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Front cover photo: A rare day with cloud formations over the central valley of Petra, Jordan. The row of so-called Royal Tomb façades in the background. Photograph by Qais Tweissi.

About the Photographer: Qais Tweissi is a native of Wadi Musa, the modern gateway town to the World Heritage site of Petra in southern Jordan. He is an artist, photographer, draftsman, graphic designer, and conservation technician. He has worked with many archaeological missions in Petra and also with designing and installing cultural heritage displays for The Jordan Museum. He is currently a core team member of the Temple of the Winged Lions Cultural Resource Management Initiative.

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THE *JOURNAL OF EASTERN MEDITERRANEAN ARCHAEOLOGY AND HERITAGE STUDIES* (*JEMAHS*) is a peer-reviewed journal published by The Pennsylvania State University Press. *JEMAHS* is devoted to traditional, anthropological, social, and applied archaeologies of the eastern Mediterranean, encompassing both prehistoric and historic periods. The journal's geographic range spans three continents and brings together, as no academic periodical has done before, the archaeologies of Greece and the Aegean, Anatolia, the Levant, Cyprus, Egypt, and North Africa.

As the journal will not be identified with any particular archaeological discipline, the editors invite articles from all varieties of professionals who work on the past cultures of the modern countries bordering the eastern Mediterranean Sea. Similarly, a broad range of topics will be covered including, but by no means limited to:

Excavation and survey field results;
Landscape archaeology and GIS;
Underwater archaeology;
Archaeological sciences and archaeometry;
Material culture studies;
Ethnoarchaeology;
Social archaeology;
Conservation and heritage studies;
Cultural heritage management;
Sustainable tourism development; and
New technologies/virtual reality.

Appearing four times a year in February, May, August, and November, the journal will engage professionals and scholars of archaeology and heritage studies as well as non-practitioners and students, both graduate and undergraduate.

In addition to combining traditional and theoretical archaeological data and interpretation, the journal's articles may range from early prehistory to recent historical time periods. It also aims to publish accessible, jargon-free, readable, color-illustrated articles that will be informative for professional and non-professional readers. The journal does not publish unprovenanced artifacts purchased on the antiquities market or objects from private collections.

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All correspondence and digital submissions should be sent to: Dr. Ann E. Killebrew (aek11@psu.edu). By submitting their work to *JEMAHS*, authors agree to editorial modifications of their manuscripts that are designed to help *JEMAHS* fulfill its mission.

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For complete author submission guidelines, please visit: http://www.psupress.org/journals/jnls_JEMAHS.html

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FROM THE EDITORS

Sandra A. Scham and Ann E. Killebrew

Welcome Readers!

On behalf of the editors and editorial board of the *Journal of Eastern Mediterranean Archaeology and Heritage Studies*, we are excited to present you, our readers, with this inaugural issue. Our goal for the journal is to make it accessible, wide-ranging, inclusive, and informative—and to cover the eastern Mediterranean past and the cultures influenced by the eastern Mediterranean in a way that has not been done before. The submissions for this first issue, we believe, will show that this admittedly ambitious agenda is an achievable one.

Our initial Forum section features a discussion by experts in the field of publishing online and in print on a provocative topic of great interest to scholars—open access. In addition, you will find on the following pages a unique and timely discussion about the progress being made in preserving the Temple of the Winged Lions at the legendary site of Petra in Jordan; an exploration of the Nabataean Incense Road; an insightful examination of the significance of Khirbat al-Mafjar for the Palestinian past; and an illustrated narrative about the use of archaeological sites in the eastern Mediterranean as backdrops for visits by political leaders. Finally, a thorough and enlightening review article about the latest volume on the Tall Jawa excavations introduces our Book Review section.

For those of you who work in this region as archaeologists, cultural heritage specialists, or in any other field that explores its past, we hope that you believe, as we do, that a multi-disciplinary journal devoted to encouraging dialogue and cooperation in this region is long overdue—and we also hope that you will consider submitting articles to us in the future. Enjoy this stimulating prologue to what we hope will be a continuing relationship and please feel free to share your thoughts and opinions about the journal with us.

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PRESERVING PETRA SUSTAINABLY (ONE STEP AT A TIME)

Christopher A. Tuttle

The Temple of The Winged Lions Cultural Resource Management Initiative as a Step Forward

ABSTRACT

A mystery that still needs to be solved for the World Heritage site of Petra, Jordan is how to sustainably preserve it for the future. This article reviews some of the many complex issues faced in efforts to protect this important cultural heritage resource. It then presents a summary of the excavated Temple of the Winged Lions, a 2,000-year-old Nabataean temple in the ancient city center, which is the focus of a new initiative that is attempting some first steps forward toward helping to solve this mystery. The Temple of the Winged Lions Cultural Resource Management Initiative is introduced and some of the project's subcomponents that are endeavoring to establish a holistic, grassroots approach to cultural resource management in Petra are presented.

> *. . . and the antiquities of Wady Mousa will then be found to rank amongst the most curious remains of ancient art.—J. L. Burckhardt ([1822] 1983: 421–22)*

On August 22, 1812, the Swiss explorer Johann Ludwig Burckhardt (a.k.a. John Lewis and Jean Louis), traveling in disguise as Sheikh Ibrahim ibn Abdullah, became the first European on record to enter the ancient city of Petra since the German pilgrim Thietmar in the year 1217 (Fig. 1) (Thietmar 1857). As a result of this visit, his fresh knowledge of the geography, and his familiarity with literary sources and oral traditions about the history of the region, Burckhardt was the first to "re-identify" the site as Petra. Although his own account of this exploration would only be published posthumously a decade later, word spread quickly around the world about the visit because of his diligence in maintaining a detailed correspondence of his travels. Other travelers and scholars soon followed and quickly began producing publications about the ancient city. These travel accounts and studies sparked the world's enduring fascination with the mysteries and wonders of Petra.

Petra was never truly a "lost" city as it has often been portrayed in different media. When this description is used, it reflects the contemporary cultural perspective of Europe and the Americas in the nineteenth century. At that time, the veracity of the city's existence and its location were still "lost" to these regions of the world. This was largely due to the political and religious realities of the times, which frequently made it difficult for ready congress with or travel between the predominantly Christian 'West' and the Islamic 'East.' Burckhardt was not alone in his need to learn the language and cultural traits of the region sufficiently to masquerade as a local in order to safely travel in the region. U. J. Seetzen, a German explorer, also undertook such a masquerade for his journey in 1805–1806. When he heard about the ruins in Wadi Musa but was not able to visit them, he

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FIG. 1
The dome of the Islamic shrine to the Prophet Aaron (Harun) on Jabal Harun in the early morning. Burckhardt (Sheikh Ibrahim) was permitted to enter Petra while en route to make a sacrifice at this shrine which was built in the Mamluk period. (Photo by Q. Tweissi.)

could only speculate that these might be Petra (Seetzen 1854–1859 III: 16–19). All of the reports produced by these early travelers to the site provide accounts of their encounters with local people who were still engaging with the site. However, since there is significant variance between the different narratives with respect to both the identities of these peoples and the forms of their engagement with the site, it can be difficult today to gain a clear understanding of this part of Petra's history.

What is clear is that both the archaeological and historical evidence available to us today demonstrate that local populations have continuously lived in and around the area of the ancient city. Petra's status as a 'city' may have begun to decline in the seventh century CE, following the decisive defeat of the Byzantine imperial forces by the Islamic armies of the Rashidun Caliphate at the Battle of Yarmouk in 636 CE, but the site was never fully abandoned. Local peoples have engaged with the site in a diverse range of ways throughout the centuries, including inhabiting the rupestral monuments, grazing livestock, farming, and mining the ruins for resources.

Two hundred years after Burckhardt, fascination with Petra continues to grow, now encompassing an even wider range of interests than the antiquarian focus on the rupestral monuments that generally motivated the early travelers and explorers (Fig. 2). History and archaeology are still the primary foci for many, but today much

of the research conducted in Petra seeks to gain a broader diachronic understanding of human interactions with the site that goes beyond the dominant visible remains from the Hellenistic through Late Antique periods. The history of human engagements with the landscape, both within and around Petra, span millennia and includes evidence from many different periods (Paleolithic, Neolithic, Chalcolithic, Bronze and Iron Ages, Hellenistic–Roman [Nabataean], Byzantine, the Middle Ages, as well as Early, Middle, and Late Islamic). At the bicentennial of Burckhardt's visit, we now know that the stunning rock-carved and constructed monuments of the Nabataean, Roman, Byzantine, and medieval periods, represent only a small part of the site's human history.

Petra lies nestled in a rugged terrain of intersecting sandstone mountains and valleys in an arid region of southern Jordan. The landscape is both breathtaking and a rich source of information. The site offers a kaleidoscope of vistas as the light changes throughout the day, creating a profound and lasting aesthetic experience for most visitors. The nature of the topography, which includes numerous exposed sections of the rock formations, also provides geologists with a wealth of information about our planet (Fig. 3) (Barjous 1989, 1992). Despite the apparent aridity of the site, biodiversity abounds in the region, affording still another avenue for exploration and fascination (Fig. 4) (Ruben and Disi 2006). All of these natural resources combined contribute to the

FIG. 2
A row of Nabataean tomb façades—some of the rupestral monuments that have fascinated visitors for two hundred years. (Photo by Q. Tweissi.)

FIG. 3
A view of Petra's theater, along with some tomb complexes and domestic caves that demonstrates the integration of the city's monuments with the geology and topography. (Photo by Q. Tweissi.)

FIG. 4
Blue Agama lizards (*Pseudotrapelus sinaitus*) are some of the most frequently glimpsed animals in Petra. (Photo by Q. Tweissi.)

environmental aspects of Petra's outstanding universal value as a UNESCO World Heritage site.

All the evidence available to us today suggests that Petra was an economic powerhouse in antiquity. Much of the city's wealth was garnered through activities related to trade. We still do not fully understand today the mechanics of how the trading worked or the full range of means by which it generated wealth. It is very likely that revenues were generated not only by the direct sale of transported wares, but also through at least customs duties and protection fees. These incomes were also eventually augmented through the Nabataeans' own production of goods from the raw materials arriving with the caravans (Fig. 5). Whatever the sources, it is clear that between the late first century BCE until well after the Roman annexation of the

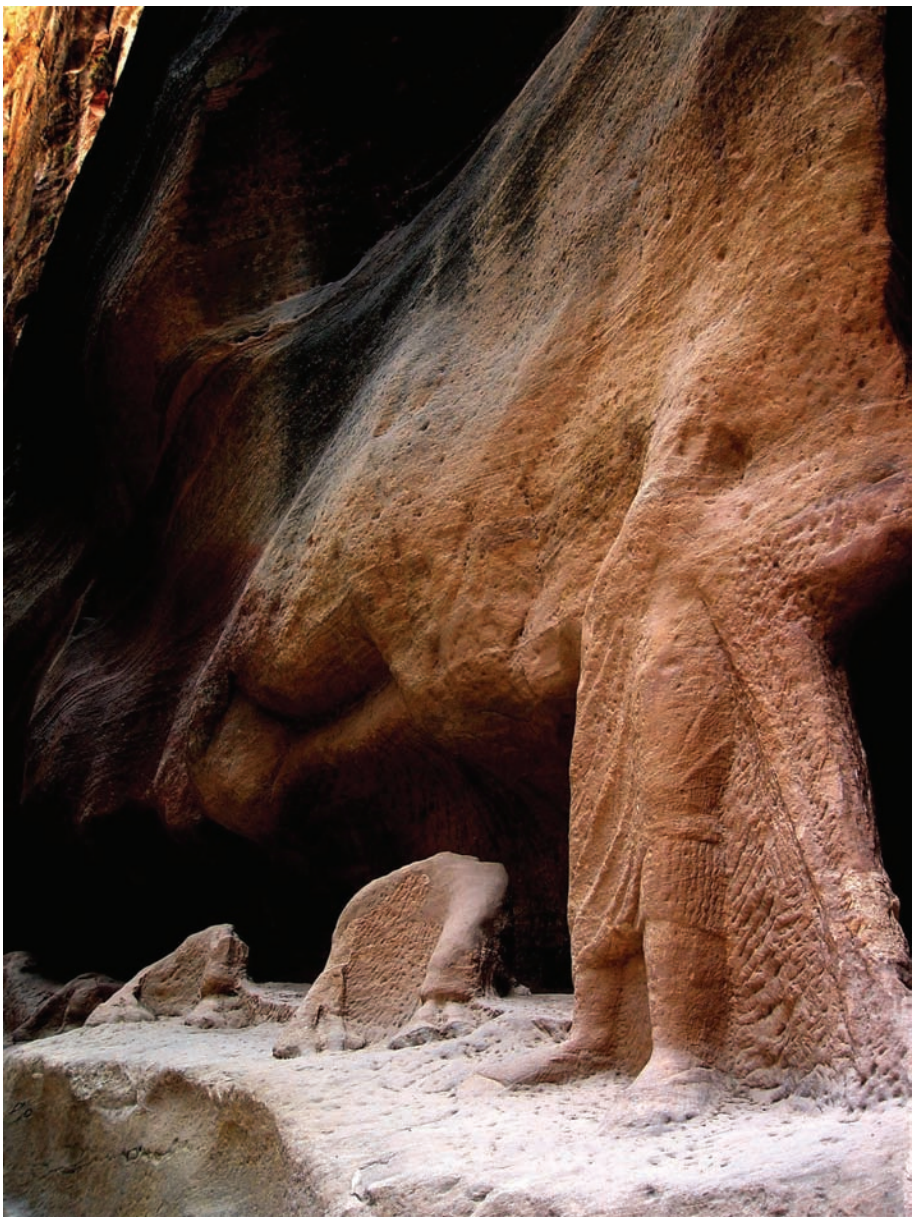

FIG. 5
Carving of a cameleer and a camel from a relief in the Siq at Petra. (Photo by Q. Tweissi.)

kingdom (106 CE), the generated wealth that came to Petra was substantial.

When Petra was the capital of their kingdom,[1] the Nabataeans controlled most, if not all, of the overland trade routes bringing luxury goods across the sands of Arabia to Mediterranean ports and commercial centers in the areas of modern Syria and Iraq. The most famous of the wares transshipped were incenses, primarily frankincense and myrrh, resins which derive from trees that grow only in the southern areas of the Arabian Peninsula and some regions on the east coast of Africa. Incenses were some of the top moneymakers in antiquity due to the demand for them—given that most religious facilities required them for rituals and offerings, and the burning of incense was also frequently a part of other rites, such as funerals and weddings (Fig. 6).

These trade routes would also have borne other costly goods that came onto the Arabian Peninsula from Africa, India, and points further to the east: these goods probably included dyes (especially indigo), specialty woods, ivory, gems, and precious metals. Spices were also very important commodities brought to the west from India and further east by overland trade. We cannot be certain today about all of the spices that may have been involved (Miller 1969; Keay 2006), but we do know about the peppers. In the early first century CE, at least three types of pepper were available in Roman markets (long, white, and black), and they were amongst the most expensive commodities available. Pliny the Elder, writing around 77 CE, clearly did not share the Roman passion for peppers and is dumbstruck by the amount of money he feels Romans are wasting on these spices (*HN* 12.14). Much of this Roman money, as well as monies from throughout the Mediterranean world, was trickling back into Nabataean coffers.

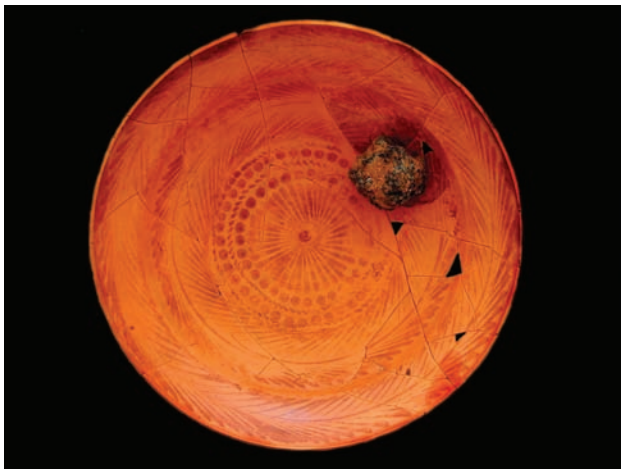

FIG. 6
A Nabataean-painted fineware bowl, dated to the last quarter of the first century BCE, and a lump of burnt incense that were found within an earlier tomb beneath the al-Khazneh façade. For the photograph, the incense has been placed on a scorch mark on the surface of the bowl. Other ceramic vessels were also found with scorch marks, leading the excavators (Farajat and al-Nawafleh 2005) to hypothesize their use for burning incense offerings. (Photo by Q. Tweissi.)

In 106 CE the Nabataean kingdom ceased to be an independent political entity when it was annexed by the Roman Empire and became part of *Provincia Arabia*. Nabataea had already become a client kingdom of Rome sometime after 64/63 BCE, following Pompey the Great's annexation of the Seleucid territories into Rome's first eastern province in Syria. We do not really know why the annexation of Nabataea took place when it did, or exactly how it was executed. It is quite possible, however, that the importance of the trade revenues generated in this territory played a role in this political change. Early hypotheses conjectured that a decline in overland trade may have occurred in the decades before the annexation when Rome created alternate less-expensive routes by connecting the Red Sea to the Nile across its Egyptian province's eastern desert. This supposed decline in trade revenues decreased the Nabataeans' fiscal strength, forcing them to turn to less profitable economic sectors, which created in turn a situation that may have contributed to the Roman annexation of their kingdom (Negev 1977, 1986; Bowersock 1983; Sartre 1985). More recent studies have shown, however, that trade through the former territory of Nabataea did not in fact decline, but likely evolved and even intensified (Johnson 1987; Fiema 1996). Petra remained an essential city in this new geopolitical reality. It became the administrative center

of the new Roman province, and its status and importance endured in some form for another four centuries (Fiema 1987, 2003; Gagos 2009).

Economic power has returned to Petra today in the form of the tourism revenue it generates. Literally millions of people have followed in Burckhardt's footsteps over the last two hundred years (Fig. 7). This traffic to Petra has generally increased steadily since the archaeological park was inscribed as a UNESCO World Heritage site in 1985. Tourism is one of Jordan's top two sources of federal revenue (www.tourism.jo), and there is no doubt that Petra is one of the major draws that brings visitors to the country. These tourism-related monies are also of vital importance for the economic survival of the communities abutting the Petra Archaeological Park as well as for numerous scattered family groups inhabiting and engaging with its historic landscape (Fig. 8) (Alhasanat 2010; Mustafa and Abu Tayeh 2011; Comer 2012).

These are just some of the primary values that constitute the uniqueness of Petra as a global cultural resource. There are many other values, but these have been highlighted here—archaeology, environment, and economy—as they are the ones most directly affected by one of the great mysteries still to be solved in Petra. This particular mystery is not a usual one that most people think of when contemplating the unknown at archaeological sites, but it is an essential one that needs to be solved. It is the mystery of how to preserve the intrinsic values of Petra in a sustainable way so as to ensure that all of the marvels we experience at the site today are still there for future generations.

Fragility is a predominant characteristic of all three of these cultural heritage values in the Petra Archaeological Park (al-Salameen 2012; Comer 2012). This may seem counterintuitive with respect to at least the archaeology and economic values, but it is true. Creating a sustainable means of preserving and managing these values is a central challenge faced in Petra today.

Indeed, Petra is known as the "rose red city half as old as time"[2] that is carved into and constructed out of stone, and the site's very name means "rock" in Greek, which was the *lingua franca* of international trade in Nabataean–Roman times. Yet, the rocks of Petra are mostly sandstones, which are fraught with numerous problems such as relative softness, friability, and problematic chemical composition (Fig. 9). The very characteristics of the building materials available make them inherently susceptible to a variety of risk factors, such as water, wind, and use-related erosion, rising damp and salt efflorescence, deterioration due to solar radiation exposure as well as geological activity. Solving the mystery of how to preserve the sandstones of Petra is still an ongoing process that involves many international specialists, including geologists, conservators, engineers, architects, and archaeologists. Although much progress has been made in recent decades, final solutions still frequently elude the cultural resource management experts working at the site.

The economic value of Petra tourism may generally be robust, but it is also vulnerable to a wide variety of factors. Most notably, the political circumstances in the greater Middle East region can have profound impacts on the viability of tourism as an economic resource. This has been experienced in the Petra Archaeological Park multiple times during the last decades when events such as the Persian Gulf War (1990–1991), Iraq War (2003–2011), and the more recent "Arab Spring" wave of political change in the Middle East and North Africa (MENA) area, create literal or perceived instability that leads to overall decline in tourist travel to the region. Decline in the number of visitors to Petra has an immediate and direct affect on the ability of the people in multiple local communities to make their living, which is largely tied to providing different types of services to the tourists. To make Petra provide a sustainable economic value to the local communities, the emphasis, nature, and mechanisms of revenue generation all need to be reconceived to include job opportunities other than just those in the service industries. Solving our mystery must therefore also include figuring out how to innovate such new opportunities, build durable capacity in both human resources and infrastructure, and secure the necessary funding to make the new types of initiatives sustainable over time.

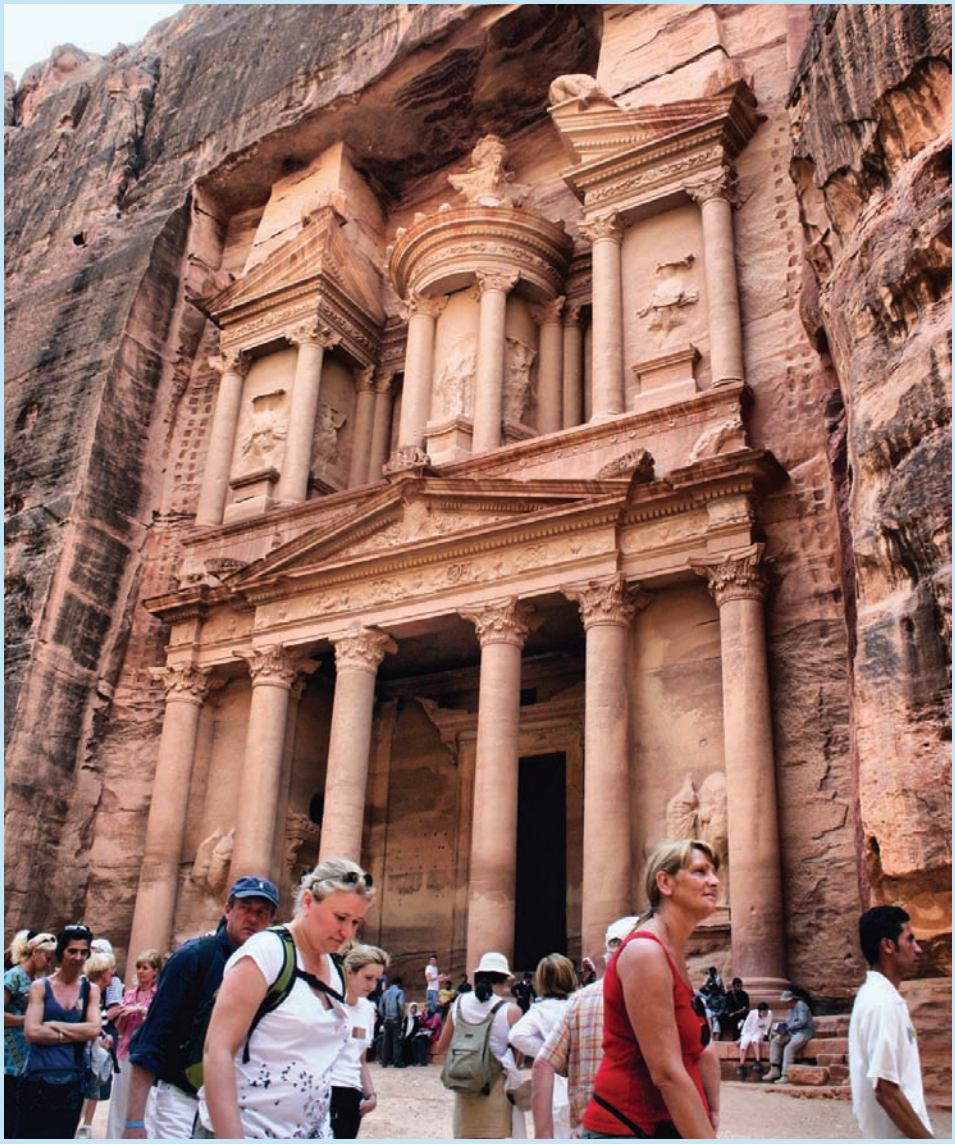

FIG. 7
Visitors in front of the iconic al-Khazneh ("Treasury") façade at Petra. The monument is actually a tomb, probably for the royal family, and dates to the late first century BCE. (Photo by Q. Tweissi.)

FIG. 8
A modern mini "caravan." Abdullah, a member of the Bedul tribe of Bedouin who once lived inside Petra, en route to restock goods that will be sold in one of the modern shops in the Petra Archaeological Park. (Photo by Q. Tweissi.)

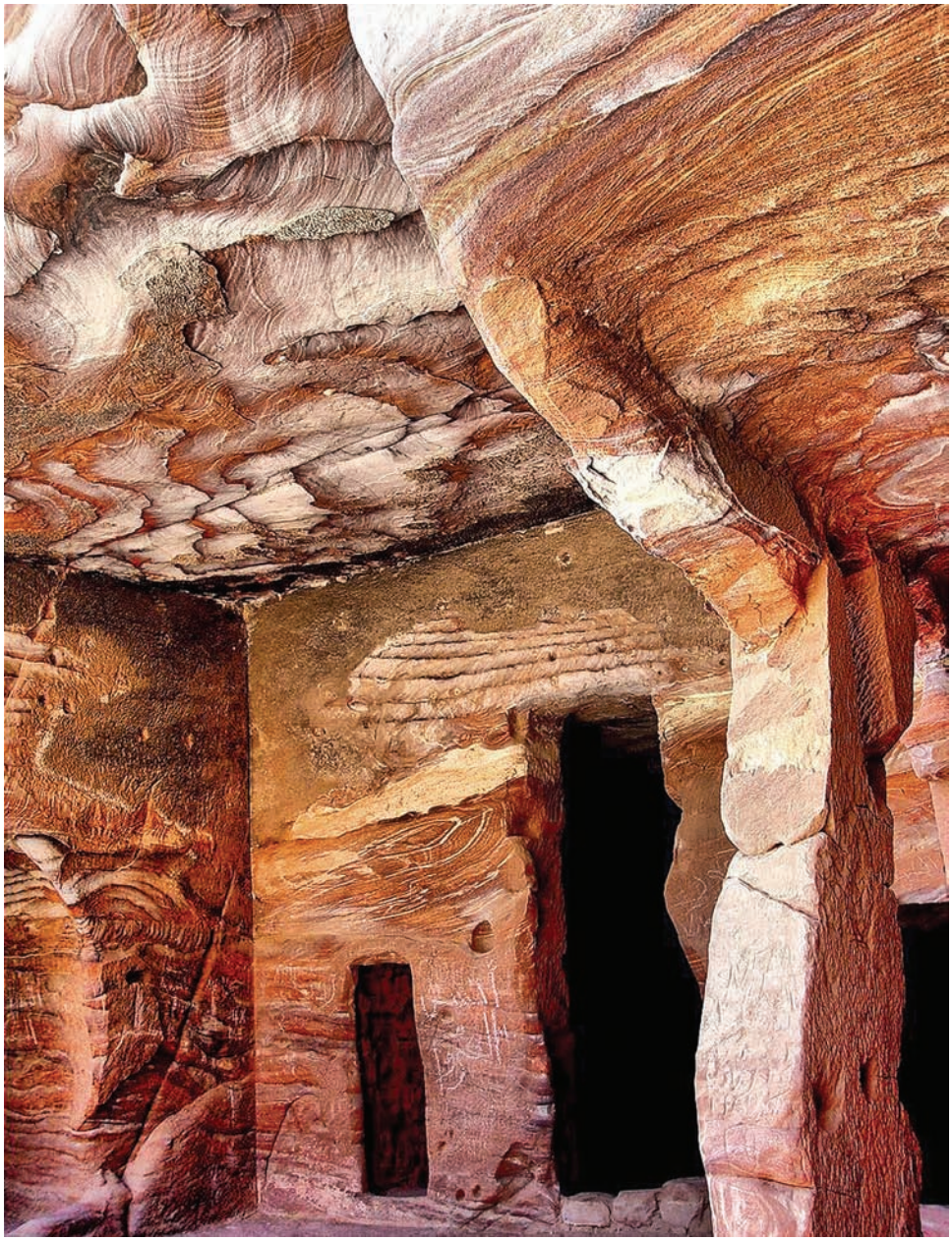

FIG. 9
A rock-cut chamber used for ritual dining during Nabataean funeral rites carved into layers of banded sandstone. Evident in this image are different types of damage: erosion by wind, water, and use, geological cracking, salt efflorescence as well as graffiti and soot accumulation. (Photo by Q. Tweissi.)

The Temple of the Winged Lions in Petra[3]

The Temple of the Winged Lions is a Nabataean religious building that is situated prominently on the north slope of the Wadi Musa (Moses' Valley), overlooking the ancient city center of Petra (Fig. 10). Remnants of this and other neighboring buildings were first investigated in 1897–1898 by the pioneering survey team of R. E. Brünnow and A. von Domaszewski (1904–1909), who tentatively identified the structures as the location of an Upper and Lower Gymnasium, designations that remained on maps of Petra until the late twentieth

century when these initial interpretations were proven to be wrong.

Modern scientific work on the north slope of the Wadi Musa was begun in 1973 by the American Expedition to Petra (AEP), an independent archaeological mission under the direction of the late Philip C. Hammond. This involved conducting the first remote sensing survey in Petra using a combination of early proton-magnetometer and soil-resistivity technologies in an attempt to identify still buried remains of these and other buildings in the area (Hammond 1974a–b). The survey revealed a significant number of sub-surface anomalies which encouraged Hammond to begin excavation in two areas in 1974. By the completion of this first excavation season, the AEP project had discovered part of a residential sector of the ancient city and revealed the presence of a monumental temple (Fig. 11). Included amongst the artifacts recovered in the temple during the first few seasons were unique capital fragments decorated with "winged lions," which prompted the re-designation of the building as the Temple of the Winged Lions, the moniker that is still employed today. The AEP excavations in the area of the temple complex would subsequently continue for nineteen seasons between 1974 and 2005. A report on the 1974–1990 seasons was published (Hammond 1996), but almost no information is presently available from the later seasons.

The temple is currently believed to have been completed around the end of the first quarter of the second century CE based on interpretations of an inscription and archaeological materials recovered from levels below the floors of the building. Hammond proposed that the temple continued to operate as late as the fourth century CE when it was largely destroyed by a massive earthquake on May 19, 363 CE. Part of the collapsed temple complex was later robbed and many of its architectural materials were re-used in structures such as the Petra Church, which served as the Byzantine cathedral of the city in the late fifth and sixth centuries CE (Fiema et al. 2001).

The temple precinct was connected to the Colonnaded Street in antiquity by a massive bridge that spanned the Wadi Musa. This bridge gave access into a *propylaeum* (vestibule) that ascended the slope northward to the temple itself. Very little remains today of this *propylaeum*, so we cannot be certain of its exact form. We know that it was flanked on both sides by a single row of columns, and that it probably consisted of alternating sections of monumental stairs and landings in order to facilitate an easy ascent.

The *propylaeum* in turn gave access directly onto the *pronaos* (porch) in front of the temple entrance. The front façade of the temple *pronaos* consisted of two enormous columns which were flanked by antae walls that enclosed the porch on the east and west sides (*distyle in antis*). Both the columns and the antae walls were crowned with capitals or half capitals that were carved in a Nabataean version of the Corinthian order. The front surfaces of the antae walls were in part decorated with relief sculptures carved on inset blocks. Two of these blocks are partially preserved and can be seen on the site today: one shows a robed human torso and the other a torch. The architrave on the façade was constructed of massive sandstone blocks carved with triglyphs and plain circular metopes.

One entered the main room of the temple (*cella*) directly from the level of the *pronaos*, without need of any steps. The focus inside the temple was a raised square podium that is centered toward the back (north) side of the *cella*. Sufficient space remained between the podium and the north wall to permit circumambulation of this cultic platform. Surrounding the podium are twelve columns (four on each side), which were surmounted originally with the "winged lions" capitals (Fig. 12). Two short stairways located at each of the front (south) corners provide access onto the podium. The floor of the podium was originally paved with black and white marble pieces, shaped as squares, diamonds, and triangles, which were laid in a number of geometric *opus sectile* patterns. A small crypt with shelves is located on the backside (north) of the platform, which may have been used to store cultic paraphernalia. Lead ties found in the *cella* and rust stains on the masonry indicate that the small stairways were gated and that the spaces between the engaged columns were likely closed with curtains.

The east and west sides of the cultic podium are flanked by a row of freestanding columns that extend the length of the *cella*. Each of these columns in turn

FIG. 10
Aerial view over the Temple of the Winged Lions, looking west. The excavation impact zone is clearly visible, extending nearly 200 m in all directions around the complex, and includes soil dumps, rock piles, and architectural *lapidaria*. (Photo by C. A. Tuttle.)

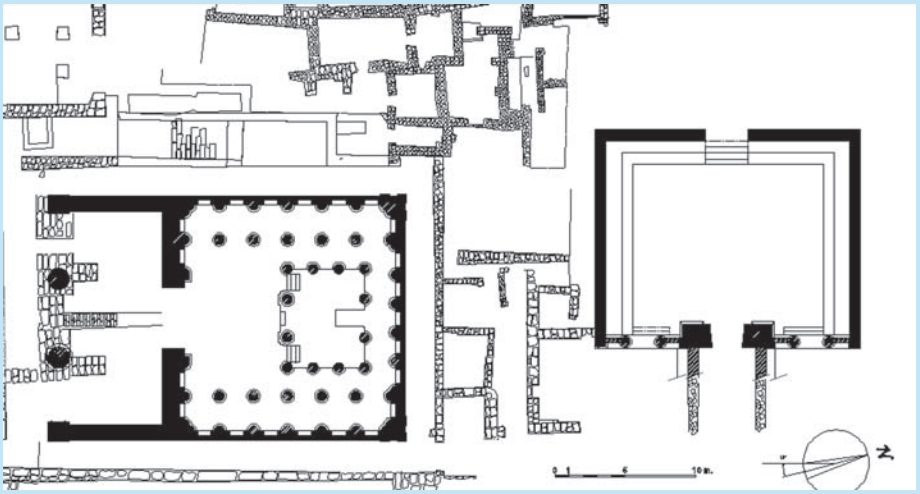

FIG. 11
Plan of the core AEP excavation area, including the temple (left), North Court (right), and section of later rooms (upper) built outside the temple precinct. (Drawing by C. Kanellopoulos.)

FIG. 12
A fragment from one of the "winged lion" capitals. (Original registration photo from the AEP archive. Courtesy of Lin Hammond and ACOR.)

generally aligns exactly with engaged pilasters set into the interior wall faces. In addition to the 12 "winged lions" columns, a total of 34 columns and pilasters crowned with Nabataean-Corinthian capitals decorated the first story of the temple. Mathematical calculations, analyses of additional architectural fragments found on the site, and the presence of an exterior stairway on the west side of the precinct indicate that there was at least a second story on the building originally. The interior faces of the second story appear to have been decorated with smaller columns and engaged pilasters that also employed a version of the Nabataean-Corinthian capitals. All of the columnar elements were at some point coated with a thick layer of stucco that was carved with decorative fluting. Large niches for votive and cultic objects are present in the first story between the engaged pilasters along the walls of the *cella*, but it is not certain whether similar niches existed in the second story. During excavation on the floor along the walls, a number of cultic objects were recovered which probably originally stood on shelves in the niches, including the famous inscribed "Eye-Idol" that had been dedicated in the temple to the "Goddess of Hayyan Son of Nybat" (Fig. 13).

The walls were elaborately decorated with molded stucco and panels painted in vibrant colors: reds, purples,

FIG. 13
The inscribed "Eye-Idol" stele recovered inside the temple *cella*. The inscription reads "Goddess of Hayyan son of Nybat." (Photo by Q. Tweissi.)

blues, yellows, oranges, blacks, whites, and some elements were gilded. The stucco moldings included affixes in the forms of "tragic masks," male and female heads, flowers and leaves as well as cornices decorated with painted dentils and the egg-and-tongue motif.

Two distinct phases of interior decoration were detected in the *cella*. In the earliest phase the wall panels depicted Graeco-Roman motifs such as dolphins, *putti*, human figures, and garlands. The columns were encased in stucco, carved to resemble cable fluting, and their bottom edges were encircled with decorative marble ring bases. In a second phase, the *cella* decoration was changed. The wall paintings were "pecked" and replaced with plain painted panels. The fluting on the columns was plastered and smoothed over, and their surface was decorated instead with appliquéd geometric and floral elements formed in stucco.

The cella floor as well as the baseboards of the wall appear to have stayed the same during both decorative phases. The area in front of the *cella* podium (south), just inside the temple entrance, was paved with large squares of white and gray marble. The areas to the sides and back of the cult podium employed flagstone pavers of marble-like, light brown limestone. The baseboards were made from slabs of an almost translucent marble-like stone of mottled white, yellow, and amber hues and affixed to the walls (*crustae*) at the top level of the floor paving.

Long corridors surround the *cella* on the east, north, and west sides. In the west corridor a large room with a flagstone pavement was built against the outer precinct wall, beneath an exterior stairway. A significant number of metal objects were recovered from this room, some complete and others that were fragmentary or disassembled, which led Hammond to interpret the space as the Metal Workshop (Hammond 1987), although the room contained no industrial installations to support this idea. The objects included complete bronze vessels and fixtures with anthropomorphic features, such as a winged figure and a bust of Zeus-Serapis. Several nearly identical objects and fixtures were discovered in the ruins of a temple treasury in the Western Temple of the Nabataean city Oboda (Avdat) on the Incense Road in the Negev Desert (Rosenthal-Heginbottom 1997; see also Erickson-Gini and Israel in this issue for a fuller discussion of the Incense Road). Given this similarity in the finds at both sites and the fact that the room described is located in one of the most secure areas of the Petra complex, it is likely that it served as the treasury of this temple.

Thousands of artifacts, ranging from monumental to prosaic, were recovered by the AEP excavations in the temple precinct. One object in particular stands out in importance for this building as well as for the archaeology of Petra and the Nabataean kingdom. In a basement room beneath the *pronaos* over 1,000 pieces of marble were found collected together, several of which had partial inscriptions on them. One slab contained four fragmentary lines, reconfigured on several separate occasions, from a much larger Nabataean religio-legal inscription that includes the precise date on which the decree was made during the thirty-seventh regnal year of the Nabataean king Aretas IV (August 19, 28/29 CE). The partial inscription deals with cultic legislation related to the handling and division of revenues and offerings that came under the control of a group of priests. Hammond proposed that the inscription was originally installed in this temple and that it had been removed during the second decorative phase inside the cella. On the basis of this reasoning, the inscription was used as primary evidence to date the completion and dedication of the temple (Hammond, Johnson, and Jones 1986; Jones 1989). Unfortunately, the rest of the inscription was never found and its proposed place of origin has also never been confirmed, both factors which now cast doubt on its usefulness for providing an absolute date for this particular temple.

Other artifacts found would, however, appear to help with regard to the identity of the deity (or deities) worshipped in the temple. Some of these include the inscribed "Eye-Idol" already mentioned that refers to a goddess along with other such "eye-idols," several other carved and ceramic goddess images as well as perforated seashells and small copper bells that may have belonged to a "sistrum-like" musical instrument. All of these discoveries point to a female deity as the probable focus of worship in the temple. Hammond eventually concluded that the temple was established for the worship of a main Nabataean goddess, who was known throughout the region by the epithet 'Allat ('the Goddess') and possibly specifically at Petra by the different title of al-'Uzza

('the Mightiest'). The indigenous goddess of this temple appears to have also been equated (syncretized) with other cosmopolitan deities from the Hellenistic and Roman world, such as Isis and Aphrodite. Amongst the evidence for Isis worship are a fragment of an inscribed Egyptian funerary stele from Athribis that depicted Osiris, fragments from several seated, mourning Isis coroplastic figurines, and the aforementioned bronze head of Zeus-Sarapis. The indications for the worship of Aphrodite in this temple are less direct; we have literary and papyrological references that equate 'Allat/al-'Uzza to this goddess and, in one instance, include a reference to a temple of Aphrodite in Petra, which has led some to hypothesize that this temple is the one being referenced.

The AEP excavations uncovered several other areas around the temple precinct that must be mentioned. The first of these was a series of rooms in the northwest quadrant that appears to have been initially constructed sometime after the temple itself, but in a space that may have originally been related to the temple. The construction of these buildings is substantially different from that of the temple, and it is clear that the rooms were reconfigured several different times during their occupation, which lasted up to the 363 CE earthquake. Some of the rooms show possible evidence for small-scale industries, such as grain storage and processing, the making of miniature altars, and even specialty oil production.

To the north of the temple is a large nearly-square paved area with a monumental entrance on its east side and a smaller entrance on the west (the North Court). It has two or three tiers or possible benches along the interior of its north, west, and south walls. The structure had columns at least along its eastern façade, to either side of what appears to be a possible tetrapylon-like entryway. The exact nature of this enigmatic structure is unknown. We also do not yet know if it has a direct relationship to the Temple of the Winged Lions precinct or represents a completely separate structure.

The extensive excavations and exposure of buildings carried out by the AEP project have the potential to make a profound contribution to our knowledge of Petra. However, a lot of the data generated by the original project was never made readily accessible and almost no conservation was undertaken on the site. As a result, not only is the long-term survival of the temple severely threatened, but the fullness of her story has yet to be told.

The Temple of the Winged Lions Cultural Resource Management Initiative—Its Context

In 2009 the Temple of the Winged Lions Cultural Resource Management Initiative (TWLCRM) was launched by the American Center of Oriental Research (ACOR) in Amman, Jordan, in partnership with the Jordanian Department of Antiquities and the Petra Archaeological Park, and with cooperation from a large number of international organizations and missions.[4] The TWLCRM project is presently undertaking a multi-year campaign for the re-documentation, conservation, preservation, restoration, presentation, landscape rejuvenation, and re-publication of this important monumental complex (Fig. 14).

The first two years were devoted to documenting and assessing the current state of the site, developing the conceptual and practical plans, and seeking the necessary funding. Various fieldwork components began in late 2011 when the project was awarded an Ambassadors Fund for Cultural Preservation (AFCP) Large Grant funded by the U.S. Department of State's Bureau of Educational and Cultural Affairs. Additional funding is coming from ACOR through a USAID endowment for cultural heritage work in Jordan. Logistical, technical, and human resources support is being provided by both the Department of Antiquities and the Petra Archaeological Park.

FIG. 14
The project logo, inspired by the temple's eponymous "winged lion" capitals. (Design by Q. Tweissi.)

A major focus in the overall project design is the creation of sustainability for the preservation efforts within and around the temple precinct and hopefully, by extension, for subsequent endeavors that will be undertaken within the archaeological park. Sustainable preservation of archaeological sites is a mutable concept, however. Every site has its own set of unique circumstances and needs, and, frequently, these vary for different monuments themselves within a site. These circumstances and needs first have to be identified and addressed specifically if the solutions implemented for the varied problems are to be sustainable in the long term.

There are a number of significant impediments that have hampered the implementation of sustainable preservation efforts in Petra, but several in particular are amongst the most prominent. First is the absence of a set of standards for the types of physical and chemical conservation interventions appropriate to each of the varied circumstances faced with the different types of monuments in the archaeological park. The second is related to the difficulties for outside "experts" alone in identifying and obtaining suitable conservation materials in Jordan that meet international best practices standards and the UNESCO guidelines for conserving World Heritage sites. The third is inconstancy with respect to the availability of local technical personnel trained with the necessary skills for implementing and maintaining conservation interventions for the monuments. The fourth is the most complicated in that it deals with multifaceted issues of human cognition amongst the local populations that engage daily with the cultural heritage resources: it involves the current levels of social and ideological investment in, and understanding about, the different types of importance that are represented by the archaeological park.

The TWLCRM initiative is a complex project with many different components. It is thus an ideal venue for trying to address aspects of these impediments through multiple vectors—such as education, capacity-building, and direct involvement in the design and implementation processes for the work undertaken. Of these vectors, education is perhaps the most important, since it directly affects both capacity building and direct involvement. To create true sustainability, education needs to be a "two-way street." It cannot be solely conceived as a situation where the "experts" are the educators: sometimes said experts need to be the students.

For example, local populations often understand important details about what resources are immediately available and the best ways to employ them successfully to meet desired outcomes. Collaborative use by "expert" teams of resources and methods that are already familiar to local communities has great potential for benefitting sustainable preservation efforts at cultural heritage sites. Such collaboration can also aid in strengthening the historic continuum between the ancient and modern populations associated with today's cultural resources; a continuum that has often been interrupted, not only by the inherent changes that come with the passage of time, but also through the intentional or inadvertent disenfranchisement of modern local populations by "experts" and other types of stake-holders, whose interests and goals do not necessarily align with, or take into account, those of the regional inhabitants. When this continuum remains broken, ignored, or under-utilized, an important tool for the sustainable conservation and preservation of cultural heritage resources is lost.

Heritage sites such as Petra were built by and for ancient "local" populations from the familiar raw materials available to them. How and where these materials were used in antiquity is usually not random, but were, rather, the products of intimate knowledge and practical experience. Their success at using the materials is attested by the very survival of any part of their constructions. Oftentimes, at least some of these materials are still understood and utilized today by modern populations. Sustainable preservation and conservation efforts can only benefit by engaging with and learning from this local knowledge and experience. In the end, collaborative use of both local and outside knowledge, experience, and materials will facilitate the sustainable future maintenance by the local communities of the conservation interventions undertaken at a site.

This type of "two-way" educational exchange is at the core of the TWLCRM conceptual outline. The initiative is actively exploring this type of engagement in all of its project subcomponents as it takes the first steps forward toward sustainably preserving one piece of Petra.

TWLCRM—Its Steps Forward at Present

The following section presents short briefs that describe some of the TWLCRM components and gives reports on some of the progress made in the early stages of the initiative. These will highlight some of the ways in which the project is attempting to address the selected values and impediments discussed earlier.

The TWLCRM initiative gained a major boon in late 2009 when Mrs. Lin Hammond facilitated the return to Jordan of her late husband's entire AEP archive. During the past three years, several young Jordanians, whose training is in archaeology or cultural heritage management, have worked diligently toward the digital capture of every paper, photograph, and image negative in this archive. Eventually, this entire excavation archive will be made available to the public in an interactive online database as part of the initiative's re-publication effort.

An innovation that this project is introducing into the milieu of preserving Petra is the concept of landscape rehabilitation following the completion of an excavation. One of the ways that archaeological excavation can itself endanger a site is through the impact it has on the landscape around the monuments being explored. This type of work can have drastic affects on the environmental values of the cultural resource through, for example, changing watershed and foot traffic patterns, eliminating or inducing change in vegetation coverage, and destroying wildlife habitats. Materials from the original excavation of the Temple of the Winged Lions—soil dumps, rock piles, architectural *lapadaria*—were placed on unexcavated areas abutting the temple precinct, substantially altering the landscape around the site and inhibiting additional scientific research on other features in this area of the park. This initiative seeks to rectify this situation as much as possible.

The initiative is employing landscape architecture methodologies for the first time in Petra. A current vegetation survey was conducted across the site area and the data was compared to a couple of control sites with similar slopes and aspect elsewhere in Petra; the vegetation survey will continue to monitor the area in different seasons during the next year in order to establish a full set of baseline data. The final stage of this initiative will involve reintroducing native vegetation both to stabilize the topsoil as well as to rehabilitate the environmental context of the slope.

There are more than a dozen soil dumps and rock piles scattered around the excavation site (the largest of the soil dumps extends down the side of a slope and is about the height of a four-story building!). All of the soil dumps and rock piles are being removed from the site. The soils are being screened and re-used for backfilling efforts. Rock piles are being sorted for different types of re-use, storage in back-filled areas, or disposal. The architectural *lapadaria* are being consolidated; construction elements not chosen for re-use or final display will be stored within backfilled areas of the temple precinct. All materials are being re-documented and the location of re-buried objects will be recorded in a GIS database.

These landscape rejuvenation efforts are massive and have themselves the potential to cause additional damage to this sector of the cultural heritage park. As part of the effort to mitigate such risks as much as possible, the TWLCRM team engages with experienced members of the local Bedouin tribes (Bedul, Amareen, and S'eediyeen), who bring to the initiative a diverse range of strategies and methodologies that derive not only from their work on other archaeological projects, but reflect practical knowledge from their everyday lives. This type of collaboration is an essential part of the initiative and has been a successful first step toward fostering both an educational exchange and expanding different modes of engagement for both the local communities and the TWLCRM team.

All of the architecture elements on the site are being re-documented through surveying, measurements, photography, drafting, photogrammetry, and laser scanning. Several young people from the local Bedul community have been employed and trained by the TWLCRM team in the basics of systematic data collection techniques to assist with this subcomponent of the project (Fig. 15). The many types of damage and deterioration evident on the standing structures are also being identified, mapped, and classified on photographs and drawings with the assistance of other local trainees, who are learning how to employ international standards for this type

FIG. 15
Sakhr Mohammed, one of the TWLCRM trainees from the Bedul tribe of the Umm Seyhun village, in the process of inventorying and documenting ring bases from the temple *cella* columns in one of the *lapidaria*. (Photo by Q. Tweissi.)

of documentation. This work will record the present state of the constructions and will be used for designing the conservation interventions required to preserve the buildings.

The use of appropriate lime mortars (rather than cements) must become a key component in any set of conservation standards in Petra since they are historically more accurate and they help mitigate some of the threats, such as rising damp and salt efflorescence that endanger the sandstone building material. At present, however, there are very few people affiliated with the site that have any experience in either mixing or working with such mortars; moreover, the properly prepared ingredients are not always readily available locally. The TWLCRM conservation team is working with the Department of Antiquities and Petra Archaeological Park to develop a local slaked lime production depot as part of the initiative. A local team will be trained in the production process as well as how then to mix and apply the lime mortars appropriately in different circumstances (Fig. 16). This is a key piece of building sustainability since lime mortars, although better for the long-term conservation of Petra's ancient monuments, do require regular monitoring and maintenance.

FIG. 16
Lead conservator, Christina Danielli (right), works with Jordanian conservation technician Mohammed Freij and Milena Zafirova, a Macedonian student trainee, on building a test wall on the site for trying different mortar mixtures. (Photo by Q. Tweissi.)

Developing relationships with the surrounding local communities has been a major focus of the team's efforts during the past two years. This work serves the needs and goals of the project in a number of ways. It has permitted developing a roster of potential employees, facilitated obtaining many materials locally that are needed for the project, and it has helped build awareness about the important roles the people in these communities must play if preservation work in Petra is to become sustainable.

Creating economic opportunities that are not specifically tied to the annual tourism cycle is a key aspect of the project. Ensuring equitable access to these opportunities for multiple communities, tribes, and family groups is also essential. With the direct assistance and advice of people from each community, the TWLCRM team has thus organized the roster of potential employees according to these different social associations. During each session of fieldwork, the team is carefully selected so that people from multiple villages, tribes, and families benefit from the employment and training opportunities. Members of these communities also assist the team in identifying any special circumstances so that the hiring can be prioritized for those who may have a particular and immediate economic need, or who are felt by their peers to have special potential or aptitude for being trained. Each field team works for about two weeks to a month and then a new team is hired, thus maximizing the number of people who benefit. Individuals who demonstrate special aptitude for or interest in aspects of the work may be retained and

selected for further training. The project has introduced for the first time in Petra a scaled pay system for the field teams as a means of acknowledging different skill levels, encouraging commitment to the project goals, and providing advancement opportunities.

Some of TWLCRM's exciting achievements in community development are related to establishing opportunities for local women to contribute to the project, and thus directly benefit economically, and to develop a greater sense of personal engagement with the cultural heritage aspect of Petra. New initiatives include establishing a women's cooperative for making sandbags and employing women for the first time ever as part of the fieldwork teams for an archaeological project in the Petra park.

This project requires thousands of sandbags for buttressing collapsing architecture, creating protective surfaces on which the team can work without causing additional damage to the site and for closing off dangerous sections of the building from tourist foot traffic (Fig. 17). Sandbags, however, are neither readily available nor cheap to obtain in Jordan. It was thus decided to make the sandbags locally as one of the community engagement and economic development efforts. A cooperative was constituted from women in financial need from three of the communities that abut the archaeological park (Bayda, Umm Sayhoun, and Wadi Musa). In selecting the women participants, preference was given to those who are divorced or widowed, with children, and who have no regular source of independent income. Recycled burlap (jute) rice bags are purchased and then given to the women who hand modify them to the form required by the project. The majority of the funds expended on the estimated 12,000 bags needed will go directly to the women of the cooperative, who are able to carry out this work at home with their families where they can integrate the work into their own schedules (Fig. 18).

Archaeological fieldwork projects have been conducted in Petra since the 1930s. Despite this long history of work on the site, opportunities in the field for women have been extremely scarce—usually limited to making tea for male laborers and foreign teams as well as picking up trash around the work sites. A major goal of the TWLCRM initiative is to help change this status quo regarding employment and educational opportunities for women on active project sites in the park. Creating the opportunities for this change is a slow and sensitive process since some complex socio-cultural issues exist in the local communities about women working both outside the home and alongside men in public. In order to make this change possible, it has been necessary to build trust, respect, and an ethos of cooperation through direct engagement with the local communities. Important aspects of building these relationships have been the initiative's policies of paying both men and women equally for their labors on the same pay scale, of employing women of different ages and providing tasks suitable for their participation, and being sensitive to organizing the mixed gender fieldwork teams into appropriate combinations based on recommendations from within the local communities.

The first steps of this project subcomponent have been remarkably successful during the first year of the initiative. Women have been employed to assist with re-surveying of the TWL site to create new architectural plans—a significant step since surveying is still predominantly a male vocation in Jordan. Women are now employed for various manual labor tasks, such as sifting the soil from the original excavation dumps, which is re-excavated and transported to the women by a male team (the sifted soil is used for temporary backfilling of sections in the temple precinct and for filling the sandbags). The women have also been trained to collect, sort, and prepare all of the archaeological material culture collected during the process of generating "clean" soil for cataloging and study. Another team of women is employed on site to close the full sandbags by hand-sewing. When needed, one woman each day is employed to provide a form of on-site "day care" for the young children who have to come to work with their mothers. One of the successful aspects of this subcomponent has been that the opportunities created to date have been sufficiently diverse to permit women of different ages and physical abilities to participate (Fig. 19).

During the first year of the TWLCRM initiative's fieldwork, the number of opportunities has been small due to the trial and error realities of developing a new project while simultaneously implementing a new holistic model for its execution. However, the initiative is continuing

FIG. 17
Employing materials made or obtained locally to protect the temple *cella* during the project's work. Sandbags around the platform are made by local women through modifying recycled burlap rice bags. Jute fabric from local shops is used in the foreground to create a protective barrier on top of the remnant floor mortars prior to placing a temporary layer of backfilled soil. Dirt in the sandbags and backfilling comes from sifting and removing original excavation dumps from the site. (Photo by Q. Tweissi.)

FIG. 18
Ageileh, a Bedul woman, working on site to finish sandbags. Recycled burlap rice bags are modified off site by a women's cooperative. On site, sifted soil from the excavation dumps is used to fill the bags, which are then hand sewn closed by a team of four women using jute twine. The final product can be seen in the wall of sandbags behind her. (Photo by Q. Tweissi.)

FIG. 19
Women sifting soil from the old excavation dumps. One woman each day is also employed to provide "day-care" for the children who have to come to the site with their mothers. (Photo by M. Elena Ronza.)

to work with the local communities to foster additional opportunities for women in the future. It is hoped that these will include more active roles in the diverse tasks required for the project, such as documentation, post-processing of material culture, implementing conservation interventions, executing site presentation strategies, and management.

Sustainability Is Local

Most of the efforts undertaken by the TWLCRM project to date focused on capacity building, establishing infrastructure, and developing social engagement strategies that contribute to accomplishing both the preparatory and final tasks that constitute the entire cultural resource management initiative. During the course of the fieldwork seasons, the entire TWLCRM team monitors the capabilities of the local workers employed in order to identify people who demonstrate both the motivation and aptitude that could lead to greater participation. Identified individuals who express a desire for greater engagement are then more directly included in the educational exchange in order to prepare them for more active roles in the various processes required for sustainably preserving Petra in the future. These people will now participate in training for undertaking the more complex tasks that will be required to

complete the later stages of the project. These task areas include: identifying, documenting, and cataloging specific architectural elements for use in restoration and for re-publishing of the excavation data; learning to identify, classify, and record the diverse forms of damage encountered on the monuments of Petra; and undertaking necessary repairs and stabilization efforts on the buildings using both modern and historical materials and methods.

Cultural heritage resource sites like the Petra Archaeological Park are complex and multi-faceted entities that defy simple definitions and simplistic solutions for their problems. Sustainability of efforts to protect and preserve the totality of these resources can only be achieved through the efforts of the people whose very lives are directly linked to all of the different facets, and not just a select few. The TWLCRM team hopes that its grassroots approach, of using education to raise awareness, to promote capacity for utilizing local materials and skills, and to create experienced teams within the surrounding communities will make a lasting contribution toward preserving Petra.

Notes

1. We are still not certain today about when exactly the Nabataean kingdom was formed or when Petra was established as its capital. For a compilation and discussion of historical sources, see Hackl, Jenni, and Schneider 2003. For general overview discussions on the Nabataeans, see Schmid 2001 and Taylor 2002.
2. This is the oft-quoted final line of the award winning "Petra, A Poem" written by Dean John Burgon around 1845 (Burgon 1846). Burgon had heard descriptions of the ancient city but had never seen it himself.
3. The author would like to thank Tali Erickson-Gini who helped write parts of this section, an earlier version of which has appeared in German (Tuttle and Erickson-Gini 2012). Additional thanks is offered to team members M. Elena Ronza, Tali Erickson-Gini, Erin Addison, and Barbara A. Porter for reading and commenting on this article.
4. The TWLCRM core team: Christopher A. Tuttle (director/archaeologist), Asma Shhaltoug (DOA co-director/structural engineer), Maria Elena Ronza (project manager/architectural restorer/archaeologist), Christina Danielli (lead conservator), Chrysanthos Kanellopoulos (lead architect), Tali Erickson-Gini (archaeologist), Erin Addison (landscape architect), Elena Corbett (contemporary historian), Fatma Marii (artifact conservator), Qais Tweissi (drafting/photography/graphic design), and Barbara A. Porter (project oversight).

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