

PETRA'S GREAT TEMPLE LEADING NABATAEAN EXCAVATION

The Great Temple in Petra is today the only Nabataean building fully excavated. It took US Brown University over 14 years to unravel the hidden ruins previously overseen.

The few remains were regarded as not important, as there were no evident standing structures revealing that there has been a huge temple complex underneath covering 11,500m², which was destroyed by several earthquakes.

But be assured these excavations revealed much about the Nabataean architecture and culture. Over 200 special research projects put many missing pieces of a remarkable mosaic together to complete the big Nabataean picture and proved various previous assumptions.

The American scientists used all available technologies

starting from GPS, geographic information system, ground penetration radar, instrumental neutron activation analysis, fresco pigment analysis, palynology, marble isotopes analysis, stone weathering, dendrochronology and a newly developed software creating 3D images using a computer augmented virtual environment.

First explored in 1890's by German Bruennow and von Domaszewski, it was Bachmann who finally proved the existence of a great temple in 1921. It was built during the Nabataean period in the last quarter of first century BC and is the key site of Nabataean culture with a unique blend of Greek, Roman and Egyptian elements.

This temple demonstrated best the surprising sophistication of

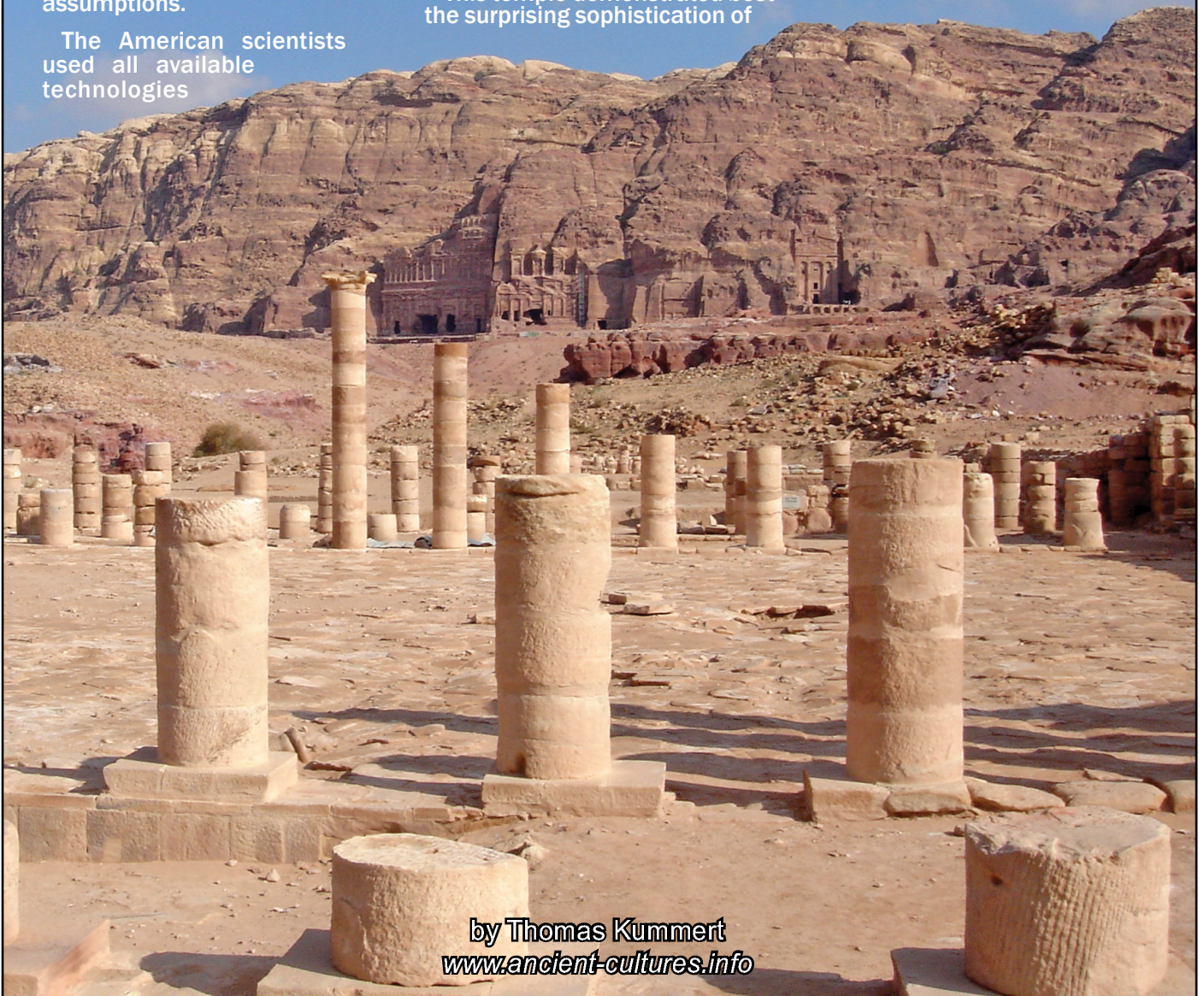
Nabataean culture, its values, practiced rituals and religious beliefs. Nevertheless it is not certain if it actually was a temple, or served as an odeum or bouleuterion, Greek name for consulting auditorium, as it featured a small amphitheatre with 600 seats where normally the temple sanctuary was situated.

Great Temple History

The temple precinct was built in eight main phases, with various architectural changes and enlargements.

First, only a small roofed temple-like building with two rows of columns and no walls was erected. This was followed by a surrounding walled tenemos including perimeter walls and staircases.

Later a second tenemos with



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Great Temple view from Lion Temple opposite



Great Temple view from Lion Temple opposite

a big open courtyard, colonnades and arched vaulted cryptoportici was added in front at a lower level due to the slight sloping of the hill side.

The Great Temple as it is called today was possibly converted to a Roman temple after 106AD with major changes and refurbishments. At a later stage in its history we even have to assume an industrial use, as an oven for ceramic production was discovered. In addition many ballista balls suggest that the building was also used as storage of armor and ammunition.

And now comes the surprise, the restructured entrance hall with strengthening of walls suggests the possibility that wild animals such as elephants were held or alternatively used as a prison and/or treasury for the huge amounts of silver Nabataeans accumulated.

The Great Temple was certainly still in use in Byzantine times and finally collapsed during the

551AD earthquake.

Great Temple Architecture

This palatial Nabataean building was covered with very aesthetic decorations. Many sculptures, elaborate frescos and floral friezes rounded up this exquisite piece of ancient architecture. This all needed a high level of construction organization and artisan skills to complete.

Nabataeans liked architectural symmetry and the play with light and shadow in their stucco walls and paintings. The overall iconography was very similar to the facade of the Treasury. But the layout was different as the Great Temple was a free standing complex with entrance hall, staircases, a lower and upper tenemos type colonnaded courtyard, small amphitheatre and temple sanctuary. It was established that certain passages had wooden doors two meters wide and windows and door ways were arched.

Petra City Center

This edifice was part of a group of key structures in Petra on both sides of the main colonnaded boulevard. On the opposite side of the riverbed you will find the partly excavated Lion Temple and a palace, which has not yet been investigated.

The Nymphaeum and three huge markets are situated to the left and on the right, the triple arched Tenemos Gate concluded the colonnades.

Similar to many Roman cities, Petra had a holy district which was not open to the general public. This area started behind the Tenemos Gate and consisted of the thermal baths, a small temple and the temple today called Qasr el-bint Faroun. The main altar stood as in all Greek temples outside on a raised platform in front of the temple and the huge black betyle of Petra's tutelary deity Dushara was situated on a golden platform right next to it.



Great Temple with Roman bath complex in front



Special courtyard paving with drainage below



Drainage channels

Great Temple Details

The Great Temple was the largest free standing structure in Petra at 7,560m² and measuring 135m in length and 56m in width. The complex had surrounding walkways and the 15m high columns supported a roof structure, which was equal in height to a modern six storey building.

An extensive subterranean water canalization system was discovered with four big canals plus some smaller channels. Actually the precinct had two water systems for excess winter flash floods and a smaller channel system built later, possibly to collect roof run off water piped to three water cisterns with a total capacity of 560,000 liters.

A garden and pool area outside the main complex was accessible via a door in the perimeter wall.

The Great Temple is situated up to 25m above the colonnaded main street. A wide central staircase is leading up to a huge lower tenemos open courtyard measuring 56m by 49m and paved with hexagonally shaped flagstones.

Numerous pieces of roof tiles were discovered during the excavations suggesting that the staircase was covered. This courtyard was surrounded by a triple colonnade with 120 columns. Here archeologists discovered another big surprise, those 15m high columns were adorned with detailed plastically shaped Asian elephant heads at each of the four corners of its top capitals.

Typical for all Greek temples a horned altar found in the entrance hall area.

The lower tenemos had two more unique building features.

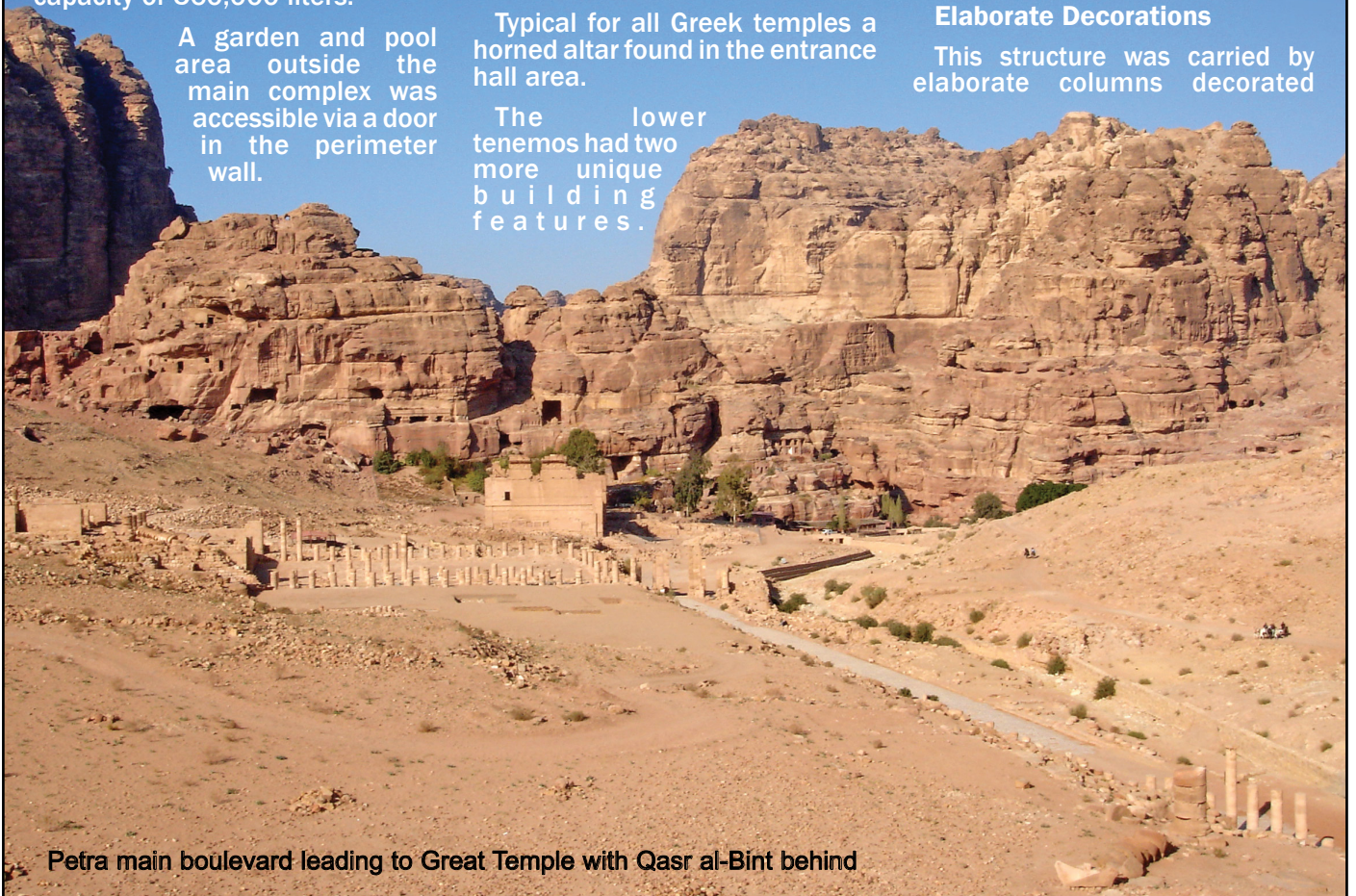
Under the side colonnades two arched cellar rooms, so-called cryptoportici, were discovered and the passage above leads into semi circular buttressed large niches, so-called exedrae, framed by columns and with an encircling bench.

Three staircases lead to the upper tenemos and courtyard which was surrounding the main temple building with a small amphitheatre inside and the temple area behind it. This part was actually built first and later extensions included the upper and thereafter the lower tenemos.

The temple was free standing and surrounded by the higher roofed tenemos colonnades

Elaborate Decorations

This structure was carried by elaborate columns decorated



Petra main boulevard leading to Great Temple with Qasr al-Bint behind

Full view of the Great Temple from el-Habis mountain fort, also seen some of the excavations in the residential quarters



with deeply carved fine sculptured limestone Nabataean-Corinthian capitals. The column shafts were embellished with flat red or yellow plaster to a height of 4m from their attic bases and covered with white ridged plaster until the beginning of its capitals.

The floral decorations of the capitals were similar to those of the al-Khazna or Treasury. The flanking corridors were also decorated with multi colored plaster. Later elegant inter columnar walls were built with arched doorways, windows and staircases.

The amphitheatre was a major architectural component of the Great Temple and was more influenced by Greek than Roman architectural design. It offered 13 rows of seats possibly later extended to 20 courses with a total of 600 seats.

The orchestra with a 6m diameter was too small for large functions, and therefore it is assumed that

the small amphitheatre was used for royal functions, speeches, or small religious ceremonies and rituals.

Another remarkable feature are the three so-called shrine rooms including what archeologists call the Baroque Room with its celebrated ceiling with rich decorations at its south west corner. These rooms lie outside the back perimeter wall and are only reachable through a small perimeter wall door from inside the temple. This door is a very much out of sight entrance and suggests that the usage of those rooms was limited to a selected few.

Let us come back to the elaborate decorations all Petra buildings and tombs were covered with and of which unfortunately there are no remains to be seen today. Therefore it is very difficult for visitors to imagine the richness of colors and decorations used by the Nabataeans.

All columns and walls were covered and decorated with red and white painted stucco. Lower column drums were carved with bushy acanthus leaves and upper drums with fluted cauliculi, sprawling vines, fruits, grape clusters, vegetables, pomegranates, pine cones, acorns, poppies, serrated hibiscus petals, plus large deeply carved corner volutes.

Metal clamps were used to hold the column drums in place. Important frescos were discovered on the temple west corridor walls. These frescos are true frescos with no binding medium and pigments placed directly on wet surface.

The walls were covered with multi layer quartz sand based plaster with a 10mm to 20mm first coat plus 5mm fine coat for paint. All walls were lavishly stuccoed and painted with detailed fresco motifs, which were often repainted over time when fading.



Full view of the Great Temple from residential quarters at Katute Hill, behind it the yet unexcavated markets

The colors used were produced from green earth, red earth with hematite and kaolin, yellow earth with goethite and certain clays, plus carbon black from unknown origin. In addition Egyptian blue was imported, which was also used in Italian Pompeii and Mesopotamian Dura Europos situated in Syria on the border with Iraq.

Above the paintings in the upper parts of walls, molded stucco was applied with a rich ornamental repertoire of classical moldings with many motifs, bead rows, reels, egg and tongue, egg and dart, denticles, enhanced by multi coloring with yellows, blues, reds and greens dominated and some gold with often bright blue painted cornices near door ways.

Does this sound like an unsophisticated culture 2,000 years ago? Not at all, and I hope these details give you the extent of Nabataean sophistication and development, which overshadowed many of its neighboring kingdoms. And now

remember where Nabataeans came from, they were an ethnic mixture of various Arabian Peninsular based tribes.

Nabataean Government

To better understand the Great Temple set up and usage you have to know how the Nabataean kings ruled and how their governmental administration worked. It is difficult to accept that this important kingdom had no clearly defined borders, nor were Nabataeans the only power in what historians define as their territory, nor did they represent the majority in that area.

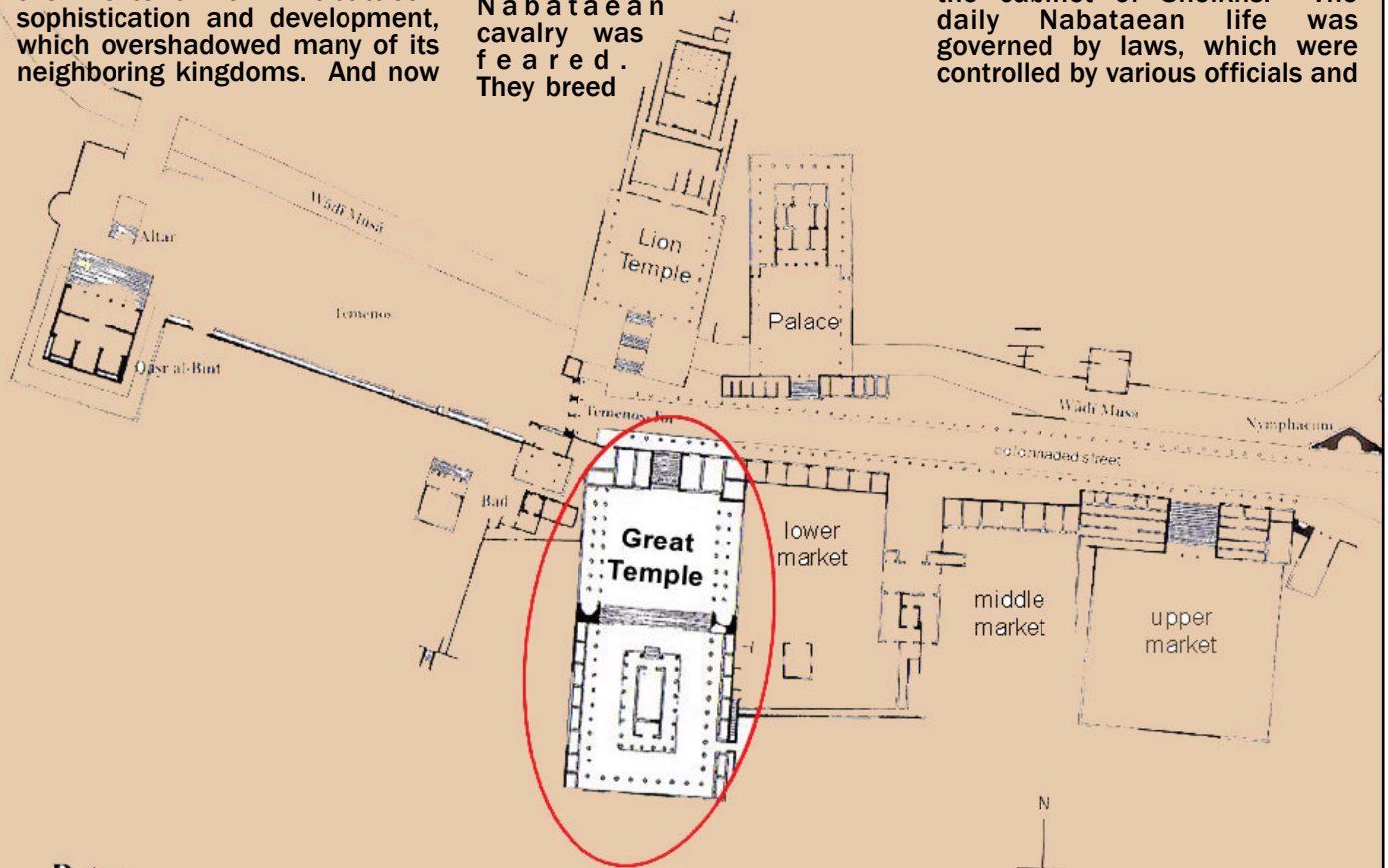
This was not important to Nabataeans as long as they had control over their important trade routes and other tribes living in the area did not challenge them. Otherwise they would quickly respond and gather an army of up to 50,000 men. Every man was a warrior and the Nabataean cavalry was feared. They breed

their own horses and two fighters were sitting on a camel releasing their arrows to the front and back.

The Nabataean state was a well governed community with the king domiciled in Petra and governors in charge in other cities. It is assumed from various sources that the Nabataean state had adopted the Hellenistic example and the king was the head of a cabinet of ministers and the Great Temple amphitheatre might have been used exactly for this purpose.

Based on this we could say today that the Nabataean egalitarian king ruled by popular approval and courts of law existed already. Therefore the king was more a chairman and it was reported that he served his people, rather than being served at festivities.

Greek historian Strabo mentioned a thirteen member symposia, which was possibly the cabinet of Sheikhs. The daily Nabataean life was governed by laws, which were controlled by various officials and



Petra City Center



administrators. Nabataeans were good diplomats and also used marriage diplomacy to cement important trade relationships with other empires.

The Roman Bath Complex

An elegant Roman bath complex called *balneum* was built on west side of the Great Temple precinct following the typical Pompeian bath layout. But the Herodian bath in Jericho might too have been an inspiration for Nabataean builders. This complex is reachable from the Great Temple though a door in the perimeter wall and also from the colonnaded boulevard via a small staircase on the west side of the Great Temple.

But let me describe this Roman style bath in more detail to you as it is quite a sophisticated installation.

The 900m² bath complex offered twenty rooms all marble covered with four vestibules, a changing room or *apodyterium* with benches at the side walls, a cold water splash bath or *loutron*, plus a cold water pool and an ornamental pool or *frigidarium*.

The hot section consisted of two hot rooms/sauna or *caldarium*, a domed steam bath or *tepidarium* and the necessary heating room or *praefurnium* using timber to fire up the temperatures.

In addition this bath had a well

room to relax and the obligatory bathrooms with six toilets. The fore room led on to a colonnaded courtyard. The immense volume of water needed for any bath of this size was possibly coming from the Ain Brak spring in the south of Petra, with the piping ending up in the well room.

The walls of the ornamental and *frigidarium* pool rooms were covered with sandstone slab, which were affixed with copper support hinges. The first bath installation dates back to the times of King Malichus II around 70AD, but a major extension to the bath complex started after Roman rule in 106AD.

Discovered Artifacts

Now let us look at the many artifacts discovered during the fourteen years of intense excavations, which can tell us a lot about the sophistication of the Nabataean culture. In total over 4,000 artifacts were found with 70% being pottery, a fact which makes dating very simple. But besides ceramic ware also artifacts made of glass, metal, marble, alabaster, ivory and shells were excavated.

Nabataean Pottery

Coming back to pottery items, over 800 oil lamps found in the Great Temple area is proof of a busy social life after sun set. The list of items found include various

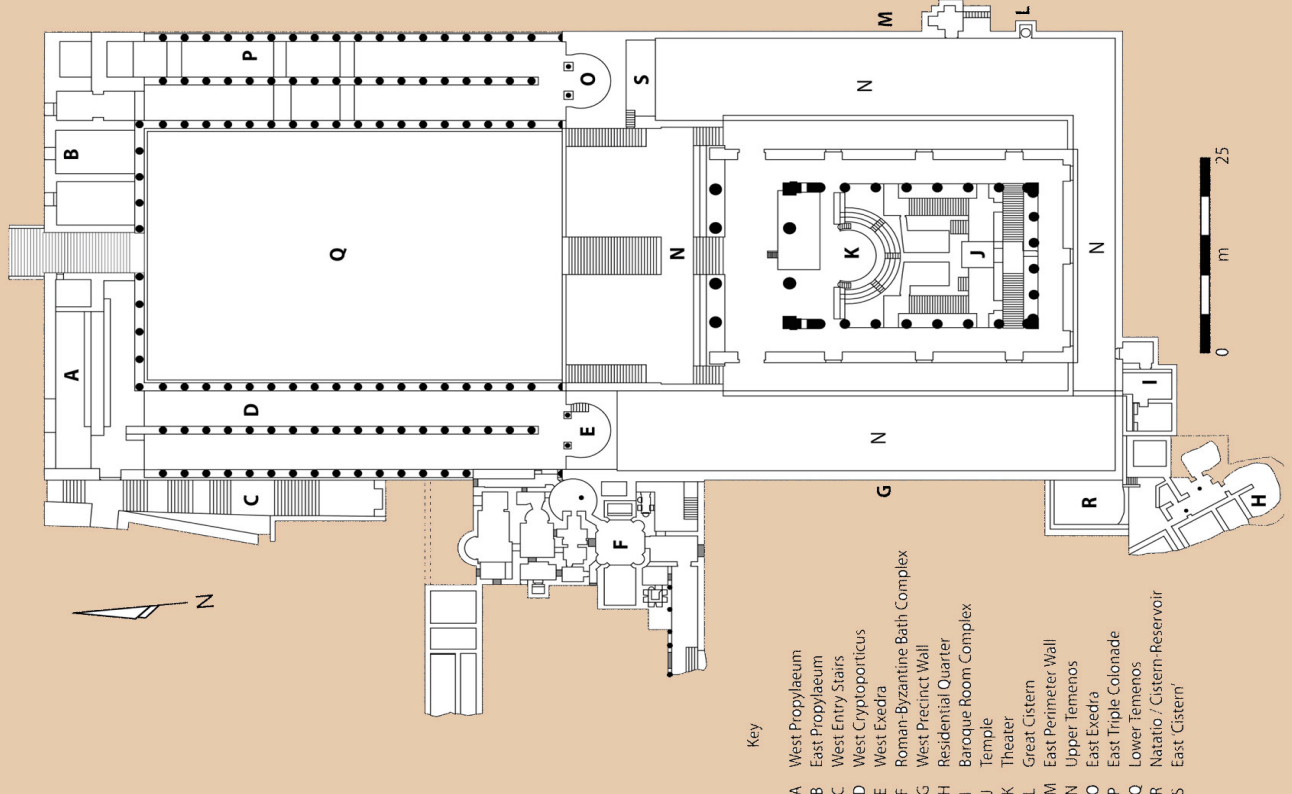
types of bowls, cups, juglets, refined animal sprouted vessels, bigger water collection jugs, and even a complete undamaged ridged drinking cup.

Just note that rich Petra inhabitants used golden drinking cups. Eighteen faïences round up the big picture of Nabataean pottery use. 30,000 potsherds found only in the small portion of residential quarters excavated on Petra's ez-Zantur hill behind the Great Temple complex, show how widely spread was the use of household pottery items.

This is supported by a recent discovery in a cistern in upper part of Wadi Farasa right next to the so-called Soldiers Tomb. In this cistern a full set of Nabataean pottery with several dozen complete ceramic vessels were discovered. This is the biggest find in Petra of undamaged pottery, and no reason was found yet why a huge and complete ceramic household set was deposited in this cistern. Was it washed away by one of the common winter flash floods, or was it hidden to escape a Roman attack, as the pottery is dated around 100AD the time when Romans took over Petra?

The typical Nabataean red pottery is very light and egg shell thin. This thinness was only possible, when Nabataean potters were able to make it very strong

Petra Great Temple





First built portion with small theatre auditorium



Surrounding walls & double passage was later added

with metal like qualities. This was achieved by producing well fired pieces, which actually still today give a nice ring tone, almost like crystal, when snapped with a fingernail.

To illustrate the level of artistic pottery items used in daily Petra city life, I want to mention just two very interesting ceramic pieces: an undamaged oil lamp filler in form of a well shaped hedgehog and an ibex headed infant feeder.

Was glass rare? Certainly not as over 6,600 fragments of Roman glassware were excavated. Asking the same question about metal is not necessary, as we know that Nabataeans were operating various mines in the Wadi Araba area and produced metal items themselves.

The items discovered during the excavations included oil lamps, spoons, bronze leafs, petals, toggle pins, normal pins, tacks, tools, nails, spikes, knobs and door pieces all made of iron or

bronze. When looking at weapons and armor, the list is equally impressive with 162 metal arrow heads, 105 iron javelin points, an iron helmet cheek piece and various harness plates, iron and bronze scabbard tips, as well as an iron horse harness.

Please remember that we are talking about pieces only unearthed during the Great Temple excavations covering an area of 9,000m², and remember that so far only 10% of Petra has been excavated and imagine what could still be found in future!

Now if we look at the other remarkable items excavated such as jewelry, discoveries include a complete twisted silver bracelet, several bronze rings, bracelets and crescent shaped pendants, plus two bronze spade shaped pendants, bronze buckles and bronze tube beads, which were part of a necklace.

In the area of the Great Temple

alone, 680 coins of Nabataean and Roman mint were found, mostly silver. The list of special items include five elephant head column capitals, two pilasters with goddess Fortuna busts, an over life sized head of city goddess Tyche wearing diadem with crown of city gates. A sculptured head of deity Helios and finally an extraordinary lion head.

As mentioned before in my comments about the rich painted and stucco decorations, this again is proof of a very sophisticated Nabataean culture, which was at even par with Greco Roman ideals.

Myth End of Nabataean Independence

There is still no clear answer to various assumptions archeologists have voiced over the years with regards to the last days of independence of Petra and the Nabataean kingdom. The most supported version is, that Romans became so strong in the region,



Over 500 seat auditorium possibly used for consultative Greek type Senate meetings between King & leaders



Here the huge size of the first courtyard can be well seen

that even wealthy Nabataeans could not resist and it was a matter of time before they had to give in.

In this version, the last Nabataean King Rabbel II was described as weak and negotiating a trade off non-attack treaty with Romans. In this deal the Romans would “inherit” his kingdom after his death.

King Rabbel the Second

Now let us look at Rabbel the Second, who ruled from 70AD to 106AD. He was the son of Malichus II and when his father died, he was still under age and therefore his mother Queen Shaqilah II ruled for the first five years with the help of Onaishu. This was possible as women had equal rights in Nabataea. Family trees with female names show that women could head a clan and pass on inheritance to their daughters.

When Rabbel took over he redeveloped the Negev area and transferred the Nabataean capital to Bosra. The redeveloping of the Negev area and transfer of capital are certainly not the deeds of a weak king.

The move to Bosra might have been triggered by a rebellion in Mada'in Salah caused by a certain Demsi or Damasi, who was supported by various Hejaz tribes. Nabataea still controlled 25% of all Roman trade and was still the only kingdom in a region under Roman influence with great

autonomy and not under direct Roman rule.

If we take a different view and say that Rabbel was a clever strategist, like his predecessors have proven over time, and had like all Nabataean kings only one goal, the survival of the Nabataean trade interests, then the answer could be simply this: Rabbel was prepared to give up independence for the huge benefit for Petra and all Nabataeans to become Roman citizens, instead of being conquered one day and become a Roman slave.

These benefits included a tax free status for the city and its inhabitants, full protection under Roman law and the use of a strong Roman army to protect all trade routes. If you cannot conquer them, take on their identity and take all the benefits, which come with being a naturalized Roman.

The Roman Takeover

At this point the Great Temple excavations come in again and in particular the 423 ballista balls found in the area of the destroyed west corner of the building. Becoming impatient with Rabbel, Roman Emperor Trajan nevertheless conquered Petra and killed Rabbel in 106AD. Cornelius Paulus, the governor of Syria at the time, became ruler of the Nabataean Kingdom, which was later converted to a Roman Province called Arabia Petraea

and Petra was granted status of metropolis, the highest city status outside Rome.

Great Temple Summery

All major ancient buildings were erected in phases and each king had to add an extension, and it was no different with our Great Temple in Petra. Only one of the twelve known Nabataean kings did not get involved, or we actually have not yet found any record of it.

In summery let us look at the many phases and break them down into the most important ones. First building steps were started before 100BC by Aretas I and Rabbel I. But a big step forward was taken under the rule of Obodas I, Aretas III and Obodas III. A great redesign took place under Aretas IV.

Shortly after the Roman takeover, the Great Temple was badly damaged in the 113AD earthquake. After some reconstruction and extension by Romans, the building was abandoned in the mid second century AD and fully destroyed in the 363AD earthquake. During Byzantine times its remains were used as quarry and fluvial deposits accumulated so that Bedouins in modern times used the flat space on the hill slope as farming area. So much about the history of Petra's most prestigious and biggest building.



Unique elephant head capitels



Unique elephant head capitels