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The Petra Great Temple A Final Chapter

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Martha and Artemis Joukowsky;
photo by B.A. Porter

In August at the end of my last season at Petra, ACOR requested an account of my Petra Great Temple research to mark the conclusion of our fieldwork seasons. Few archaeologists get to recount and bring together a myriad of excavation impressions. I apologize for presuming to summarize what these last 14 years have meant to me, most particularly because the past, I have discovered, recedes into a blur and the present seizes the day. I know, however, that I have experienced an archaeological feast that defied all expectations.

My Brown University team has rescued and redefined the architecture of the Great Temple, a major archaeological and architectural component of metropolitan Petra. It is the largest freestanding building yet excavated in the city—its 7560 m² precinct consists of a Propylaeum, Lower Temenos, and Upper Temenos, the sacred enclosure for the temple proper. In the Propylaeum and Lower Temenos are east and



The Petra Great Temple, looking south, in August 2006; photo by E.A. Power

west colonnades under which are cryptoporticoes (vaulted chambers). With 145 columns topped with phenomenal Asian Elephant headed capitals, these triple colonnades lead into semi-circular buttressed exedrae. Between the colonnades is a sweeping plaza with white limestone hexagonal pavers positioned above an extensive subterranean canalization system. In addition to 19,000 recovered architectural fragments, there are thousands of artifacts, including coins, limestone facial friezes, glass, and ceramic lamps and figurines, as well as eggshell-thin Nabataean wares. Elaborate floral friezes and acanthus-laden limestone capitals suggest the temple was constructed in the last quarter of the 1st century B.C. by the Nabataeans after which it was enlarged with the theater in the 1st century A.D. The precinct was in use until the 6th century A.D., the Byzantine period.



One of the famous Asian Elephant headed capitals from the Petra Great Temple; photo by B. de Vries

We posit that the earliest temple was *distyle in antis* (two front columns) with colorfully painted stuccoed columns and walls. But the refurbished structure with an added porch, as seen today, is *tetrastyle in antis* (four front columns) with side anta walls embellished with pilaster reliefs. The structure measures 35 m east west, and is some 42 m in length. A stairway approaches a broad deep pronaos (entry), which in turn leads into side corridors accessing a 620 seat theater. Exterior paved walkways frame the temple, where sculpted facial fragments and fine, deeply carved architectural elements were found. Approximately 15 m in height, the porch columns plus the triangular pediment and entablature hypothetically place the temple's height to at least 19 m.

Beyond the temple proper, a sword deity relief is carved into the bedrock of the Upper Temenos above an underground cistern which would have held 390,000 liters of water. In the southwest is the Baroque Room, where to our astonishment the massive wreckage of a delicately designed painted and gilded plaster ceiling was recovered. To its west is an 11 room Residential Quarter where we unearthed masses of painted Nabataean ceramics.

While excavating to the west of the precinct this summer, a Roman-Byzantine bath complex was discovered. It was appointed with an ornamental pool, a well, a frigidarium (cold plunge), caldaria (hot rooms), a rest room, and a probable palestra-gymnasium—yet another incredible discovery!

The exacting task of the conservation and restoration of the Great Temple is undertaken yearly, and reports are published in the *Annual of the Department of Antiquities of Jordan* and in the *American Journal of Archaeology*. The final volumes of excavation discoveries are underway.

I am enormously grateful to the Department of Antiquities of the Hashemite Kingdom of Jordan. Dependent on the many superb individuals at ACOR, I acknowledge, in particular, an enormous debt to Pierre and Patricia Bikai who in 1992 encouraged me to work at the Great Temple, and Barbara A. Porter who resolves my immediate issues today. I am struck by the kindness and expertise of the amazing Bedouin who for all these years have excavated beside me. Members of my loyal team, including my dearest husband, continue to devote themselves to the heroic efforts of excavation, photographing, recording, thinking, and publishing. Time and time again they miraculously articulate the enormous corpus of stratigraphy, architecture, and artifacts.

In writing this final chapter, I know I have never in my life known such personal happiness and accomplishment. Through these excavations I have acquired historic, tribal, and archaeological knowledge. All my team weave threads into the 2000 year old fabric of the Nabataeans, transcending time and space. For my own part, I will never excavate any other site for 14 consecutive seasons. I will never know a precinct as well as I know the Great Temple, and I will never be so vulnerable to so many archaeological and personal surprises, and love each of them as I have.

The Origins and Development of Early Agricultural Communities in West-Central Jordan

The first season of the Origins and Development of Agriculture in Jordan (ODAJ) project was undertaken between 20 May and 17 June 2006. Excavations were carried out at three locations in the greater Wadi Hasa drainage. The overarching research goal of the project is to model the transition to agriculture within the unique cultural and natural landscapes of the Wadi Hasa. Sites on either side of the forager/farmer transition were targeted for test excavations to investigate the potential for a multi-year research project. Two sites in the Wadi Juheira were chosen to represent the terminal foraging or Natufian occupations in the area. The Natufian sites TBAS 102 and 212 were recorded in 1999–2000 during the Tafila-Busayra Archaeological Survey (TBAS), directed by Dr. Burton MacDonald. Neeley conducted the lithic analysis of survey surface collections and had identified potentially productive Natufian materials in the collections. We also returned to Khirbet Hammam, a Pre-Pottery Neolithic (PPN) village on the south bank of the Wadi Hasa. Limited test excavations at Khirbet Hammam conducted by the directors in 1999 had shown the site to be deeply stratified with well-preserved architecture and abundant cultural materials.

The specific goals of the research in the Wadi Juheira for the 2006 field season included: (1) obtain surface materials

from TBAS 102 and 212 to determine the relative age of these sites (i.e., are they Early or Late Natufian); (2) carry out test excavations to determine the nature of stratigraphic relationships and document the range of artifacts and organic specimens present; and (3) begin to integrate the archaeological sites with the local geomorphological setting (i.e., marl deposits identified on Natural Resource Authority geological maps).

The goals of the research at Khirbet Hammam for the 2006 season were to: (1) produce a detailed map of the large site recording topographic relief, visible surface features, and archaeological collection units; (2) survey and collect surface materials; (3) explore subsurface deposits in a different area of the site than those uncovered during the test excavations in 1999; and (4) expose a larger horizontal area in order to provide a detailed description of architecture and building techniques employed.

Additional surface collection and test excavation in the Wadi Juheira were very successful. Early typo-technological analyses indicate that both sites likely have Late Natufian occupations (approximately 11,000–10,200 years ago). Although analyses have yet to be undertaken, there is an impressionistic pattern of spatial differences in the on-site activities. Perhaps more interestingly, the excavations indicated that there were significant subsurface material deposits at both TBAS 102 (ca. 25 cm below the surface) and TBAS 212 (ca. 40 cm below the surface). This is very encouraging for future excavations at these sites. Both sites contained datable charcoal, identifiable faunal remains, and a number of shell bead ornaments. Brett Hill's geoarchaeological observations of fossil spring and marl deposits indicate that the local environment during the late Epipaleolithic was substantially different from the present desert setting. Our preliminary interpretation is that the Wadi Juheira was home to marshes and/or spring deposits that made this an attractive place for Late Natufian peoples; one in which they returned repeatedly over a long span of time. The immediate area around TBAS 102 and 212 contains additional Epipaleolithic sites. The TBAS crew documented one of these (TBAS 210) at the leading edge of a basalt flow close to both of the excavated sites. Surface survey indicated that TBAS 210 contained a wealth of ground stone tools. Large boulder cuphole mortars and pestles were common forms. The pestle forms were very similar to basalt artifacts found at the excavated sites.



Surface collecting on TBAS 102; both photos provided by the authors

At Khirbet Hammam a mapping team, led by Jen Jones, spent nine days producing a detailed map of the site using an electronic total station. Other team members made a systematic transect surface survey of the site terrace. The combined efforts of the mapping and survey teams revealed that the site is much larger than our previous 3 hectare estimate. In fact, the site covers in excess of 6 hectares. The East Field of the site was identified as a potentially productive area for subsurface investigations based on surface artifact densities and visible wall courses. We opened three test trenches. These excavations in the East Field revealed a series of complex and closely spaced architectural units made of well-masoned stone. One structure appears to be an apsidal room made with massive boulders serving as a foundation course. Three flat-lying groundstone items on a hard-packed surface marked a subfloor pit that contained an adult human skull. A second structure is represented by a 3 m wall segment crosscut by Test Trenches 2 and 3. Several more ephemeral, single coursed walls occurred in Test Trenches 1 and 3. The East Field area holds a great deal of potential for future excavations both in terms of rich cultural assemblages, but also extensive architectural features. Furthermore, we built upon the 1999 assessment which identified a Late PPNB component. Based on preliminary typological examination of the lithics from surface and subsurface deposits, we suspect that the site may also include an Early and Middle PPNB village as well. Charcoal samples



Natufian pestles

from Khirbet Hammam will provide absolute dates in the coming months. We also collected organic samples which, when analyzed, will aid in the reconstruction of the plant and animal communities around Khirbet Hammam.

The success of the 2006 season provides a first step in our reconstruction of the Natufian and Pre-Pottery Neolithic cultural and natural landscapes in the greater Wadi Hasa drainage. First, the typological assessment of the investigated sites indicates a nearly unbroken sequence from the Late Natufian through the Early, Middle, and Late PPN. This is important as it provides a chronological platform for future research. Second, the interaction of human populations with their natural landscapes is emerging to be a complex, yet rewarding research endeavor in this unique region of south-central Jordan. Future plans also include substantial input from a quaternary geologist to help formulate more detailed environmental reconstructions. We hope that the analysis of the 2006 material culture will continue to clarify our initial research objectives and raise new questions for future archaeological research in the area.

The field crew consisted of the project directors along with Dr. Brett Hill (Hendrix College), Dr. Jennifer Jones (University of Minnesota, Duluth), Mr. Jordan Knudsen (Montana State University), and Mr. Abdullah Rawashdeh (Department of Antiquities, Tafila Office). Our project was supported primarily through Montana State University, with supplemental funding from the University of Minnesota, Duluth and Marquette University. Special thanks go to Dr. Fawwaz Al-Kraysheh, Director-General of the Department of Antiquities, Jihad Haroun, the Kerak and Tafila offices of the Department of Antiquities, Jihad Darwish, and Abdullah Rawashdeh.

Jane Peterson, Marquette University

Michael Neeley, Montana State University

The Ayl to Ras an-Naqb Archaeological Survey, Second Season (2006)

The Ayl to Ras an-Naqb Archaeological Survey, Southern Jordan, completed its first infield season in 2005. The second infield season took place in May and June 2006.

The objective of this survey is to discover, interpret, and record archaeological sites within the survey region. To this end, the survey territory is divided into three topographical zones: Zone I, the area to the west where elevations are between 1500 and 1100 m; Zone II, the mountainous region, where elevations are from just over 1700 m to the north of the village of Ayl to 1500 m in the south at Ras an-Naqb; and Zone III, from the 1500 m line on the west towards the 1200 m line on the east.

During the 2005 season, the infield work was concentrated in Zone II, the central zone of the survey area whose western and eastern boundaries are defined by the 1500 m elevation line. The comprehensive and systematic pedestrian survey in this zone yielded sites ranging in age from the Paleolithic to the Ottoman period. However, not every cultural-temporal unit is represented (see *ACOR Newsletter* 17.1).

During the second infield season, we concentrated our efforts on transecting and recording the random squares and processing archaeological remains found in the three topographical zones of the survey territory. The stratified random squares (500 x 500 m), covering approximately five percent of each zone of the project area, are based on the four Series K737 maps covering this portion of Jordan. They were randomly generated using Arc/INFO GIS software; projection and coordinates system UTM Zone 36 N; European Datum 1950; database development by G. L. Christopherson and P. O. Leckman.

During the 2006 season, we transected 82 random squares: 27 in Zone I; 25 in Zone II; and 30 in Zone III. While carrying out this work, an additional 115 sites were recorded (sites 210–324) which were located within, adjacent to, or on our way to/from the random squares. The location of each square and site is plotted on maps using an ArcGIS database, and preliminary cultural-temporal units are assigned to the collected materials. Following the infield work, research continues on the cultural remains of the survey territory: selected lithics and sherds are being drawn; preparation of the plates for publication is underway; and work on the final report has begun.

As mentioned previously, Sites 1–209 are concentrated in Zone II. However, due to the fact that we transected random squares in all three topographical zones of the survey territory, the new Sites 210–324 are located in all three zones.

Preliminary analyses of collected lithics and sherds from both the random squares and sites of the 2006 season indicate the cultural units present in each. We are pleased to report that the distribution of cultural-temporal units indicate a statistical similarity between the artifacts collected in the random squares and the sites which suggests an unbiased coverage of the project area.

The type of sites represented in the 2006 survey season include: agricultural towns/villages/hamlets; campsites; defensive installations; farms; lithic scatters; roads; and water catchment facilities. Sites associated with agricultural activity are by far the most numerous. Consequently, it seems that the survey territory was an important region for agricultural production, at least during some periods.

Burton MacDonald, St. Francis Xavier University

Scott Quaintance, Manhattan, Kansas

Tall al-'Umayri 2006

The 2006 field season of the Madaba Plains Project-'Umayri, our eleventh since beginning in 1984, took place between 28 June and 2 August 2006. Excavations occurred in four fields, all on the top of the mound: Field A on the west central area; Field B at the northwest corner; Field H at the southwest corner; and Field L on the southern edge. Research focused on the Late Bronze Age (Field B), early and late Iron I (Fields A, H, and L), Iron II (Fields A, B, and H), and the Hellenistic period (Field L).

The Late Bronze Age

Excavations in 2006 probed further the exceptionally well preserved LB palace/temple complex in Field B, in a quest to articulate completely the remaining walls of the structure and reach the floor. After several seasons of excavating the building, it was clear we had at least five rooms and possibly six. Two rooms of special interest this season were the large sanctuary hall which enclosed a brick-and-stone wall containing the cultic niche discovered in 2004 and the entry hall.

The sanctuary revealed two use surfaces, only the later of which was cleared, leaving the original floor for future excavation. There were not many artifacts found on this floor, aside from a plaster-lined presentation altar facing the standing stones of the cultic niche. Excavation also produced fragments of poorly fired figurines and triangular, square, and pentagonal sherds indicating cultic function. In addition, several stone benches appeared along the eastern wall of the room. The entry hall, while not grand in scale, was monumental in function. Ancient visitors had to surmount an earlier Middle Bronze Age wall before descending into the LB building to a landing. There is so much destruction debris in the rooms (about 2.5 to 3 m) that we assume there was at least a second story. The complete floor of the entrance hall is not yet excavated.

The major question of the function of the building is still debated. Some believe it to be a palace that happened to have

a cultic shrine in one of its rooms, perhaps a basement room. It would be typical of the many palatial structures around the southern Levant of this time. Others suggest that the building was primarily a temple that happened to have attached rooms to the south. Thus we are calling it a “palace/temple.” The pottery from the destruction in the building spans most of the Late Bronze Age, lacking representation only from the 13th century B.C. Because the pottery must come from the bricks in the upper walls, it dates to the construction of the building, which would probably be around the end of the 14th century or the early 13th century B.C. The destruction debris just above the upper surface contained many burned beams, some as thick as 20 cm in diameter.

The Iron I Period

Given the extent of early Iron I remains over much of the tell, we have chosen to focus our attention on what was a significant early Iron I town and have excavated these remains in every Field, especially Fields A, B, and H, across the western part of the tell. Work this season in Field A focused on several tightly defined operations in restricted spaces, resulting in only partial exposure of this major phase at the tell.

For ten years we have hoped to find a gate in Field A. The curve of the perimeter wall in this area was the first clue that a gate might be discovered. A second large wall extending parallel four meters south of the curved perimeter wall also suggested the presence of a gate. This season’s efforts confirmed that these two walls are part of a gate. Two piers extending into the passageway of the gate entrance were uncovered, but the original surface was not reached during this season.

The late Iron I period was also represented in Fields A and H. Walls and rooms from several late Iron I occupation phases, including a doorway and an oddly shaped “S-curve” wall, emerged in Field A. One late Iron I room turned out to have been battered on all walls except one, demonstrating that these walls had been dug down into earlier strata.

Field H produced both early and late Iron Age remains, centered primarily around a series of large open-air pavements. Upper phases had been paved with plaster or cobbles and yielded finds of model shrines, figurines, and statue parts. A single large stone, highly much on the top, stood at the center



View of Field A from the north, revealing the early Iron I Building A in the foreground and the curving perimeter wall, turning eastward into a gate area; both photos by D.R. Clark



Field H from the east, picturing remains of the late Iron I/early Iron II cobble surfaces and the exposure of Iron I surfaces beneath them

of the courtyard. Pottery from the floor of these cobbles suggested it had been used toward the end of the Iron I period, or perhaps the very beginning of Iron II. Penetrating beneath the cobble surfaces exposed early Iron I remains, but only part of one domestic structure.

Excavations in Field L in recent seasons have revealed the tops of large Iron I walls. These need further clarification and stratigraphic connection with Field H to better understand the early Iron I structures along the southern portion of the tell.

The Iron II Period

Only architectural fragments and limited cultural remains from the Iron II period emerged this season. Fragmentary wall remnants from Iron II buildings have been exposed in Fields A, B, and H during the project. Most of these Iron II walls were removed during the current season. It is also clear that some Iron II occupation levels with limited remains have been uncovered in Field L. Three large stones appeared with natural solution cavities, forming rope holes, and may have been used as weights for an oil press as yet undiscovered.

The Hellenistic Period

Earlier seasons in Field L uncovered extensive remains of a Hellenistic farmstead similar to those found in the hinterland regions and excavated by us in the past. This season we sought to understand the eastern and northern extent of the structure. Hellenistic remains were significantly reduced in this area. The continuation of a fine plaster surface encountered in squares farther to the west was uncovered here, but it was thin and soon disappeared in the eastern half of the squares. A drain beneath the surface in the adjacent square to the west (6K79) was found to exist only for about a meter into 6L70 before it ended. While the squares to the west yielded clear evidence for two phases of Hellenistic remains, the current two squares indicate only one. Hellenistic finds included three coins. The plan of the Hellenistic farmstead thus remains much as we projected it after last season—a series of long rooms in the first phase, and subdivided with bins in the second phase.

Douglas R. Clark, La Sierra University

Larry G. Herr, Canadian University College

The Wadi ath-Thamad Project 2006

With the support of Dr. Fawwaz Al-Khaysheh, Director-General of the Department of Antiquities of Jordan, the eighth season of excavation at Khirbat al-Mudayna was conducted between 12 June and 20 July 2006. Survey around the site and three weeks of soundings at az-Zona were also carried out. The focus of excavation at Khirbat al-Mudayna was the Moabite settlement on the mound and the Nabataean villa at the foot of the hill, along with salvage excavations at several cemetery sites and at the Roman castellum of az-Zona.

Excavation at Khirbat al-Mudayna continued in four areas of the Iron Age walled settlement: the retaining walls at the north end outside the six-chambered gate (Building 100, Field C); the pillared buildings inside the town (Fields B and D); the pillared house at the south end of the mound (Field E); and the Nabataean-early Roman house (Field N).

The goal in Fields A–C was to explore the complex stratigraphic history of four silos and their retaining walls which were constructed prior to the development of the gate area and the casemate wall system. Two retaining walls running east-west across the north slope of the mound were traced to the west to determine the manner in which they served as support walls for Silos 4 and S50. The size of these large stone-lined silos (each 2.50 m deep) suggest that they were used for storage of agricultural surpluses, although no contemporary architecture has been exposed on the mound. When they went out of use, these silos were filled with soil and Iron II pottery as a support for the plaza in front of the later Iron II gate. In the process of excavation, a semi-circular feature was exposed at the northern edge of the artificial terrace formed by the retaining walls. This feature appears to be part of the support structure for the retaining walls themselves.

Previous excavation inside the town revealed a series of pillared buildings (B200 [north] and B205 [central]) which shared a party wall. Within these buildings were more than 150 loom weights and other textile production tools and installations. This season, a third pillared building (B210 [south]) was partially exposed. On the west there is an entrance ramp and an indirect access to the middle room of three parallel rooms separated by pillared walls with basins in place between the pillars. In the process of excavation, it became clear that there had been two phases of use in Building 210, which shares its northern wall with Building 205. During the first phase of use, a large cellar was cut into the underlying bedrock of the northern room. This cellar was subsequently covered, but the building continued in use and at this time the party wall between the two buildings was replaced. Finds from the final occupation of Building 210 include a large basalt saddle quern, a basalt millstone, spindle whorls, and an ash-stained limestone altar.

Additional work was carried out in the central north-south street which separates the three pillared buildings on the east from the western half of the site. As the level of this street rose over time, the inhabitants built ramps with stairs alongside the outer wall of each pillared building, leading up to the street. In the debris of the street, we recovered a horse and rider figure and 11 zoomorphic figurine fragments, along with four small

limestone altars. Along the west side of the street, a new excavation area (Field D) was opened which yielded a long-room building (B300) with relatively massive walls. It differs from the pillared building in that its walls are all boulder-and-chink construction. The floor of this room was covered with collapsed ceiling beams but contained few other finds suggesting that it was looted or abandoned in antiquity.

At the south end of the site further exploration was carried out in Building 400. Here too, there is a room with a line of pillars and limestone basins. Beside the pillars was a cluster of unfired clay loom weights and a considerable amount of mendable pottery. To the east was another room that served as a kitchen; here there was a very large basalt saddle quern built into a bench or working platform alongside a clay oven. Of special importance was the discovery beside the oven of the head and shoulders of a limestone male figure (now in the Madaba Museum), a miniature stone figurine, basalt hand grinders and millstones, chert pounders, glycymeris shells, and an iron arrowhead.

Excavation resumed in the northern half of a Nabataean house (B800) located at the foot of the mound in Field N. Several new squares were opened to clarify the area of the entrance vestibule with its large lintel stone. This vestibule opens into a large courtyard which contained two clay ovens. Additional work was carried out along the north wall of the complex in order to clarify the plan of the building. Pottery dating to the 1st century A.D. is not abundant but it does include sherds of terra sigillata. Previously, four Thamudic inscriptions incised on doorframes were recovered in this house. To the south in Field L, documentation and excavation continued in order to clarify the relationship of a series of water management walls to the Nabataean-early Roman period reservoir (B700) excavated in 2005.

The project enjoyed the support of Mr. Ali al-Khayyat, Director of the Madaba District, and of Mr. Husam Hizajeen and Mr. Zuhair Zubi, representatives of the Department of Antiquities. The 2006 season was sponsored by Wilfrid Laurier University and funded by the Social Sciences and Humanities Research Council of Canada and the University of Pittsburgh Research Development Fund. The team included 48 scholars, students, and volunteers from Canada, the United States, Austria, Great Britain, Jordan, Denmark, and the Netherlands.
P. M. Michèle Daviau, Wilfrid Laurier University

Early Roman/Nabataean Period Mummified Burials from Southern Jordan

In January 2006, salvage excavations directed by Hani Falahat of the Department of Antiquities recovered five partially robbed burials, four from three different cemeteries along Wadi Mudayfa'at (MDA, MDB, and MDC), and one from another cemetery adjacent to Wadi Abu Khasharif (WAK). The lack of an identifiable settlement in the vicinity of the cemeteries suggests that they may have been used as regular burial grounds by nomadic groups. A planned archaeological survey of the cemeteries' environs should clarify this issue. Conditions at the sites led to excellent preservation of textiles



MDC Burial 1 (25-29 year old possible female) with extensive hair and scalp preservation; both photos provided by M.A. Perry

and leather in addition to mummified soft tissue and hair on some of the human remains. Two burials, MDB Burial 1 and MDC Burial 1, date to the 2nd century A.D. based on ¹⁴C analysis and assessment of the material culture; similarities between the burials and artifacts imply that all recovered burials date to approximately the 2nd century as well.

Megan Perry and Abdel Halim al-Shiyab began analysis of the five burials during February 2006 and continued their assessment in June 2006. The excavated graves contained the remains of a 7 (\pm 24 months) year old child (MDA Burial 2), a well-preserved 50+ year old male (MDB Burial 1), a 25–29 year old possible female (MDC Burial 1), a 16–18 year old individual (WAK Burial 1), and an individual of unknown age and sex, of which only a few strands of hair were recovered (MDA Burial 1). Most of the individuals, with the exception of MDB Burial 1, had signs of intermittent childhood stress from approximately 2–6 years of age in the form of dental enamel hypoplasias (DEHs). Extensive dental wear in the older male (MDB Burial 1) had revealed the pulp cavity of three teeth in the right upper jaw due to infection, resulting in the formation of two abscesses. Additionally six of his left ribs and four of his right ribs display partially healed fractures that apparently derived from two separate trauma episodes, the first fracturing the front side of the left ribs and the second



MDB Burial 1 (50+ year old male) with extensive soft tissue and hair preservation and remnant of burial shroud/tunic adhering to the face

fracturing the back portion of his lower left and right ribs. The 25–29 year old possible female (MDC Burial 1) and 16–18 year old (WAK Burial 1) had extensive pathological lytic lesions in their vertebrae, possibly from an unidentified infectious disease. Two individuals (MDA Burial 2 and MDC Burial 1) also displayed periosteal lesions possibly related to a non-specific infection.

The extremely well-preserved nature of these burials indicates that they can elucidate the health and quality of life, migration patterns, diet, and culture of nomadic individuals in Jordan during the Roman period. MDA Burial 2, MDB Burial 1, and MDC Burial 1 all contain preserved soft tissue and hair that can be used for isotope analyses of diet and migration in addition to ancient DNA analysis. Assessment of the textiles and leather recovered with the burials will also illuminate these individuals' economic and cultural ties with regional groups and their transhumance patterns.

Megan A. Perry, East Carolina University; Abdel Halim al-Shiyab, Department of Antiquities/Yarmouk University; and Hani Falahat, Department of Antiquities

The Early Islamic *Qasr* and Mosque Complex at Humayma: its Eighth-century Context and Agricultural Viability

My research in Jordan and Syria yielded results that contextualize the *qasr* (large residence)-mosque complex at Humayma (in south Jordan) among other Umayyad period (661–750 A.D.) *qasur* located in arid zones, demonstrating their potential function as estates producing surplus agriculture during the first half of the 8th century. Literary sources mention that the Abbasid family inhabitants of the *qasr* at Humayma tended a grove of 500 olive trees during the decades before assuming control of the caliphate in 750 A.D. Yet Humayma and many other *qasur* are situated in isohyets of 50–200 mm mean annual rainfall, environments that are typically challenged to grow even grains and certainly challenged to provide the at least 10 cubic meters of water per year that each olive tree requires. Developing a potential agro-economic function of so many of the Umayyad period *qasur* (the so-called desert palaces) seeks to illuminate what has confounded scholars for more than a century: why were they located in arid zones?

The study primarily consisted of assessing the micro-environments of each Umayyad period *qasr* site in Jordan and Syria that receives less than 200 mm annual rainfall, evaluating the natural 'endogenous' water resources (e.g., local wadi flows and runoff water) and man-made installations for collecting and deflecting the water to agricultural purpose (e.g., dams, channels, reservoirs) as well as crop processing installations. The assessment was made from study of excavation and survey reports, study of aerial photographs, conferring with local water management specialists, and site visits.

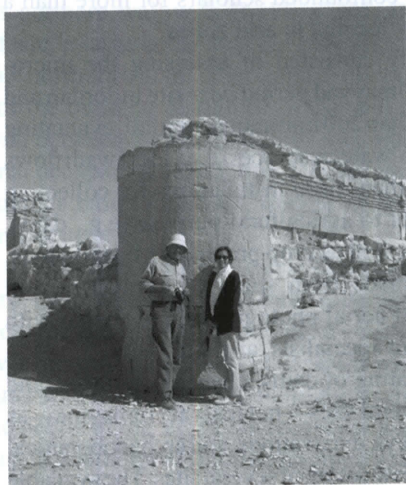
The inconclusive dating of dams, channels, terraces, and agricultural fields at several sites—not least at Humayma—as well as incomplete surveys, excavations, and archaeobotanical analyses prevented full evaluation of several sites. The available

data do, nonetheless, make it possible to state that agricultural production expanded in arid regions east of the Levantine highlands during the Umayyad period at 14 (as many as 21) rural *qasr* sites. At least seven were newly established sites (or refashioned/reanimated after a long hiatus of occupation) and cultivation (or intended cultivation) was (was to be) developed on a large scale (Gharbi/Harbaqa, Ma'an, Qastal, Qudaym, Sharqi, Tuba, and Umm al-Walid/Qanatir). New cultivation was to be pursued for at least moderate yield at six new sites ('Amra, Azraq al-Shisan, Mshash, Mshatta, Sil, and Zabib). Crop growing expanded at at least one site (Hallabat) already under cultivation, and probably continued (if not expanded) at five others (Bakhra', Bayda, Faddayn, Humayma, and Jilat). Two major water collection sites (Burqu' and Says) may have dedicated some of the resource to tillage. Grains, grapes, and olives were among the Umayyad period crop repertoire at the sites.

Previous library research at Harvard, thanks to an Aga Khan Program Research Fellowship, allowed me to consult the Arabic sources which relate that the Abbasids were among other elite families significantly interested in agriculture in the Hijaz (NW Arabian Peninsula). There the Caliphate facilitated land reclamation in the desertous hinterlands of oases in part to make land grants to the many veterans of the conquests and to feed an expanding local population. Expertise for developing arid zones came largely from slaves and clients (*mawali*) brought after the conquests from east of the Euphrates, and much of the capital came from booty collected during the conquests.

The detailed qualitative and quantitative evaluation of *qasr* sites coupled with study of written materials, allows valuable baseline reassessment of 21 *qasur* established in the Levantine steppe and semi-desert during the Umayyad period. This project affects interpretation of why, who, and how many of the rural *qasur* were established in arid areas, demonstrating that one intention was to cultivate the land on a significant scale and that some patrons were not members of the reigning Umayyad family, as well as positing that some of the expertise in arid farming and capital for it came from outside the region.

Rebecca M. Foote, Aga Khan Program, Harvard University, National Endowment of the Humanities Fellow, ACOR



Ghazi Bisheh and Rebecca Foote at Qasr al-Hayr al-Sharqi, in Syria; photo provided by the author

Nancy Lapp Retires as Chair of the ACOR Fellowship Committee

Nancy Lapp retired from the ACOR Board of Trustees on 30 June 2006 after many years of distinguished service. Nancy will be well remembered for chairing the ACOR Fellowship committee for 18 years, from 1988 until her retirement. Nancy is also an extraordinary scholar who contributed in many ways to Near Eastern archaeology.

Nancy received her B.S. from the University of Cincinnati in 1952 and an M.A. from McCormick Theological Seminary in 1954. She then entered the doctoral program in Near Eastern Studies at Johns Hopkins University, where she studied under William F. Albright in 1956–58. Her graduate career was interrupted by marriage to Paul Lapp, a distinguished young scholar with whom she would collaborate for the next decade while having four children. Between 1960 and 1968 she and Paul were resident in Jerusalem at the American School of Oriental Research (now the Albright Institute of Archaeological Research). Paul and Nancy conducted excavations at a number of sites in the West Bank, including Beth-zur, Tell Balatah, and Ta'anach, as well as 'Araq el Emir, Jordan. Nancy developed an extraordinary knowledge of pottery during these years.

After Paul's tragic and untimely death in 1969, Nancy was faced with the daunting task of both raising their children as well as seeing the results of their prodigious field work through to publication. She not only accomplished these feats but also launched new field work and contributed to both ASOR and ACOR. In 1970 she became Curator of the Bible Lands Museum at Pittsburgh Theological Seminary, a position she would hold for thirty years. She also served with Walter Rast and Thomas Schaub on the Expedition to the Southeast Plain of the Dead Sea, which excavated Bab edh-Dhra and other Early Bronze Age sites. This research resulted in an impressive list of publications, including *Discoveries in the Wadi ed-Daliyeh*, *AASOR* 41 (1974); *The Excavations at Araq el Emir*, Vol. 1, *AASOR* 47 (1983), and her history of ACOR in *An ASOR Mosaic: A Centennial History of the American Schools of Oriental Research* (2001). Nancy also served as an editor for the *Annual of the American Schools of Oriental Research* from 1996 to 2002.

As chair of the ACOR fellowship committee (1988–2006) she made another great contribution to scholarship. During these years she presided over an extraordinary period of growth in the fellowship program. In 1988, ACOR offered a few small private fellowships, none endowed, plus an annual fellowship from the National Endowment for the Humanities (NEH), temporarily lost in 1990. Through the efforts of various ACOR directors, board members, and other friends, the fellowship program was not only revitalized but enormously expanded.

In 1989, ACOR inaugurated the Jennifer C. Groot Fellowship, the first of several privately endowed fellowships honoring scholars closely associated with ACOR. These smaller fellowships regularly provide travel or research funds to undergraduate and graduate students. Beside the Groot, these fellowships now include the Harrell Family Fellowship, the Kenneth W. Russell Fellowship, the Pierre and Patricia Bikai Fellowship, and the James A. Sauer Fellowship. Several of



Nancy Lapp; photo provided by R.M. Brown

these awards are open to Jordanian students on a rotating basis. Recent gifts have established three new fellowships: the Bert and Sally de Vries Fellowship, the Samson/MacDonald Fellowship, and the Frederick/Wenger Fellowship. By the late 1990s due to the large number of applications Nancy Lapp decided to create a separate subcommittee, chaired by the author, to review these applications.

Beginning in 1991–92, ACOR began offering fellowships funded by various agencies of the U.S. government. The first were funded by the United States Information Agency (USIA), including an Arabic immersion language program. Although the greatest number of these fellowships were awarded to candidates in archaeology and other fields within ACOR's traditional mission, they also broadened the community of ACOR scholars by including work in political science, economics, modern history, and contemporary Arabic language. The USIA awards later became the CAORC (Council of American Overseas Research Centers) fellowships, which continue to this day. More than a dozen fellowships are typically awarded annually to students and scholars at different stages in their careers. The CAORC awards now constitute the largest number of ACOR fellowships each cycle, but they are dependent upon annual federal grants. In 1997, the NEH post-doctoral fellowship, ACOR's most prestigious award, was restored.

Private foundations have augmented ACOR's fellowship program in recent years. In 1996 the Samuel H. Kress Foundation began funding an annual fellowship to support dissertation research by a graduate student in art history and related fields. In 2004, ACOR began offering several resident fellowships to central and eastern European scholars through a program funded by the Andrew W. Mellon Foundation and administered through CAORC.

The extraordinary growth in the fellowship program obviously meant an enormous increase in work, both for the staff of ACOR in Amman as well as its Boston office, ably administered since 1996 by Donald Keller. Although the heaviest work was during the spring evaluation period, Nancy worked tirelessly throughout the year to deal with various issues relating to the fellowship program.

Perhaps most gratifying to Nancy and other committee members is the professional development of many former fellows. Some gained their first experience on a field project in

Jordan through an ACOR travel award, and others conducted dissertation research while residing at ACOR. Many now direct their own field projects and conduct research through senior ACOR awards, such as the CAORC post-doctoral fellowship. In short, the ACOR fellowship program, under Nancy's efficient and far-sighted leadership, has nurtured an entire generation of scholars.

Although Nancy will be greatly missed, the work of the fellowship committee will continue under her successor as chair, Øystein (Sten) LaBianca. Given her outstanding board service, she was elected a Trustee Emerita at the ACOR Board Meeting in Amman in June 2006.

*S. Thomas Parker, North Carolina State University,
Member, ACOR Fellowship Committee*

ACOR Trustees Meet in Amman

The special week in Jordan for overseas Board members started with the party held at ACOR on June 6th in honor of Pierre and Patricia Bikai and to welcome me as the new director. Some two hundred people attended, and they represented many facets of the world of the center and included most of the Jordanian board members. H.R.H. Prince Raad bin Zeid presented on behalf of H.M King Abdullah II the Medal of Independence, 2nd degree, to Pierre and the King Hussein Medal of Distinguished Service, 2nd degree, to Patricia. They also received from Arte Joukowsky as a testimonial from the Board a commemorative plaque with ACOR's Distinguished Service Medal. Many members of the Department of Antiquities and academic colleagues from Jordan and abroad were able to attend this memorable gathering.

The day of the actual board meeting, June 7th, also encompassed a visit led by Patricia Bikai to the *Out of the Desert* exhibit at the Darat al Funun displaying the results of her excavations at Beidha and Pierre's work at Rajl. After lunch at ACOR, the meeting took place and board members received the freshly printed *ACOR Newsletter* featuring the Bikais. Several special guests were with us that week, including Mary Ellen Lane, the Executive Director of CAORC (Council of American Overseas Research Centers). That evening a large number of ACOR trustees and guests attended the Petra



Three successive directors of ACOR: Bert de Vries, Barbara Porter, Pierre Bikai; photo by C.A. Tuttle



Board Members present at ACOR for June 7th meeting. First Row (left to right): H.R.H. Prince Raad bin Zeid, A. Joukowsky, N. Köprülü, B. Porter; Second: N. Coinman, W. Kavar, L. Sharaf, M. Asfour; Third: J. Geniesse, S. LaBianca, T. Parker; Back Row: T. Christensen, H. Forshey, J. Oleson, B. de Vries, M. Ibrahim, and R. Old; photo by C.A. Tuttle

National Trust co-sponsored production of *Abu Hassaan* by Carl Maria von Weber, marking the first time an entire opera was performed in Jordan.

June 8th and 9th encompassed a field trip to the south. On the first day, Petra was visited and Martha and Arte Joukowsky gave a detailed explanation of the Great Temple excavations. Chris Tuttle led the board members through the siq, and there was lively discussion on the part of many experts. The next day began with a short visit to Patricia's site at Beidha. The rest of the day was spent in Aqaba and featured a tour by Tom Parker of his work at Roman Ayla, including the structure identified as an early church. In its apse, the Joukowskys were serenaded to honor their 50th wedding anniversary, which was that very day (see front cover photo). A special treat organised by the Bikais was a glass-bottomed boat trip over the coral reefs. A marvelous lunch was then hosted by Patricia and Pierre at their new home in Tala Bay. The convivial gathering was a reminder of the many long and enduring friendships that abounded and the tradition of hospitality fostered in Jordan and thus a suitable ending to the Board festivities in Jordan.

Barbara A. Porter, ACOR Director

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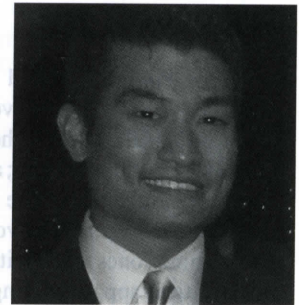
National Endowment for the Humanities Post-Doctoral Research Fellow:

Rebecca M. Foote, Islamic Art Society; From Residence to Revolutionary Headquarters: The Early Islamic Qasr and Mosque Complex at Humayma and its Eighth-century Context
The Andrew W. Mellon Foundation East-Central European Research Fellow:

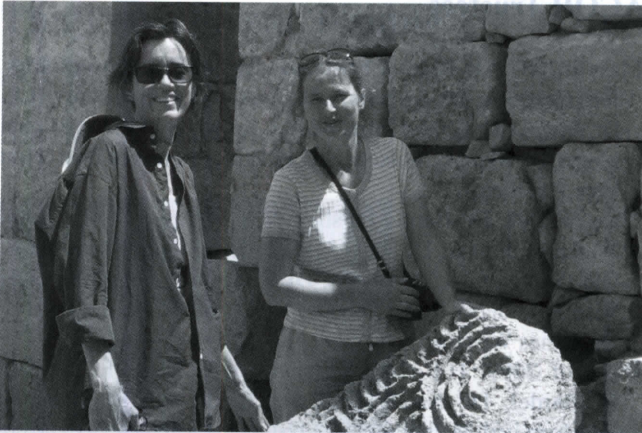
Maria Hajnalova, Slovakia Academy of Sciences; Food Economies at the Roman Frontiers: Comparison of Central Europe and Jordan



Sherry Robison



Sean Yom



Rebecca Foote and Maria Hajnalova at Qastal

Council of American Overseas Research Centers (CAORC) Senior Fellow:

Nancy R. Coinman, Iowa State University; Settlement Patterns, Subsistence and Technological Organization in the Late Pleistocene: Three Upper Paleolithic Sites in the Wadi al-Hasa, West-Central Jordan



Maysoun Nahar and Nancy Coinman at Tell as-Sawwan

CAORC Fellows:

Sherry Robison, North Carolina State University; The Christianization of the Kerak Plateau during the Byzantine Period

Sean Yom, Harvard University; The International Dimensions of Durable Authoritarianism: Crisis and Re-equilibrium in the Arab World

James A. Sauer Fellowship:

Ahmad Al-Momani, Yarmouk University; Wadi Musa Archaeological Mapping

For information on ACOR's fellowships contact:

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tel.: 617-353-6571; e-mail: acor@bu.edu; www.bu.edu/acor



Ahmad Al-Momani (right) with Abu Ahmad at Khirbet Salameh in front of ACOR

Donors to ACOR (January–June 2006)

General Donations were made by: Jon W. Anderson; Patricia and Pierre Bikai; Martha Boling-Risser in honor of her parents, Robert and Jean Boling; Mr. and Mrs. Carroll Brown; Thomas Chohnoky in honor of Denise Schmandt-Besserat; Ray Anita and Walter Hemphill in honor of Barbara A. Porter; The Joukowsky Family Foundation; Leila Sharaf; Donald Wimmer

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Sally and Bert de Vries Fellowship Endowment: Sally and Bert de Vries

The MacDonald/Sampson Fellowship Endowment: American Schools of Oriental Research, Canada (CASOR), courtesy of Debra Foran, Treasurer

The 10th International Conference on the History and Archaeology of Jordan (ICHAJ 10): P. M. Michèle Daviau; Sally and Bert de Vries; Anne-Marie and Jeffrey A. Jannuzzo; Billy W. Libby; John P. Oleson

Donations of Books and Journals were received from: AIA: American Institute of Archaeology; Björn P. Anderson; Jon W. Anderson; Pierre M. Bikai; Edoardo Borzatti von Löwenstern; Robin M. Brown; Bert de Vries; Deutsches Orient-Institut im Verbund der Stiftung Deutsches Übersee-Institut; Rebecca Foote; Maria Hajnalova; Jutta Häser; J. Brett Hill; Willy Jansen; Artemis Joukowsky; Martha S. Joukowsky; Institut Français du Proche-Orient, Amman; Zeidan Kafafi; Chrysanthos Kanellopoulos; Kimberly Katz; The Khalid Shoman Foundation-Darat al Funun; Thomas E. Levy; Yannis Meimaris; Lorenzo Nigro; John Oleson; S. Thomas Parker; Pontifica Universidad Católica Argentina; Barbara A. Porter; Marsha Pripstein Posuney; Jerry and Dolores Rose; Jane Taylor; M. François Villeneuve; Peter Warnock; Brannon Wheeler; USAID, Jordan; Fawzi Zayadine; Michael Zimmerman.

Publications

The Petra Papyri I, edited by J. Frösén, A. Arjava, and M. Lehtinen (2002). This first volume begins with the historical and archaeological context of the papyri; conservation; an outline of the dating systems in them; and a study of the family of the main character in the texts. The texts are documentary and written in Byzantine Greek. The volume includes 11 main documents and 5 minor ones, each with an introduction, Greek transcript with critical apparatus, English translation, and commentary. This large format (33 x 25 cm), cloth-bound volume has 192 pages including 26 plates. \$80.

The Petra Church, by Z. T. Fiema, C. Kanellopoulos, T. Waliszewski, and R. Schick (2001). Report on the church excavated by ACOR in Petra. With more than 700 illustrations, the volume contains reports on all aspects of a project that excavated what was probably the cathedral of Petra. This large format (33 x 25 cm), cloth-bound volume has 464 pages, 36 in full color. \$150.

The Mosaics of Jordan, by Michele Piccirillo (1992). Large format, cloth-bound volume includes 303 pages in full color with 824 illustrations, plans, and aerial photographs. \$175.

The Great Temple of Amman: The Architecture, by Chrysanthos Kanellopoulos (1994). The architecture of the temple that was excavated and partially restored by ACOR. Large format, cloth bound. \$80.

JADIS: The Jordan Antiquities Database and Information System: A Summary of the Data, edited by Gaetano Palumbo (1994). Basic information on nearly 9,000 archaeological sites from all periods, plus 117 maps. This 453-page, hard-bound volume is xerographically reproduced. \$40.

The Great Temple of Amman: The Excavations, by Anthi Koutsoukou, Kenneth W. Russell, Mohammad Najjar, and Ahmed Momani (1997). Description of the 1990-93 excavations. This hard-bound volume has 180 pages and 3 fold-out plates. \$65.

Madaba: Cultural Heritage, edited by Patricia M. Bikai and Thomas A. Dailey (1996). Catalogue of the remains from the Early Bronze Age through late Ottoman vernacular houses (113 pages, paperbound). Over 150 illustrations, five in color. Includes a separate large map. An Arabic translation is available upon request at no additional cost. \$35.

Ancient Ammonites & Modern Arabs: 5000 Years in the Madaba Plains of Jordan, edited by Gloria A. London and Douglas R. Clark (1997). Life across the centuries in the area excavated by the Madaba Plains Project. \$27.

The 150th Anniversary of the United States' Expedition to Explore the Dead Sea and the River Jordan, by Robert E. Rook (1998). An assessment of the Lynch expedition in 1848. Hard-bound volume of 32 pages. Many reproductions of Lynch's illustrations, including his three maps. \$20.

Madaba Map Centenary 1897-1997, with assistance from ACOR (Jerusalem 1999). Proceedings of a conference on the Byzantine mosaic map. This well illustrated hard-bound volume has 278 pages and is available for \$125.

All prices include shipping.

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June 2006 Board Meeting

The ACOR Board of Trustees held their annual spring meeting in Amman on June 7, 2006. Two retirees, Nancy Lapp and Judy Zimmerman, were elected Trustee Emerita. Newly elected Board members are William G. Bardel, Nancy R. Coinman (as of September 2006), Moawiyah M. Ibrahim, and Hazem Malhas. Neil Silberman stepped down having served since 2000. Donald O. Henry's recent retirement from the board was formerly acknowledged at the meeting.

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Trustee Emeritae: Mrs. Nancy Lapp and Mrs. Judy Zimmerman

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