems existed in conjunction with the channels, but no evidence was found.

The phasing of these elements begins in Site Phase II, during the major construction of the distyle temple when the channels were cut into the bedrock and lead pipes were laid. With the Phase IV Grand Design, the water channels were covered with fill, likely in preparation for the laying of the paved floor of the South Passageway, and there was no further activity for water passage. Thereafter in Site Phases IX and later massive earthquake damage and fill covered the area.

Shrine Room Floor, Special Project 123

Special Project 123 was opened by Emma Susan Libonati and Emily Catherine Egan. It was completed after reaching bedrock. The trench is located in the southwest corner of the Shrine Room and measured 0.86m north south by 0.60m east west. The purpose was to find any datable material in a small sondage underneath the hexagonal pavement floor in the Shrine Room excavated in Trench 83, 2001. Six hexagonal pavers were removed. At the conclusion of the project, the sondage was backfilled and the pavers were replaced in their original position.

Of significance were two pieces of Schmid II ceramic sherds that securely date the *terminus post quem* of the floor to the first century AD. This further solidifies the hypothesis that the construction of the Shrine Room was founded on bedrock for greater architectural stability. Special Project 123 resolved the projected dating for the construction of the southwest rooms and precinct's South Retaining Wall. As the architectural phasing has suggested for the Upper Temenos the expansion of the temple in its Grand Design reincarnation occurred in Site Phase IV. This was proven conclusively with the *terminus ante quem* of the painted sherds found underneath the floor bedding.

Baroque Room North Door, Special Project 89

Excavated by Emily Catherine Egan, this special project was undertaken in the "Baroque Room" (hereafter Baroque Room). Measuring approximately 1.30m east west, the trench was bordered in the east and west by the preserved courses of the original Nabataean north wall of the Baroque Room. Directly above the trench rested the leveling stones and stringcourse of the upper, late portion of a north wall put in place after the Nabataean wall (and door) had gone out of use. The purpose of the trench was to examine further the north wall of the Baroque Room and to determine

if the observed break in the wall's construction was a door. Working from south to north, excavations in Special Project 89 extended approximately 0.30m into the observed cut in the wall, fully exposing a preserved sandstone threshold and part of the abutting stone floor bedding to the north, firmly identifying this area as an original point of entry.

Above the threshold and floor bedding was found a great quantity of collapsed molded decorative plaster similar to that discovered in the central area of the Baroque Room in 2002. This delicate plaster, presumably fallen from the ceiling and door walls in successive layers, was consolidated by Ulrich Bellwald, and is now on display at Altes Museum, Museumsinsel in Berlin¹⁰. Additional finds from the trench were scant and consisted primarily of bone, a small quantity of pottery (both Nabataean and late) and one Nabataean coin found in the threshold's west posthole, which will be integral for dating the door's original construction.

Abundantly clear is that the perceived break in the north wall of the Baroque Room is in fact a door. This door, however, did not access the temple West Plaza, but opened into a small east west corridor excavated as part of Special Project 96 in 2004 (*infra*). As a result of excavations in Special Project 89 a number of questions were answered concerning the architectural arrangement of, and points of access to the Baroque Room. The question of the exact dating of the construction of the early and late walls of the Baroque Room, however, remains, and may be clarified by further excavation into the Baroque Room's north door from the north or south to identify and datable materials. A small sondage into the floor bedding of the Baroque Room to search for dateable material may also be useful. Notwithstanding some reservations, the phasing for the construction and plastering of the Baroque Room north door tentatively is placed in Site Phase IV of the Nabataean Great Design within the first century BC into the AD first century. The doorway collapses in the Late Nabataean pre 106AD at which time there is an accumulation of fill.

West Ramp and Southwest Wall of the Great Temple Precinct, Special Project 96

Special Project 96 was supervised by Emily Catherine Egan and Emma Susan Libonati. The trench is located in the southwest corner of the

Great Temple precinct. In the south the trench is bounded by the north wall of the Baroque Room and the north wall of the Settling Tank, and in the west by the westernmost wall of the temple precinct. The earthen ramp providing access between the temple South Corridor and the West Plaza served as the trench's east boundary and in the north excavation extended to the edge of the leveled bedrock. The purpose of this trench was to clear the earthen access ramp and to expose the south part of the temple late West Walkway Wall beneath. In removing this deposit of mixed collapse and intentional debris, lower level architectural features including the bottom courses of the late north wall of the Baroque Room, the paved floor of the proposed north corridor of the Baroque Room (*supra*), the foundation courses of the temple South Perimeter Wall and associated canalization features were uncovered¹¹. Excavation began with the clearing of the earthen ramp to the east of the late West Walkway Wall. Mechanical assistance was employed for the removal of the upper layers of debris, which had been deposited deliberately by our excavations for access and to protect the intact pavers of the South Passageway from falling ashlar during the excavation of the upper levels of Trench 85 in 2001.

The lower levels of earth contained delicate stucco fragments, a large quantity of Nabataean pottery similar to those recovered during the excavation of the nearby Residential Quarter, and significant quantities of pottery, bone, glass, metal and stucco fragments as well as organic material and faience. Thirteen architectural fragments were recovered, the most intricate of which was a carved limestone capital volute. Special finds included two complete Nabataean vessels, a ridged drinking cup and an unguentarium, a Nabataean oil lamp, the base of a figurine, a carved sandstone block with bored holes (postulated to be a sundial or board game), a small limestone pedestal, and a fragment of ridged faience.

As can be seen in **Fig. 19**, the excavation of Special Project 96 brought to light a number of new architectural features in the southwest corner of the Great Temple precinct, and with them a number of new theories concerning the construction and use of this area. The most striking features in Special Project 96 are the quarrying cuts, prominently positioned in the central area of the trench on an elevated bedrock plateau. As yet unseen at

10. The Great Temple Baroque Room Ceiling, Elephant Headed Capitals and other artifacts, in "Gesichter Des Orients 10,000 Jahre Kunst und Kultur aus Jordanien".

11. Prior excavation in the area of the trench includes the ex-

posure of the temple South Passageway (Trench 83, 2001), of the Baroque Room (Trench 89, 2002) and of the Southwest Settling Tank (Trench 101, 2004).



19. West Ramp and Southwest Wall of the Great Temple precinct to east (Artemis W. Joukowsky).

the Great Temple, quarrying cuts such as these offer valuable insight into the early construction of the temple and argue strongly that the stone used to build the temple originated from both local and more distant sources. The cuts are made in a rough grid pattern, each set approximately 1.10m apart. In antiquity, each cut would have been filled with wet wood that would expand, splitting large blocks of raw sandstone loose from the bedrock. For construction parallels, a similar style of grid quarrying is visible nearby in Bayḍa and on the bedrock outcrop east of the pediment of ad-Dayr.

Immediately west of the quarrying cuts are a second group of intriguing features: three bedrock caves. Aligned north to south, the three caves hug the edge of the bedrock plateau, each opening to the west. Like the caves in the Residential Quarter, located to the immediate west, these three caves show evidence of human manipulation. In the floor of the south cave are two square cuts, one near the cave's entrance and another smaller in the rear north corner, presumably used to anchor posts to support either a doorway or a ceiling. In the central cave, the north bedrock partition wall is chiseled into a doorjamb. In the north cave, only partially excavated, a carved ledge is visible, presumably to support a roof structure. This evidence of chisel work, combined with large quantities of ceramic and bone material, sheds light on the early use of the southwest area of the precinct prior to the Great Temple's construction. Once plans for the temple

were set and quarrying had begun, the caves were shaved down and the remaining cavities of the south and central caves were filled with large unhewn stones. The north cave, however, was carefully filled with stacked hewn sandstone ashlars. Excavation of this cave was not completed, but this preliminary discovery may be a clue to the rituals and practices of the early Nabataeans.

A third interesting feature exposed during the excavation of Special Project 96 is the so-called Shrine Room North Corridor. Located to the north of the north doorway of the Baroque Room (*supra*), the north corridor appears to be the northeast continuation of the adjacent Shrine Room. The small, cut-to-fit hexagonal pavement of the corridor is identical to that of the Shrine Room, even down to the use of bonded half-hexagons as edging. In its location, the corridor provides an alternative point of access between the Shrine Room and the Baroque Room, allowing for a circular traffic pattern in this most sacred area of the precinct. Patrons, presumably a privileged few based on the small size and spectacular decoration of these interior rooms, likely would have used the North Corridor as either a point of indirect exit or entry to the Baroque Room, circling either towards or away from the Baroque Room's east doorway¹². Based on this architectural arrangement, traffic flow within this complex proceeded as follows: from the South Passageway west, visitors entered the Anteroom, moving west into the Shrine Room and then into the Baroque Room either directly through the door between the two (set into the Shrine Room's west wall) or by way of the north corridor. Most likely one door (either in the north or in the east) to the Baroque Room would have been designated as the entrance and the other as the exit in order to minimize the disruption of the traffic flow. The lack of direct access from both the Shrine Room and the Baroque Room to the temple plazas reinforces the sacred character of these areas — screened from public view by the temple's South Perimeter Wall.

We place Stage 1 of the manipulation of the bedrock and caves and the accumulation of domestic debris in a Pre-Site Phase somewhere before the late first century BC. This is followed by

12. The function of this feature as a corridor, however, remains uncertain. Currently, the south and east portions of the hexagonal paving are obscured by the late north wall of the Baroque Room and late temple West Walkway Wall respectively. Further complicating the picture is the noted absence of hexagonal paving to the west of the small step, which marks the boundary between the North Corridor and the Shrine Room proper. Located in what should be the northwest corner of the Shrine Room, the

irregular sandstone paving in this area was initially thought to be a type of sub floor bedding. A brief sondage beneath the hexagonal pavement in the southwest corner of the Shrine Room (*supra*), however, revealed that the pavers rest directly on packed soil and are held together by white plaster. There is no stone sub floor. As such, the possibility remains that the perceived corridor is a unique feature, stylistically, but not functionally related to the adjacent Shrine Room.

the bedrock preparation and quarrying activity to level the temple southwest in Site Phase I, which is pre-first century BC. The construction of the hexagonally paved corridor can be dated to the Grand Design construction of the Great Temple in Site Phase IV. And the Late Nabataean redesign of the precinct in Site Phase V dating to the AD first century was the time in which we place the Baroque Room collapse, and presumably after that time this area was filled with debris. In Site Phase VII, secondary construction is evidenced by the addition of a ceramic piping in a channel, after which there is abandonment and a period of robbing ensues in Site Phase VIII. With the 363 earthquake there is major collapse and destruction, and in Site Phase X dated to the Byzantine period there is the construction of the late West Walkway Wall and two low walls in the South Passageway. This is followed by Site Phase XI with further collapse and the accumulation of debris.

GREAT TEMPLE

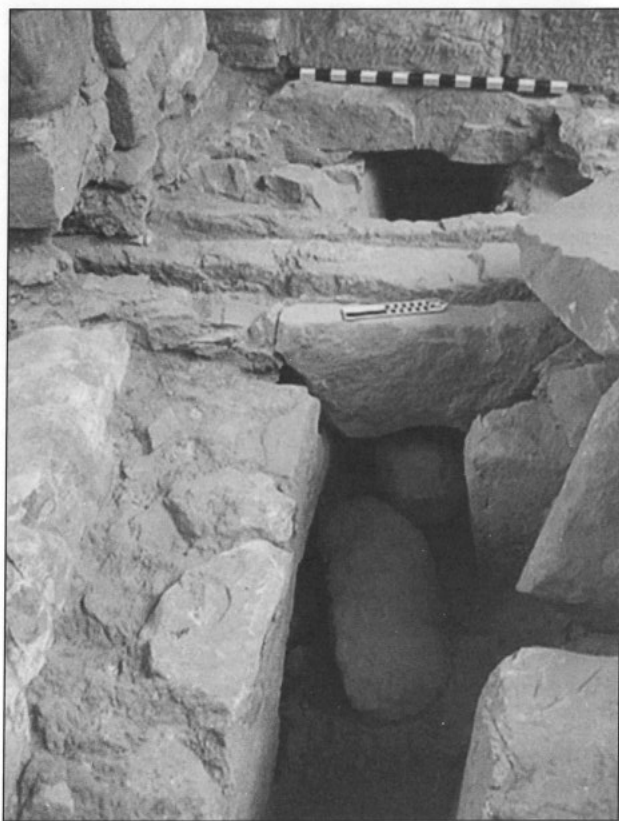
Great Temple Central Arch Canalization Special Project 120

Due to the completion of the major portion of the Petra Great Temple's excavations, we revisited the water installations in the Central Arch to determine their interrelationships, this investigation was supervised by Emma Susan Libonati in Special Project 120.

There are two separate water systems referred to in the following discussion: the central north south subterranean canalization system i.e., canalization, and the western above ground north south "channelization"¹³. The central canalization was constructed to terminate at the south of the Central Arch. In the east and south the terminus has been cut into bedrock, to the west the blockage was constructed under the Central Arch wall, but has no possible connection to any other water system¹⁴. It seems likely that the original constructors either decided that a horizontal connection to the main cistern in the East Plaza was not efficient to warrant the effort of constructing an access through the bedrock to the east and opted for the diagonal East Plaza canalization that extends both diagonally and with gravity to intersect with the central artery. It is also possible that the southern ex-

tent of the central artery was installed to accommodate winter and spring overflow by giving any water excess an overflow outlet. The central artery was in use as is apparent from the amount of sediment fill ranging from 0.60m to 0.80m in depth as well as calcification lines present on the walls. This suggests that the Nabataean canalization operated by capillary action/adhesion to draw water up to the south in certain times when there was sufficient water to warrant the south section of the canalization system working as an overflow valve. The prevalence of flash floods in the area and the Nabataean preventive measures to direct and control water, likely was a consideration in the building of this unusual feature. These excavations can be seen in **Fig. 20**.

The second water installation in use in the temple was the shallow bedrock channelization. The suggestion that the channelization was a later in-



20. Temple: East west subterranean canalization system (Artemis W. Joukowsky).

13. Special Project 120 refuted the hypothesis that the blockages to the east, west and south were possibly later installations to cease usage within the Temple of the central canalization system. These previous hypotheses were the result of sondages excavated by crawling through the central canalization but were not the result of exposing these areas by removing capstones.

14. The "hole" recognized in Trench 57, 1998 was investigated and determined that it was a poorly constructed canalization wall, which was laid in front of bedrock. In light of the definitive terminus of the Central Artery in the south, questions must be raised as to the use of the branch in the south before its connection to the canalization artery from the East Plaza.

stallation is the prevalence of abandoned attempts to cut it into Central Arch capstones¹⁵. It seems that in the first stage the channelization was potentially not differentiated into four water channels in the Central Arch¹⁶, but it was later modified prior to the installation of the Corridor Inter-columnar Walls and the construction of the Central Arch. The lead pipe and the channel bedding in bedrock trough connected to the channelization. The lead pipe insert into the east side of the south wall¹⁷ proves that when the intercolumnar walls were constructed while the channelization was still in use¹⁸. Special Projects 120 and 121 (*supra*) revealed the extent of the south central water systems within the Temple precinct. The excavations proved that the channelization connected to the South Passageway but not to the channels that run parallel to the South Temple façade wall. It is likely that the channels collected rain water or runoff from the temple roof and directed this water through a series of lead pipes. It is possible that the channelization originally fed into the central canalization system and then the installation was later modified to include an overlay of the four water channels to distinguish between the different water systems.

The central canalization system was proved definitively to terminate in the Central Arch and to connect neither to the Eastern Plaza Cistern nor to the water systems in the Upper Temenos South Passageway. This would suggest that as far as possible the channelization originating in the South Passageway of the Upper Temenos could be followed to the north through the temple to determine its use in the West Vaulted Chamber and beyond to the north.

The Site Phasing for the bedrock preparation for the water systems places the installation of the central canalization under the Central Arch in Pre-site Phase I sometime in ca. the mid-first century BC. This is before the Grand Design of the Great Temple in the late first century BC - AD first century, and the Site Phase V Late Nabataean 106 re-design, which includes the construction of the Cen-

tral Arch and the Intercolumnar Corridor Walls. The lead pipes are inserted in Site Phase V. Thus, it is assumed that this canalization functioned until the 363 earthquake of Site Phase IX.

Artifacts 2004

Artifacts recovered in 2004 artifacts include 41 coins, 81 cataloged lamps, 13 pottery vessels and figurines, four additional elephant head capitals, and 14 bone objects. The head of an elephant found in the West Cryptoporticus shown in **Fig. 10**. Our databases accumulated over 12 years of excavation continue to swell with architectural fragments bringing the total up to 14,272. There were also considerable cultural materials, numbering 21,461 for the 2004 season bringing the overall total to 348,122 artifacts recorded in our Grosso Modo database. To keep up with the documentation of our pilaster fragments, Emily Catherine Egan undertook the drawing of the Athena pilaster and the Helmet pilaster as well as many other sculptures.

Following up on the 2002 excavations of the Residential Quarter, Shari L. Saunders studied its substantial pottery assemblage. More than 30,000 sherds were excavated in the Residential Quarter and recorded in the Great Temple's database. Her study is proving to be invaluable for statistical analysis. From this assemblage Naif Zaban restored several near complete vessels, both painted and unpainted. The current study limits the number of sherds to those excavated from loci near floor levels and sealed contexts. Comparative analysis will help to date the architectural sequence in this quarter, while a functional analysis of the pottery may indicate the purpose of individual rooms or areas within the Residential Quarter. The results of the study will be published in the final report of the Great Temple excavations.

Consolidation 2004-2005

Restoration has been under the direction of Dakhilallah Qublan and has included numerous projects including the re-erection of the Pro-

15. Trench 57, 1998 Loci 21 and 28.

16. Trench 57, 1998, Loci 27, 29, 30, 31.

17. Trench 57, 1998, Locus 20.

18. Locus 2's purpose was probably to funnel rainwater from the roof and into the channelization system although this is impossible to determine since the connection would be underneath the west side of the south wall. It seems from the sediment in the Locus 5 bedrock trough, was used potentially as a small settling basin for the water flowing from this lead pipe. This installation as well as the evidence from Special Project 121 further adds credence that the channelization was used for fresh water distribution while the canalization was used for unfiltered non-potable

water. These channels were leveled with hydraulic plaster and in the westernmost channel at least the lead pipe remained. Exactly when this system fell out of use is impossible to determine. However two artifacts may date the *terminus ante quem* of this system: the first was a Nabataean fine ware bowl (Seq. No. 57737, Cat. No. 98-P-24) found in channel 2 underneath the north wall; and a coin (Seq. No. 57709, Cat. No. 98-C-11) identified as from the first century BC/AD — This coin was found in the plaster layer in the southwest that was used to fill the channelization. Additionally this coin provides a *terminus post quem* for the hard packed "clay" floor in Trench 57, 1998.

pylaeum columns and the pointing of walls. In the Propylaeum East the *in situ* vault will be consolidated and restored. At this time there is danger of its collapse, and with winter rains such a threat seems to be a distinct possibility. The Lower Temenos West Cryptoportici walls need to be pointed for their stabilization. The consolidation and reconstruction of the Lower Temenos Retaining Wall, located to either side and in front of the Central Staircase is aimed to establish continuity between the east and west sides of the wall, the absent portions of the stringcourse and cornice band are to be reconstructed in the west. The goal of restoration in this area of the temple is threefold: (1) to stabilize the highly disarticulated fill of the Lower Temenos Retaining Wall and the damaged Central Staircase; (2) to build up a barrier to prevent the collapse of fill onto the Lower Temenos, and (3) to present scholars, tourists and other visitors to the site with a more complete view of the temple's façade — and provide a realistic appearance of the original Nabataean construction.

Additionally, the important frescoes in the temple West Corridor are to be stabilized and protected against water run-off with an unobtrusive slope on the top of the shared West Corridor-West Walkway wall to deflect the winter rains. The excavated Residential Quarter and Baroque Room have been used as dumps by visitors. Entrance to these rooms will be prevented by a door or grill barring access. And finally, a flight of steps is to be constructed to the east and west of the West Wall for access to and from the South Corridor and the temple west. These measures are crucial to the structural integrity of the Great Temple. The importance of preserving and conserving this great precinct cannot be underestimated. As for the artifacts, all the metal artifacts, including the coins have been sent to 'Ammân to be restored by Naif Zaban at the American Center of Oriental Research, after which they will be returned to the Petra Museum.

Archaeologists must be responsible for the artifacts they excavate. Besides the special finds turned over to the Jordanian Department of Antiquities, there are three on-site storage areas at the Petra Great Temple, and in 2004 the reorganization of our artifact storage was undertaken so that we would be able to find useful elements to be used for consolidation or reconstruction. In storage Area #1 are located small decorative architectural elements — vines, hibiscus blossoms, pinecones, poppies, acanthus leaves, elephant head components as well as other capital architectural fragments. There are over 5637 numbered stone ar-

tifacts stored here along with marble revetment pieces that have in effect been returned to their micro-environment. Storage Area #2 contains the majority of excavated pottery diagnostics as well as plaster, metal, and bone objects. Here are located 107 crates; 91 boxes of pottery, 12 boxes of stucco, 2 boxes of bones, one crate of soil samples, and one crate of glass. Storage Area #3, the Great Temple "Sculpture Garden", is composed of large sculptural elements such as capitals and pilaster blocks. Here there are approximately 150 architectural fragments arranged in rows with the most delicately carved smaller elements behind a centrally fenced area.

At Home Research 2004

Two members of the Brown University team defended their Ph.D. dissertations in 2004, both of which will have an impact on Nabataean studies. Deirdre Grace Barrett, *The Ceramic Oil Lamp as an Indicator of Cultural Change Within Nabataean Society in Petra and its Environs Circa AD 106*, and Sara Karz Reid, *The Small Temple: A Roman Imperial Cult Building in Petra, Jordan*. We are looking forward to their final publications. Our WallDrawer program developed from our U. S. National Science Foundation grant continued to serve us well (NSF Information Technology Research (ITR #0205477) Grant of \$2 million for four years). Sarah Whicher Kansa continues to analyze our bone corpus, and David S. Reese is studying our shell remains. The chemical components of soil samples from a burned deposit in the Propylaeum East are being studied by the Brown University Chemistry Department. And, of course, much discussion continues between team members about site phasing and directions for future research.

Conclusions

Finally, it is apparent that we must continue to try to fill the gaps in our knowledge about various features of the Great Temple and focus on those that deserve special attention. For example, quite unexpected in 2004 was the discovery of the ballista ball armory in the corridor of the West Propylaeum, indicating that a major conflict was either staged here or was anticipated by the Nabataeans.

It would appear that we have one more season to excavate through the thick debris on the temple west, which is scheduled for 2005. The driving forces behind Nabataean eclecticism can be better understood when we direct our attention to their sculptural ideas and architecture as well as the functional features of their provocative architecture

and art. Fortunately, the stratigraphy is in many cases well preserved and its detailed analyses is crucial to our understanding of the Great Temple's development.

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