



# STONEZINE 12

THE DIGITAL COUNTERPART TO STONEXUS MAGAZINE

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TO STONEXUS MAGAZINE

editor: Tomas Lipps

Cover photo: Kastro Larmena, Island of Euboea, Greece. photo: ??  
The Temple of Jupiter, Baalbek photo: Dibyendu Banerjee

## IN THIS EDITION:

EVENTS

LITHIKOS GALLERY  
Greece and Spain

ENIGMATIC BA'AL BEK  
by Vince Lee

SCAVENGING REVERSED  
in the Golan Heights

MISCELLANAE

This, like all editions of STONEZINE,  
can be printed on 8.5 x 14 paper.



# CALENDAR OF EVENTS

## Fall 2017

### **DRY STONE FESTIVAL 2017**, September 29-Oct 1

Presented by Dry Stone Canada

St. Mark's Anglican Church, village of Barriefield (Kingston, Ontario)

<http://drystonecanada.com/2017-festival-st-marks-barriefield-ontario/>

### **MALLORCAN DRY STONE WALLING WORKSHOP** October 23-26 +29

and the **FIRST MEDSTONE CONGRESS** October 26-29

Village of Deia, Mallorca, Balearic Islands, Spain

<http://www.medstonecongress.com/>

### **DRY STONE WALLING COMPETITION**, October 21, 2017

The Robert M. Brewer National Dry Stone Walling Competition

Novice, Intermediate and Professional Classes – trophies, ribbons, tools and cash prizes.

Shaker Village of Pleasant Hill, near Harrodsburg, Kentucky.

ALSO:

**INTRODUCTORY WORKSHOP**, September 23-24 (Sat-Sun)

**INTRODUCTORY WORKSHOP**, October 6-7

**CERTIFICATION PREP WORKSHOP**, October 18-19

**Certification Exams**, October 20 & 22

<https://www.drystone.org/>

### **THE CARVING STUDIO AND SCULPTURE CENTER**

is holding several Stone Carving and Sculpture Workshops throughout the summer and fall in West Rutland VT.

**OPEN STUDIO A/ALUMNI WEEK, September 11-15**

**INTRODUCTORY STONECARVING**, October 7-8

<https://carvingstudio.org/events/category/workshops/>

**THE STONE TRUST** of Vermont has held several workshops over the summer.. There are still two more on its schedule:

**Site Prep Workshop**, October 6,

**Two Day Workshop: Level 1 & 2**, October 7-8

<https://thestonetrust.org/workshop/upcoming-workshops/>

LITHIKOS  
GALLERY

STONWORK  
GREECE  
& SPAIN

*photos:*  
TOMAS LIPPS



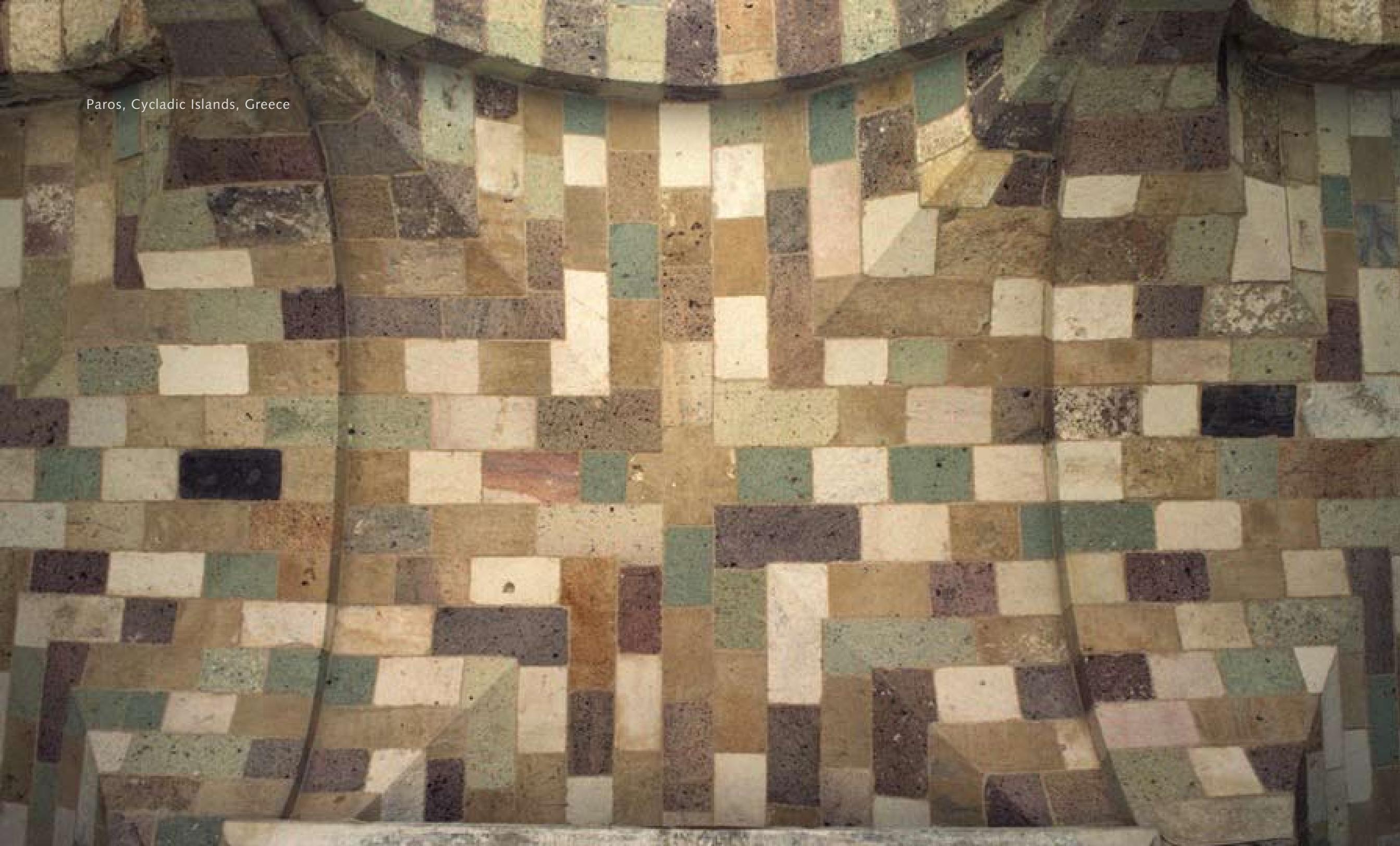
Delos, Cycladic Islands, Greece





Paros, Cycladic Islands, Greece

Paros, Cycladic Islands, Greece



LITHIKOS

Sifnos, Cycladic Islands, Greece



LITHIKOS



Delos, Cycladic Islands, Greece



pavement, the Parthenon, Athens, Greece



Tarragona, Spain



Zaragoza province, Spain







Deia, Mallorca, Balearic Islands, Spain





Barcelelona, Spain

Barcelona, Spain





## REVERSE SCAVENGING

When, in the 1967 Six-Day War, the Israel Defence Forces stormed and took the Golan Heights from an unprepared Syrian military, they were closely followed another army—one comprised of Israeli archaeologists eager to discover the history of this pocket of land in the Upper Galilee that had been Jewish territory in biblical times. The fortunes of the Golan waxed and waned as a succession of cultures achieved, and lost, dominance. There was a short-lived resurgence of Jewish settlement around the turn of the 19th.20th centuries.

This village (I don't know its name) was one of the few sites I was able to visit on the single afternoon I spent on the Golan Heights with my friend and guide, Dutch/Israeli geologist/historian, Ithamar Perath.

According to Ithamar, archaeologists noted the presence of dressed basalt blocks in the fabric of various houses in the village. Thereupon a survey was carried out and the placement of each block registered on a map. A more or less concentric array was revealed and when the archaeologists excavated at the center of that array they discovered the foundations of a synagogue.

Accordingly the blocks were 'removed' from the houses and brought to the center where they were used to rebuild the synagogue to the extent that you see in these photos. External walls are shown in the photo at the left and some interior walls below. (Not a place you'd like to be during an earthquake).

T L





*In the resurrected synagogue*

portrayed on the previous page there was no architectural stone carving to be seen. This may be an anomaly as there is ample evidence of skilled carving in the twenty or so synagogues identified in that area.

In researching this article an interesting paper came to light: *Style as a Chronical Indicator on the Relative Dating of the Golan Synagogues* by Roni Amir. As this paper makes clear, the Golan-centric, Jewish communities in the 4th century CE had the will, the wit and the craft to produce architectural stone carvings of quality.

The double column pictured here is a well-crafted oddity. Note the merging of the square and round columns worked out via the stepped geometric motif; the rustic Corinthian capital complete with acanthus leaves; the twisted rope moulding between the shaft and the capital of the round column; the diamond band in relief around the abacus.

*left: Double column, Synagogue Khorazim*

*above: Daniel in the lions' den, relief from Synagogue 'Ein Samsam. Floral motifs, lions and eagles figure prominently in Golan friezes.*

*below that: frieze from Synagogue Khorazim*



*Next Page:*

While we're in the Golan let's look at this Chalcolithic (Copper Age 4500 to 3600 BC) ruin. It had been encased in the soil for several millennia—it is not a reconstruction, this is how it was built, by people who knew what they were doing, perhaps 6,000 years ago. It had been recently excavated when the photo was taken in 1984.

Its function is somewhat of a mystery. According to Ithamar there was no evidence that it had been used for either burials or habitation.

*Chalcolithic (Copper Age) stonework:*



*The Strangler Cairn*

by Andy Goldsworthy.

An installation done in 2011 by the artist in Conondale National Park, Queensland, Australia.

The rock cairn contains the seed of its own destruction—actually a cutting from a fallen strangler fig tree.

The strangler fig begins life when seeds, deposited by birds in crevasses in the tops of other trees, germinate. The roots grow downward, gradually enveloping the host tree, or in this case, rock cairn—note the sprig emerging from the top of the cairn.

The art work has engendered controversy, not least because of its cost: \$700,000.

photo: Melanie en Australie

Here is a link to a video about the project is interesting, particularly when it is concerned with the work process: <https://vimeo.com/40558291>



DRY WALLING

*Pick and lift and fit and settle and chock all day.  
Stone scritch-scratches the rough glove.  
You invent descriptions for the stone you want:  
Thin in-squeezer; flat-long narrowy; square dumper  
With a corner lifted like a curled lip.  
A heap of stones is a feast of choices;  
Stone running thin frays the temper.  
When three successive stones fly straight to their places,  
Things are in tune that day.*

*Not that there is a perfect fit:  
Doubt comes with the compromises,  
But endurance grows with the wall.  
By mid-stage,  
Footings long buried,  
First throughs a memory,  
Top stones over the horizon yet,  
It's in the blood.  
You hear the chuckle of the hearting trickling in,  
And, travelling home, feel more tired  
To see miles of walls on the moors,  
Some broken down.*

*But heaving on the copings is play,  
A rejoicing that hardly tires,  
However long it lasts.*

—John Walker



# ENIGMATIC BA'AL BEK

*by Vincent R. Lee, architect*

Nestled at the base of the western flank of the Anti-Lebanon Mountains along that country's eastern boundary with Syria is perhaps the most perplexing, little-known and mysterious megalithic archaeological site on Earth. Located at an elevation of 3700 feet (1128m) near the headwaters of both the Orontes and Leontes Rivers, the two great spring-fed streams that nourish the region's famously fertile Bekaa Valley, Baalbek has been revered as a sacred place for millennia.

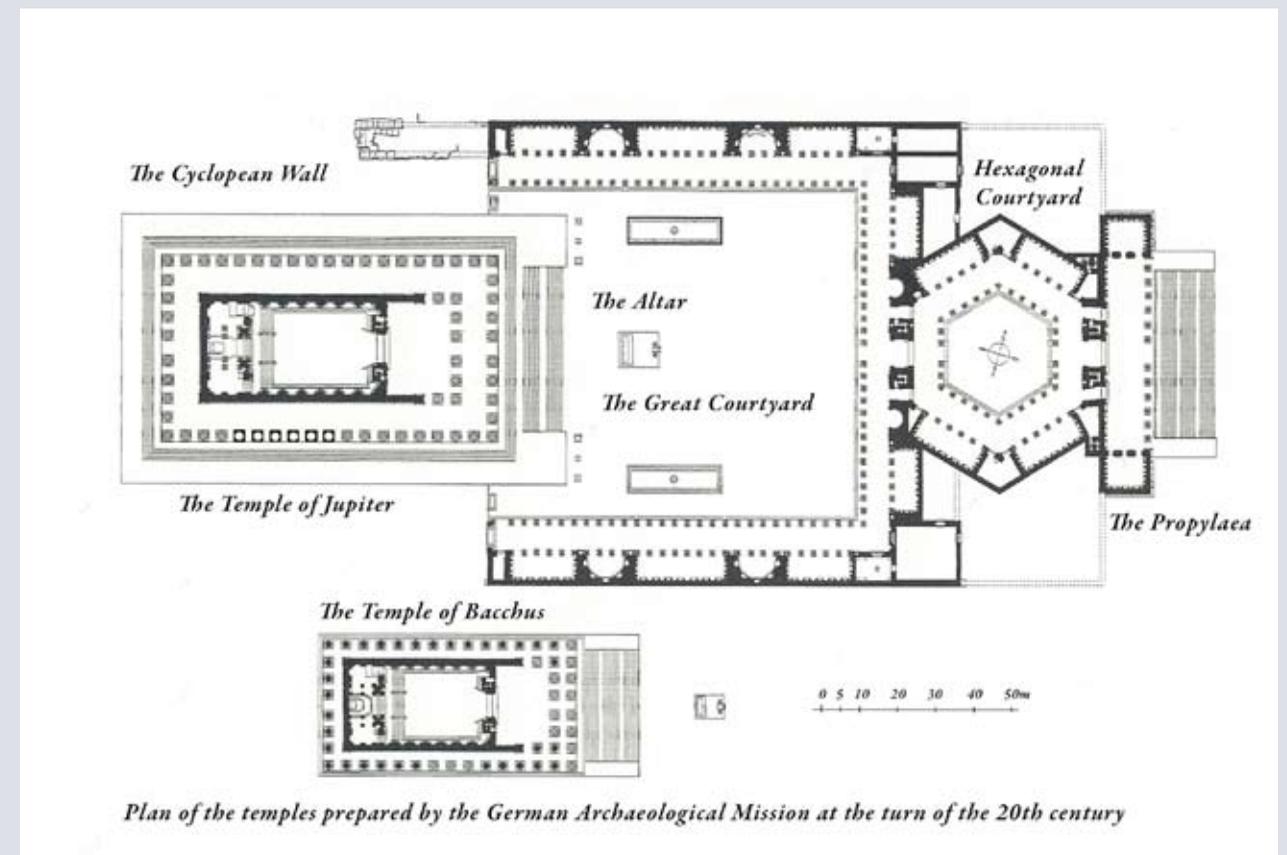
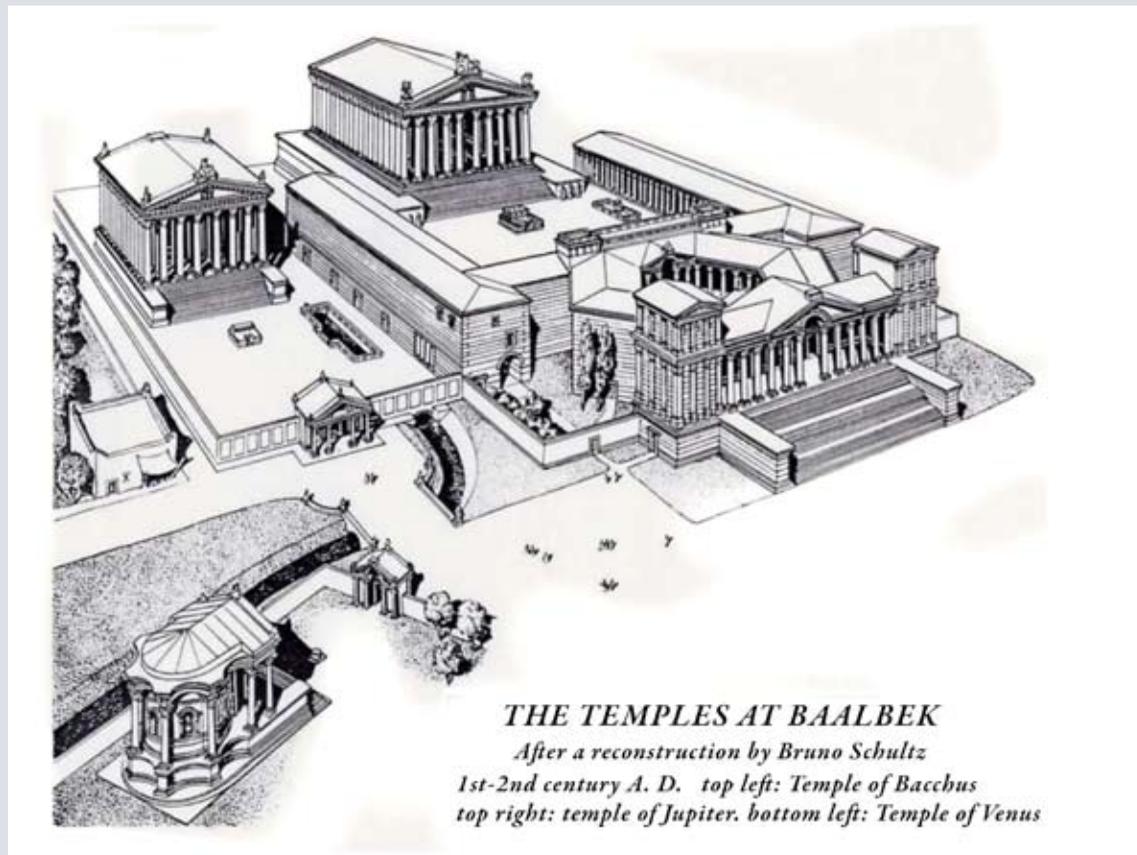
No one knows who first memorialized its spiritual power with monumental architecture, but in biblical times the Bekaa was known as the 'Valley of Lebanon,' and Early Bronze Age remains have been recovered from the bottom of a fifty-meter-deep crevice beneath the present-day ruins. Archaeologists believe this natural feature was the ancient centerpiece of a sanctuary dedicated to the Canaanite-Phoenician god Baal, from which the name Baalbek derives. All traces of this very early temple, if any, remain deeply buried beneath the work of subsequent cultures

Before 300 BCE, Alexander the Great conquered the entire region and his successors, the Ptolemies and later, the Seleucids, ruled the area until the arrival of the Romans in the time of Anthony and Cleopatra. The Greeks called the modest town that had grown around the site *Heliopolis*, City of the Sun. Octavian, soon to be Caesar Augustus, retained the name after his overthrow of Anthony at the Battle of Actium in 31 BCE

Under Augustus, the city began its rise to become one of the most important colonies in the Roman province of Syria. Located at the intersection of the main north-south and east-west roads that crisscrossed the region, Heliopolis soon became a strategic and commercial center as well as a spiritual power-place. The surrounding Bekaa valley was known as the 'breadbasket of Rome' due to its prodigious output of grains and other agricultural produce. In recognition of these virtues, Augustus early in his reign began construction there of what would become the largest temple complex in the Roman world, a work continued by all of his successors until the Christianization of the empire under Constantine in 313 CE.

This much we know, but amazingly, the classical documents say little else about this gargantuan and spectacularly elaborate project.

*All photos by the author unless otherwise noted.  
right: The Stone of the South. photo: Public Domain.*



### *Still unfinished*

When the era of pagan temple building came to a close, the complex soon began a long slide into disrepair and obscurity. The many Roman splendors were later vandalized and the stones recycled for other purposes, including a nondescript Byzantine basilica in the midst of the enormous courtyard that fronted the principal Roman Temple. In the 7th century CE, the entire region was overwhelmed by the rise of the Muslim Arabs and an uneasy coexistence with the Christians ensued. The old Greek name gave way to Baalbek in recognition of the ancient Phoenician gods. During the Crusades, the Arabs occupied the site and transformed it into an impregnable fortress, vestiges of which remain today. In the 16th century, the Ottoman Turks absorbed much of the Middle East and Baalbek drifted into obscurity, visited by the occasional Renaissance tourist and regarded largely as a curiosity by people of learning. Not until 1900 did formal studies of the site, including archaeological excavations, begin to disclose its former wonders.

German expeditions supported by Emperor Wilhelm II worked to clear, restore and record the ruins up until the outbreak of World War I, and their documentation remains most of that available to the present. In recent decades, the Lebanese government has continued to restore as much of the Roman work as possible and today encourages tourism from around the world. A long day's drive from either Beirut or Damascus, and with no airport, a visit to Baalbek nevertheless remains a bit of an adventure.

Of primary interest here, the plan and a reconstruction drawing of the Roman temple complex are shown above. At its climax in the 4th century CE, it consisted of the Temple of Jupiter, The Great Courtyard, Hexagonal Courtyard, Propylaea, the Temple of Bacchus and a small Temple of Venus, now almost completely destroyed and not shown in the plan view.

First to be built was the Temple of Jupiter with its Great Courtyard to the east in the form of an indigenous temple to Baal, thus the popular name, 'Temple of Jupiter-Baal.' The various other structures were built by Augustus' successors over the following 300 years. The Temple of Jupiter was the largest ever built by the Romans. The Parthenon would have fit nicely inside.

*above: Artist's reconstruction view of Roman Baalbek and a site plan of the Roman temple complex.*



### *The Temple of Jupiter Optimus Maximus . .*

All that remains today are six of the original 54 peristyle columns. They were carved of rose-granite at Aswan on the southern border of Egypt; each one is more than 7 feet (2.2 m) in diameter, over 70 feet (22 m) high and weighs about 230 tons (209 mt). Each section of the entablature spanning the columns weighs about 60 tons (54.5 mt), except at the corners where they exceeded 150 tons (136 mts)!

It was a megalithic masterpiece, as was the nearby Temple of Bacchus, about the size of the Parthenon and to this day, the best-preserved Roman temple in the world. Its Great Courtyard covered an area 370 by 443 feet (113 by 135 m), and was a raised, open-air enclosure within which were all the classic elements of the earlier temples to Baal believed to have occupied the site: a large, four-story altar, two purification ponds, two monumental, free-standing pillars and a sacred boulder. The entire assembly was laid out along a roughly east-west axis, and both the courtyard and temple were entered only from the east, like the Temple of Bacchus in its time.

*left: The six remaining columns of the Roman Temple of Jupiter. (The location of these columns is indicated on the plan view of the temple complex on the previous page.)*

*below: The well-preserved Roman Temple of Bacchus. photo: The World Bank (a World Bank project supported the conservation of the Temple of Bacchus, an astonishing Roman temple. Conservation work provided much-needed employment to people residing in the nearby areas – with 70% of the workforce being Syrian refugees. In the summer of 2016, the temple hosted the 60th International Festival of Baalbeck, attracting large numbers of visitors from Lebanon and the region.)*



*The astounding Baalbek Trilithon,*

the feature for which the site is most famous today is not shown on either the plan or the reconstruction drawing. Virtually hidden under the west end of the structure it consists of three 900-ton (818 mt) blocks that form part of the raised platform on which the Temple of Jupiter was erected. Less well known is that beneath the trilithon lie twenty-four 400-ton (364 mt) blocks (forming an immense 'U'-shaped enclosure, nearly encircling, but otherwise unrelated to, the Roman temple platform. Conventional wisdom is that this megalithic extravaganza—actually *maxilithic*, since they are among the largest stones ever quarried—was part of the Roman project, abandoned for some reason during construction. The only hard evidence for this was a piece of *spolia*: a discarded column drum discovered in the foun-

dations beneath the trilithon and generally presumed to be of Roman origin. Why the Roman builders would have had a column drum on-site at such an early stage of construction remains a question—as does how it came to be identified as Roman. Judging from its position in the wall it is likely to have been a much later structural repair, a 'dutchman' inserted in the fabric of the wall, perhaps by Arab masons.

*below: Two views of Baalbek's famous 'trilithon' stones (note the outlined human figures for scale) the one on the right illustrates the differing degrees of weathering between the stones of the trilithon wall and the Roman masonry above it. photos: Public Domain*

*right: The column section in the trilithon wall. photo: From the book Magicians of the Gods by Graham Hancock*



### *What else can be said*

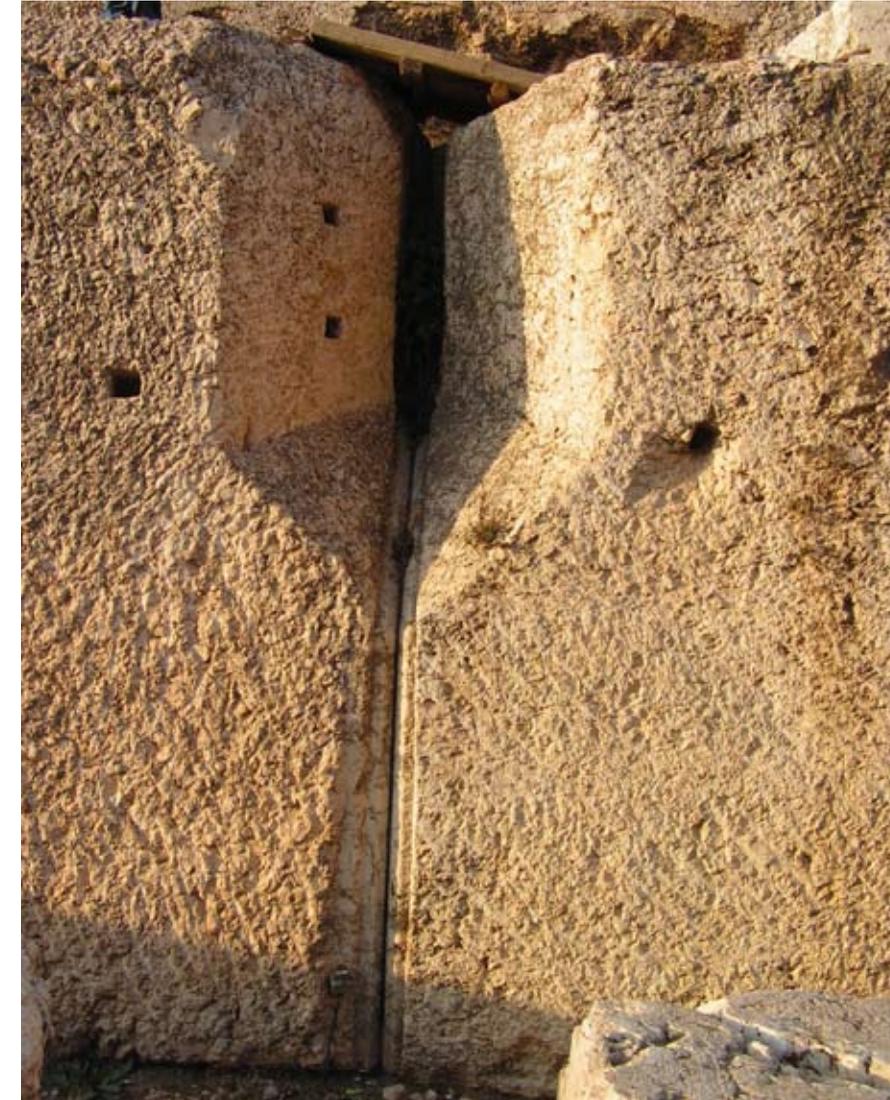
about this truly Cyclopean feature of Baalbek's astounding ruins before going into the many other reasons for believing the trilithon and the courses of massive blocks supporting it are not Roman? Let's see. . .

In addition to its almost complete structural irrelevance to the surrounding work, it would have gone essentially unnoticed by visitors to the site in its heyday, who would have entered the complex and its temples only from the east, the one direction from which none of the gigantic blocks would have been visible.

Another interesting fact noted by many observers is that weathering on the huge blocks is much more pronounced than on adjacent stones of the same material clearly dating from the Roman period.

There is ample evidence that the maxilithic work was incomplete when abandoned. The beveled topmost profile of the 400-ton (364 metric ton) blocks on the west is incomplete on the south and non-existent on the north. Template grooves on the unfinished blocks show that the detail was clearly intended on all sides.

And finally, a curious detail was apparently discovered when the Roman platform was cleared of rubble—the full-scale working drawing of the temple's cornice and entablature engraved on the top one of the trilithon blocks.



*left: Note the uncompleted beveling of the maxilithic blocks.*

*above: Work to be done scribed and then abandoned? Done during the Iron Age, judging by the toolmarks?*

### *The three largest building blocks in the world*

provide proof that more was planned than was ever completed.

In the quarry at Baalbek that supplied the largest of the stones for the temple mount there is a trio of mind-boggling colossi. Lying shaped but unmoved, apparently awaiting transport to join the trilithon wall is the 1200-ton (1090 mt) *Stone of the South*.

A larger block was discovered and excavated by German archaeologists in 1990; it weighed 1500 tons (1360 mt). As the vacuities on the top indicate, this quarried block itself was subjected to quarrying.

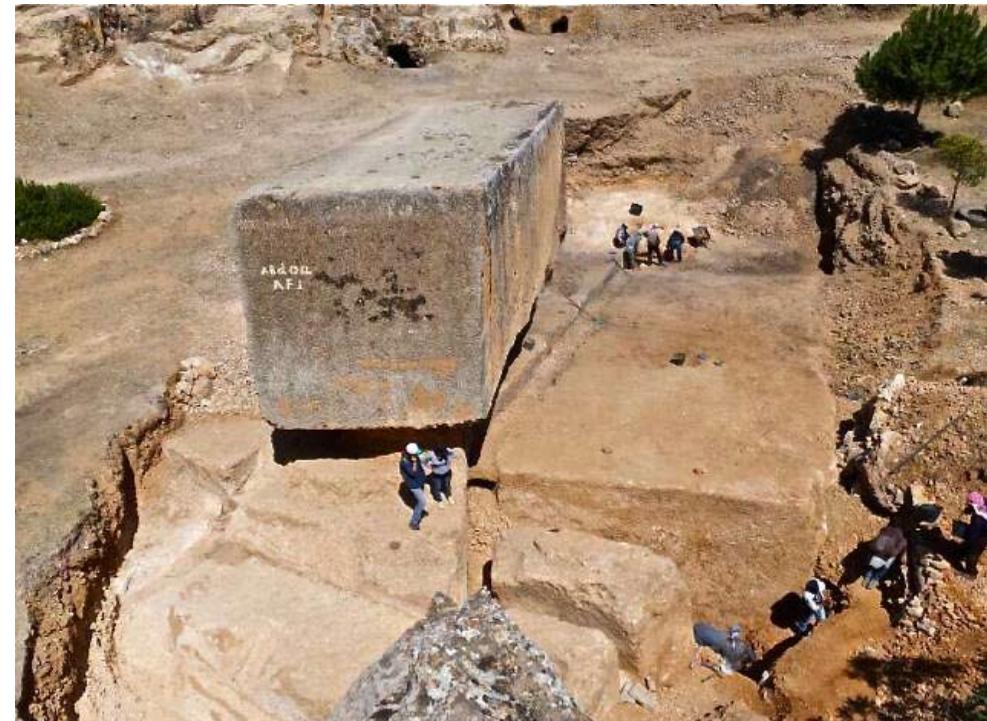
And an even larger block was discovered and partially excavated in 2014-2015, again by German archaeologists. Its weight is estimated to be nearly 1650 tons (1500 mt).

*right: The Stone of the South aka the Hajjar al-Hibla monolith.*

*below: The block discovered in 1990*

*below, right: The most recently discovered block the largest ever quarried, any time, anywhere. It is situated just below the Stone of the South.*

*photo: Deutsches Institut Archäologisches*



### *So . . . why is it doubtful*

that the Romans produced this incredible display of megalithic work?

1st: The western portico of Augustus' temple bears directly above the trilithon, where the full-scale image of the structure's cornice and entablature were found. Apparently used as a template for carving these huge blocks, it would have been useful only if exposed for long enough to see them completed. This would have needlessly held up work on that side of the building unless the trilithon was already in place during the planning stage, long before construction began. Alternatively, if construction of the Roman platform had progressed to the level of the trilithon tops, why not put the image elsewhere, well out of the way of continuing work?

2nd: the differential weathering pattern noted above strongly suggests that the megaliths have been exposed there far longer than the smaller, adjacent blocks that are indisputably of Roman origin. (see *last page*)

3rd: The giant blocks still in the quarry prove that whoever built this had in mind a much larger project—the scale, finish and design of which bear no resemblance to anything remotely Roman.

And finally, together with its many smaller but still very large, 10 and 20-ton (9-18 mt) foundation stones, the entire structure amounts to about 100,000 tons (90,909 mt) of extremely time-consuming and costly mega-masonry completely unnecessary to the Roman project. While it is true that the trilithon supports the temple's west end, the north and south sides carrying that building's even greater roof loads bear on Roman walls far less massive.

The rest of the megalithic work supports absolutely nothing. The northern wing of the 'U,' for example, is simply a free standing wall nearly 330 feet (100 m) long, about 25 feet (7.6m) from the temple platform—nine perfectly fitted 400-ton blocks—a wall with no discernible purpose.

Most telling of all, however, is the fact that the trilithon and its supporting horseshoe of mega-stones would have been a pathologically un-Roman thing to do.



*above: The gigantic extraneous wall along the northern wing. It is composed of 400 ton blocks*

Caesar Augustus was no dummy. Anytime he and his architects expended enormous amounts of time, manpower and treasure, they did it for practical reasons, and did it well. But more than anything else, they insured that it was impressive. They dazzled their subjects with the power and magnificence of Rome at every opportunity. We know from the classical documents that the largest stone the Romans ever took credit for moving was the 455-ton (413 mt) obelisk of Thutmose III, stolen by the emperor Constantine and erected eventually in the center spine of Rome's Circus Maximus by his son Constantius, where more than 100,000 spectators regularly marveled at its magnificence. Only sketchy reports of the technology involved have survived, but it was an enormous project, requiring a huge, specially built ship just to get the 100-foot (32 m) long granite shaft across the Mediterranean. At Baalbek we find 24 stones of similar size and three times as heavy about which Roman historians say absolutely nothing.

The very fact that the Baalbek stones were effectively hidden by the Romans suggests strongly that they were found already in place, abandoned unfinished by some earlier culture, and one that Augustus had little reason to celebrate. On the other hand, two things would have been clear: first, the existence of such a monument confirmed the site as an important place, clearly sacred in prior times. Second, the local population almost certainly associated the stones with both secular and spiritual power.

The way to take advantage of that power without glorifying the previous culture, was to overwhelm the site with the most impressive Roman temple complex ever conceived, building directly atop the earlier work but hiding it from view—which is precisely what the Romans did. It was a strategy used by many conquering cultures. In the New World, the Spanish Conquistadores routinely built their churches and cathedrals atop the ruins of the native temples. On the one hand, it honored and absorbed by association the hallowed nature of the place and at the same time suppressed the earlier belief system in favor of the new.

### *Local tradition tends to agree*

that the Romans found Baalbek's stupendous blocks long abandoned by an earlier culture, but opinion varies widely as to which one. Some legends go all the way back to the beginnings of recorded history. In one of the earliest, Cain is believed to have used giants and mastodons to build the "fortress" as a refuge from Yahweh's wrath following the murder of his brother, Abel. In another, Solomon built a magnificent 'castle' at Baalbek to impress Balkis, the beautiful Queen of Sheba, whose romantic attentions he sought. The fact is, however, that none of the modern excavations at the site have turned up any clues, tying the megalithic work to these or any other early cultures, leaving the Romans presumed responsible, largely by default. Making matters even more difficult, Baalbek came under the influence of nearly every ancient power in the Middle East at one time or another. In the course of time the region was ruled in succession by the Egyptians, Hittites, Canaanites, Phoenicians, Israelites, Babylonians, Assyrians and Persians in the centuries before the arrival of Alexander and, finally, the Romans. None of these earlier cultures were strangers to megalithic construction but only the Egyptians are known to have used stones anything like the size of those at Baalbek. And, like the Caesars, the Pharaohs used them where it counted: for obelisks, colossi and other public monuments, celebrating themselves and their royal grandeur.

### *One possible clue*

to solving the mystery of the trilithon lies 166 miles (265 km) south of the site, at Jerusalem's renowned Temple Mount. Built by Herod the Great in about 19 B.C.E., the Second Temple was actually a reconstruction and substantial enlargement of Solomon's original First Temple, begun in 957 B.C.E., but subsequently destroyed by the Babylonians in 586 B.C.E.. Today, only the huge platform on which Herod's temple stood remains. A portion of the western side of this platform, sometimes called the Wailing Wall, is one of the world's most sacred places for traditional Jews. It is generally credited to Herod, a powerful king and tireless builder, but a Roman puppet and ruthless tyrant to his people. Many of the devout prefer to believe that the Wailing Wall is a remnant of the First Temple, and thus a relic not of Herod, but of their beloved Solomon. No proof of this has been found, but if they are right, it could solve the puzzle of Baalbek.

Only a small portion of the western side of the Temple Mount has been excavated and exposed for visitors. Much of the rest lies buried under the modern city. A tunnel has been dug under the neighborhood immediately north of the exposed section, however, in which a continuation of the Wailing Wall is on display. Partway into this tunnel is found the *Stone of the West*.

Believed to weigh about 600 tons (545 mt), this block is many times larger than the sizeable stones that otherwise constitute the structure. It bears an uncanny resemblance to the megaliths at Baalbek, and is the only other comparably sized stone in the world of which that can be said. They are all a soft, easily worked limestone and even the "put holes" for scaffold support and chisel marks on the Jerusalem stone are similar to those at Baalbek. Is all this a coincidence, or might they be somehow related?

Based on Old Testament sources and the works of first century Jewish historian Flavius Josephus, there might be a connection. Unlike Herod, whose domain was relatively small and centered around modern-day Israel, Solomon apparently controlled a much larger swath of territory, including Baalbek and beyond. A passage in 2 Chronicles notes his building programs in *Tadmor* (Roman Palmyra in the Syrian desert, 130 kilometers beyond Baalbek) and *Baalath*, a name very similar to *Baldach* used by at least one early writer visiting Baalbek. Both the Bible and Josephus include numerous references to Solomon's use of "huge, costly" stones in the foundations of the First Temple, "stones of forty cubits in magnitude" (about 21 meters long, the trilithon stones at Baalbek are a bit more than 20 meters).

The *Bible*, in 1 Kings, boasts that he employed "seventy thousand laborers" in this work, not including 80,000 quarrymen and 3000 supervisors. Just how reliable these sources are, is an open question, but they certainly suggest a builder with a fondness for megaliths—at least one such stone did indeed find its way into the foundations of the Temple Mount and others could easily be concealed somewhere within Herod's much enlarged and still largely unexcavated reconstruction. Could it be that we have the Queen of Sheba's beauty to thank for the trilithon?



*left: The 600-ton Stone of the West at Jerusalem's Temple Mount. photos: left, Galyn Wiemers. far left: Jeff Thiemann.*

We may never know the answer to that question, but some interesting clues do exist regarding what may have been the original builders' intentions. With the Roman project removed, the layout of the maxilithic work is a large, rectangular enclosure, open to the east. Whatever exists or once existed in the enclosure's interior or on its east side remains unknown, encased within the Roman platform.

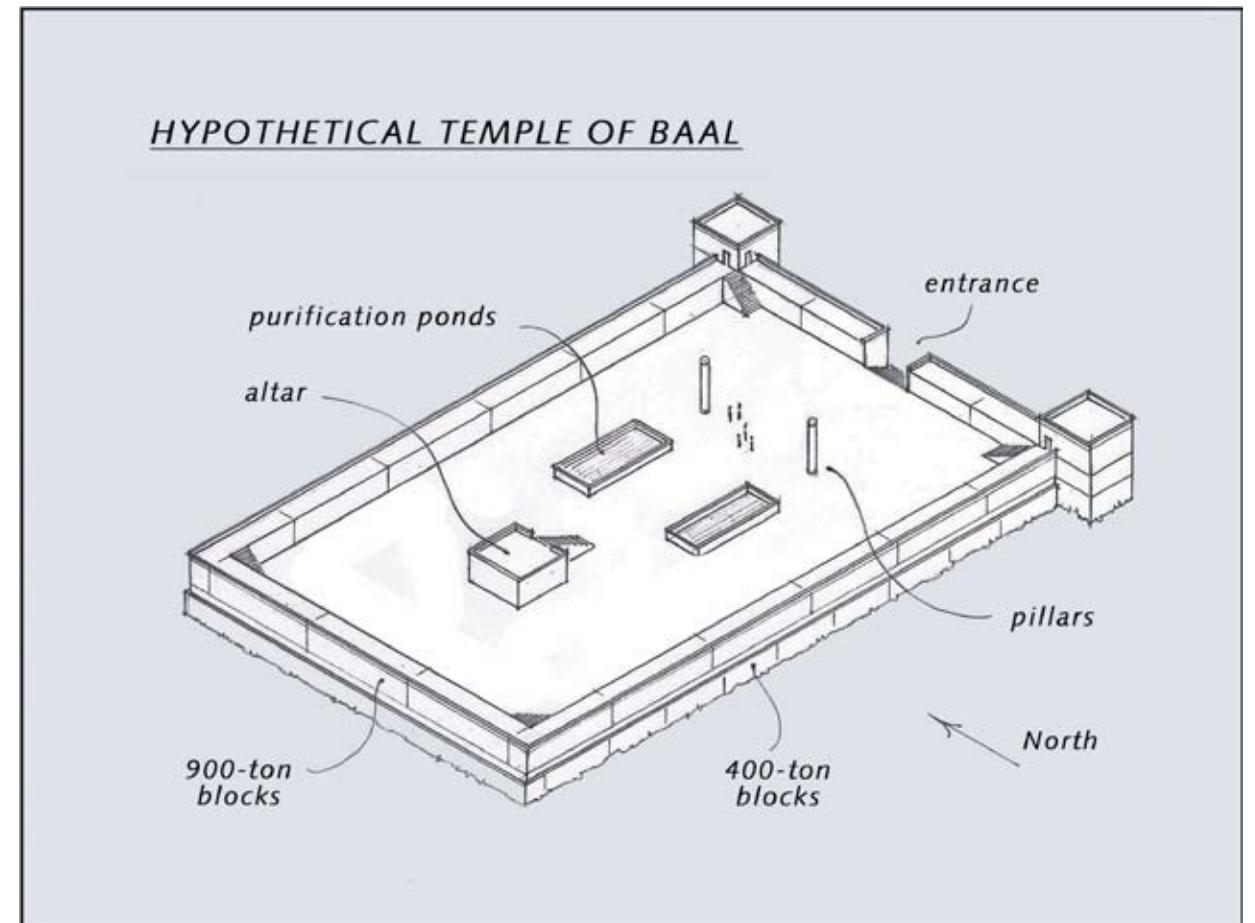
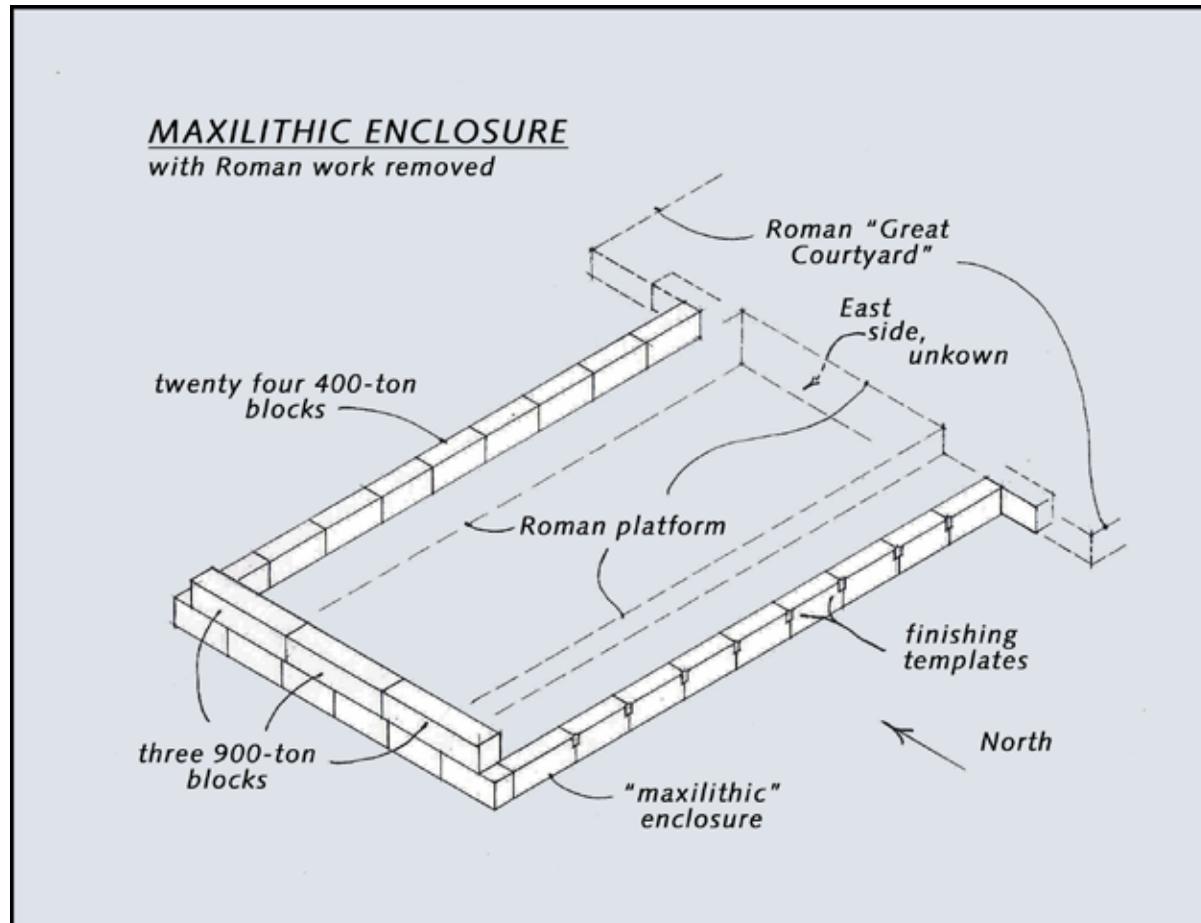
*A curious detail about the construction*

of the trilithon wall is readily apparent. The largest stones are on top, the next largest are just below them and the smallest stones are on the bottom. This is the exact opposite of common practice everywhere else in the world, where the reverse is almost universally true, with stone-size decreasing from bottom to top, for both practical and aesthetic reasons.

This 'inverted' design at Baalbek was no accident, and is almost certainly an important, if enigmatic, feature of the original design. We'll return to this striking detail later but first it will be necessary to consider the structure as a whole and see where that leads us. How do the features summarized above help us address the problem of the structure's appearance as planned? Let's take a look: With (A) the trilithon course completed by adding the blocks from the quarry and more, with (B) the beveled profile of the smaller blocks beneath the trilithon course completed and with (C) the east side of the enclosure filled in to match the rest (including projections at the corners and an entry of some sort at the center), we can propose a speculative solution. Not too surprisingly, it would have had much the form (albeit writ very large) of a typical temple to *Baal* as described earlier, in the discussion of the Great Courtyard.

The lowest, relatively small courses of stone were probably just a foundation used to retain grade on the low side of the gently sloping site and create a level plane for the maxilithic construction work above. Possibly, it would have been buried and hidden from view in the completed project. The course of 400-ton (364 mt) blocks had two purposes: first, to support the enormous weight of the trilithon course above, and second to retain the fill required to raise grade inside the perimeter to the level of the trilithon's base, thus creating the enclosed, elevated courtyard necessary to the temple's design.

Finally, the spectacular trilithon course topping all the rest, the only part of the structure visible to worshipers inside the courtyard. It would have been impressive. Perhaps it was not a palace Solomon planned for his paramour, but a stupendous temple to her gentile god, *Baal*.



### *Having configured a plausible design*

for the maxilithic structure, let's now look at the construction alternatives available to its builders. . .

Managing stones the size of those at Baalbek by hand was a daunting prospect by any means available to any of the cultures that might have done it, including the Romans. Roman technology involved moving or lifting the stones with roped windlasses attached to the stones by iron 'lewis pins' inserted into dovetail-shaped 'lewis holes' able to take perhaps 5 tons of load each. In the case of the Trilithon, at least 180 such holes would be required per block, but none remain evident on the stones today. A like number of windlasses would also be required, anchored firmly to the ground, separated to provide workspace for the many men or animals turning the wheels and relocated frequently to re-rig the ropes as the stones moved.

This could be termed the 'high-tech' option, involving sophisticated materials, tools and methods not yet known to cultures centuries earlier. We actually have good records of a similar system, used to relocate the 250-ton (227 mt) Vatican Obelisk a mere 249 feet (76 m) in 1585.

It was an colossal project, involving giant timber devices moved by hundreds of men and horses turning 42 windlasses over a huge workspace, partly cleared of buildings for the purpose. The existing maxiliths at Baalbek would have consumed 50 times as much effort and the completed enclosure utilizing the stones in the quarry and more, twice that - a possible, but unlikely scenario.

We know that the New Kingdom Egyptians manipulated like-sized objects, placing them on huge timber sleds and dragging them over roadways fitted with rollers or, more likely, greased 'sleepers' embedded into the road's surface. Let's call this the "low tech" option, since the principles involved are quite simple, applied nevertheless on a grand scale. We know that thousands of workers were employed to move the largest loads. These were, however, single monuments, not giant building blocks. The 455-ton (413 mt) obelisk of Thutmose III, stolen by Constantine, was only slightly heavier than each of the 24 blocks forming the Baalbek enclosure, and only half that of the three trilithon blocks above.

Again, as with the Roman system, it is theoretically possible that something like the Egyptian method was used, but no trace of the elaborate haul road required to move the stones from the quarry to the ruins has ever been found. Also, the mountain of fill material needed to ramp up onto to the work platform as its height increased is entirely absent. And finally, the pulling crew, grandly estimated by some at over 40,000 men, but certainly a tenth that or more, would have run out of workspace as their stone approached its destination.



It is a common flaw in many theories dealing with overland transport that they cease to work when applied to final placement of megaliths in close quarters, with no room for large gangs of handlers to work. With that in mind, a third method, so rudimentary we might call it a 'no tech' option is worth considering. It is axiomatic that the first step in almost any stone-moving project is to raise one edge off the ground. If you can't do that, your only hope is to simply drag the stone away, a virtual impossibility in most cases. Both the high and low tech options described above necessarily begin with lifting one side of the load so that it can be tumbled or levered up onto a sled of some sort. A carriage beneath the load is especially important for a finished object such as an obelisk, to prevent damage or breakage during transport.

## Moving roughly shaped blocks

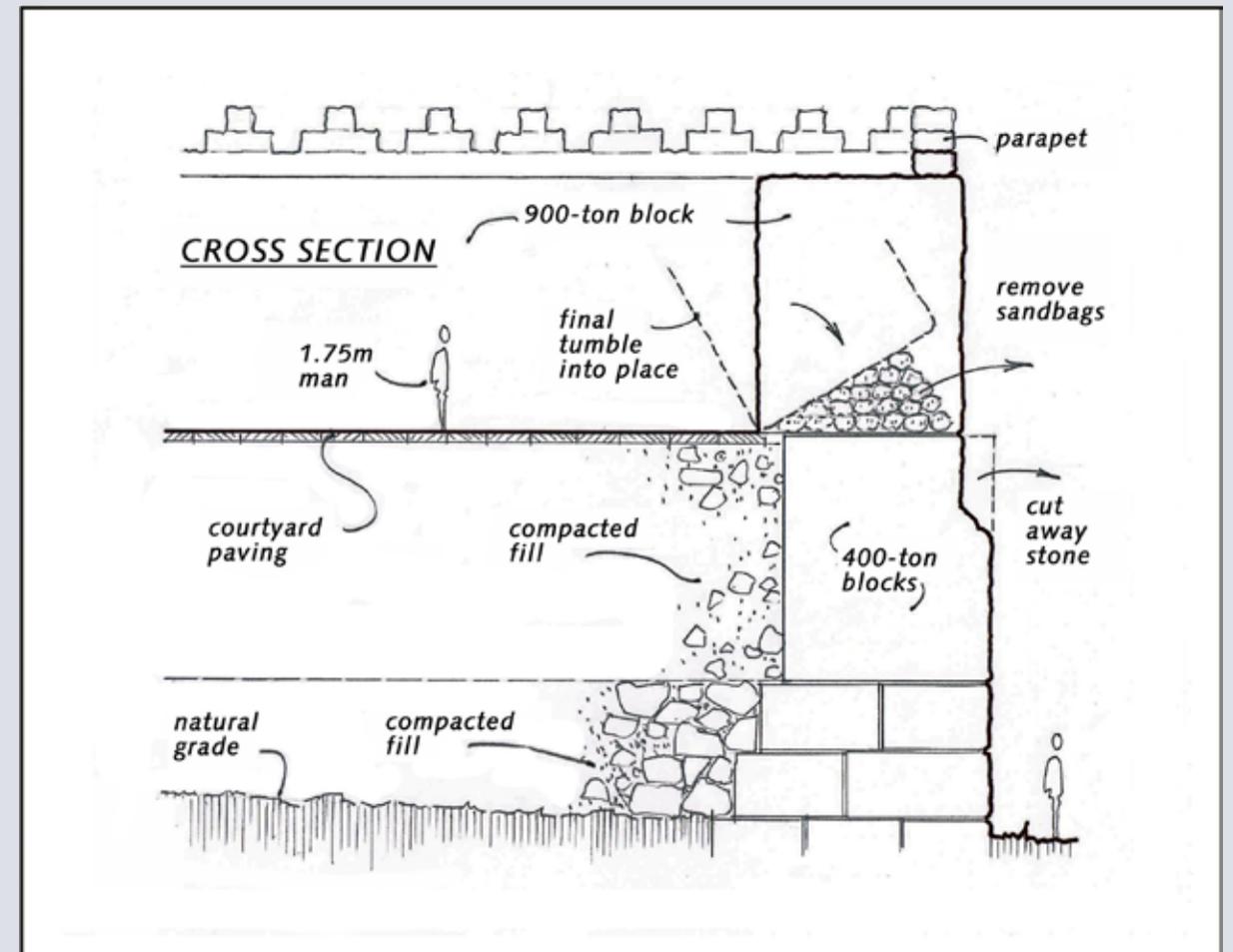
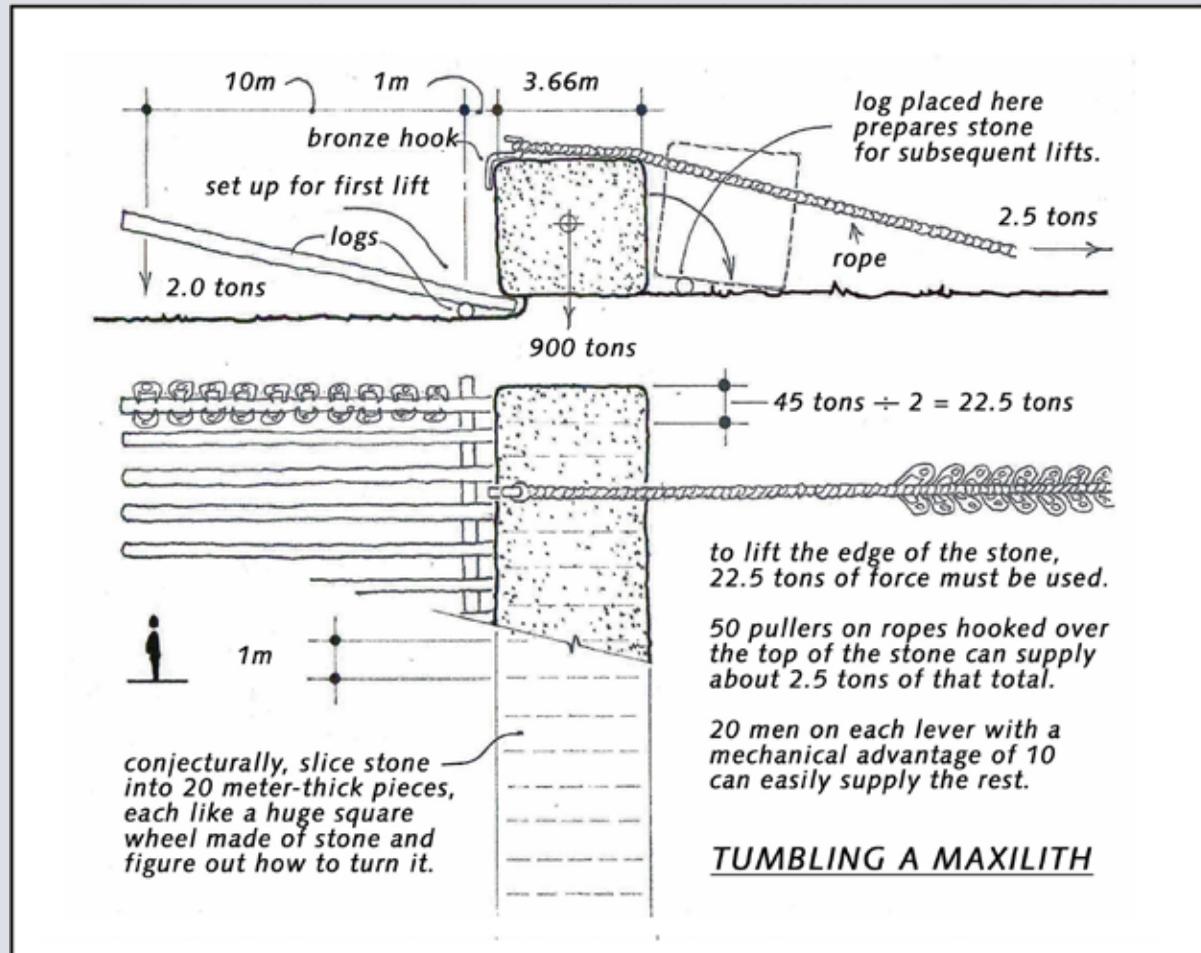
from the quarry requires less care, assuming their shapes are not prone to breakage. The stones of Baalbek meet both tests and, furthermore, are square in cross section. It is this fortunate trio of characteristics that permits the most basic method of all, simply tumbling the stone, over and over again. Even with blocks as large as those in the trilithon, this is not as daunting as it might seem.

The first move is the hardest, with half the stone's weight needing to be lifted. The far edge is the fulcrum about which the load is rising and the weight is concentrated at the center of gravity, so the force applied beneath the near edge enjoys a mechanical advantage of 2—thus only half the stone's weight is in play.

Better yet, as the near edge rises, more and more of that weight passes beyond the fulcrum, thus counterbalancing some of the load being lifted and reducing the force required. Confirmation of this is evident as the angle beneath the stone approaches 45 degrees and no force at all is needed to tumble the stone the remaining 45 degrees, with its own weight doing all the work. Clever placement of logs just beyond the fulcrum leaves the near edge of the tumbled stone raised and ready for the next lift. The lifting is done by a combination of levers beneath and pull-ropes over the top of the stone. Direction changes are made by tumbling the stone onto a slight mound beneath its center so that it ends up roughly balanced and easily rotated by pullers on one end and levers at the other. The only site preparation needed is a clear pathway

a bit wider than the length of the stone, in this case about 80 feet (25 m), little or no trace of which would remain today.

As with any method, the "devil is in the details." In this case, the main challenges are that the lever stations must be raised as the stone rises and the load must be 'chocked' after each lift to maintain the height gained. Clever and easily moved and re-established solutions to both problems would be critical to success. Crew sizes and space needs would be far less than for either the high or low-tech options described above, and the final tumble into place would be controlled by carefully emptying and removing sand bags or other cushions of some sort beneath the stone beyond the fulcrum.





*The maxilithic stonework at Baalbek remains a mystery.*

Despite decades of study and theorizing, including the analysis presented here, we cannot be sure who did it, or when it was done, or for what purpose. In this paper, the author has shown that the conventional wisdom attributing it to the Romans is based largely on a lack of alternatives rather than anything specifically Roman about the stones or their placements. To the contrary, good reasons exist to suggest otherwise. By isolating the maxilithic structure from the Roman ruins above, it is clear that the former bears little relationship to the latter, either structurally or in terms of design.

If any design concept at all can be attached to the enclosure formed by Baalbek's gigantic blocks it would echo the earlier temples to the indigenous god, Baal that were once common in the region, rather than anything Roman. A speculative connection can be made linking Baalbek to the Temple Mount in Jerusalem, site of the only other like-sized block in the Middle East. Finally, it has been shown that even the enormous blocks in Baalbek's famous trilithon did not necessarily require the relatively advanced technology of the Roman era for their transport or placement.

Earlier and far less complicated methods were up to the task—if employed by a people as dedicated and resourceful as those responsible for building this magnificent stone structure obviously were.

*"However simple the method, the devil is always in the details"*

Vince Lee, based on years of mistakes.

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