

**TIAHUANACO**  
(Tiwanaku)

and

**PUMA PUNKU**  
(Pumapunku)

**BOLIVIA**

CMG Archives

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(2014)

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**Tiahuanaco**

Tiahuanaco is a pre-Columbian site in La Paz department, near the town of Tiahuanaco, near the South East end of Lake Titicaca, in West Bolivia.

The site contains statues, monoliths, pillars, carvings, stone block walls, and the remains of the temple of the Sun.

The culture of Tiahuanaco preceded the Aymara and Inca civilizations, and it has been suggested that the ruins of Tiahuanaco could be over 14,000 years old.

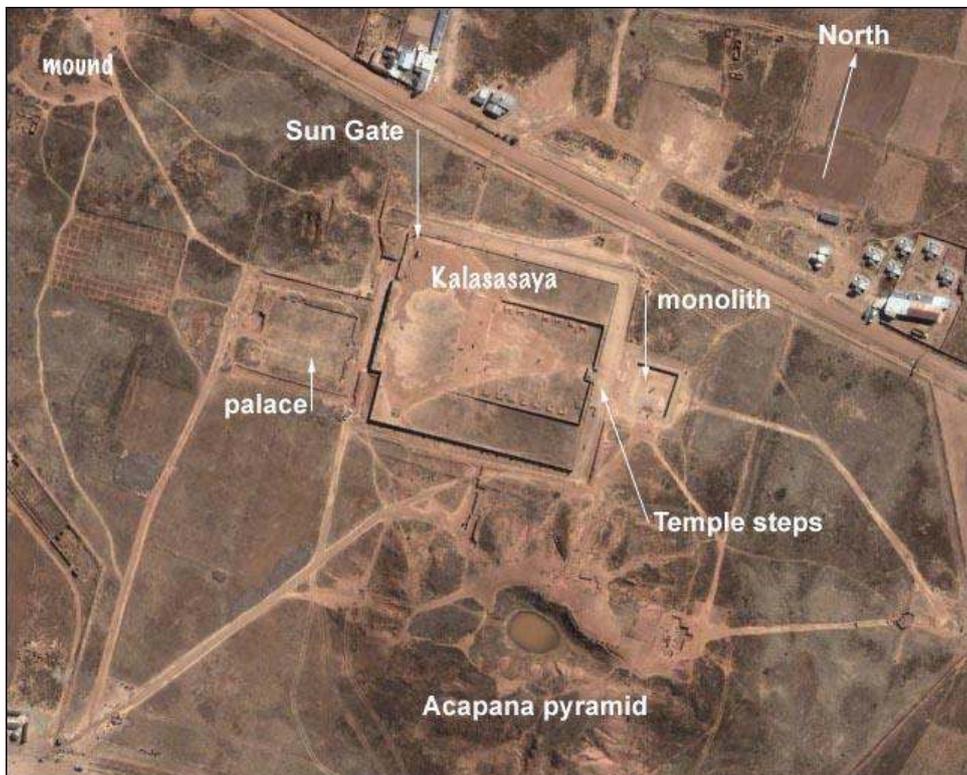
Tiahuanaco was built at an elevation of 13,000 feet; with stone blocks weighing up to as much as 200 tons.

Puma Punku, another important site, is located to the south west of the temple structure





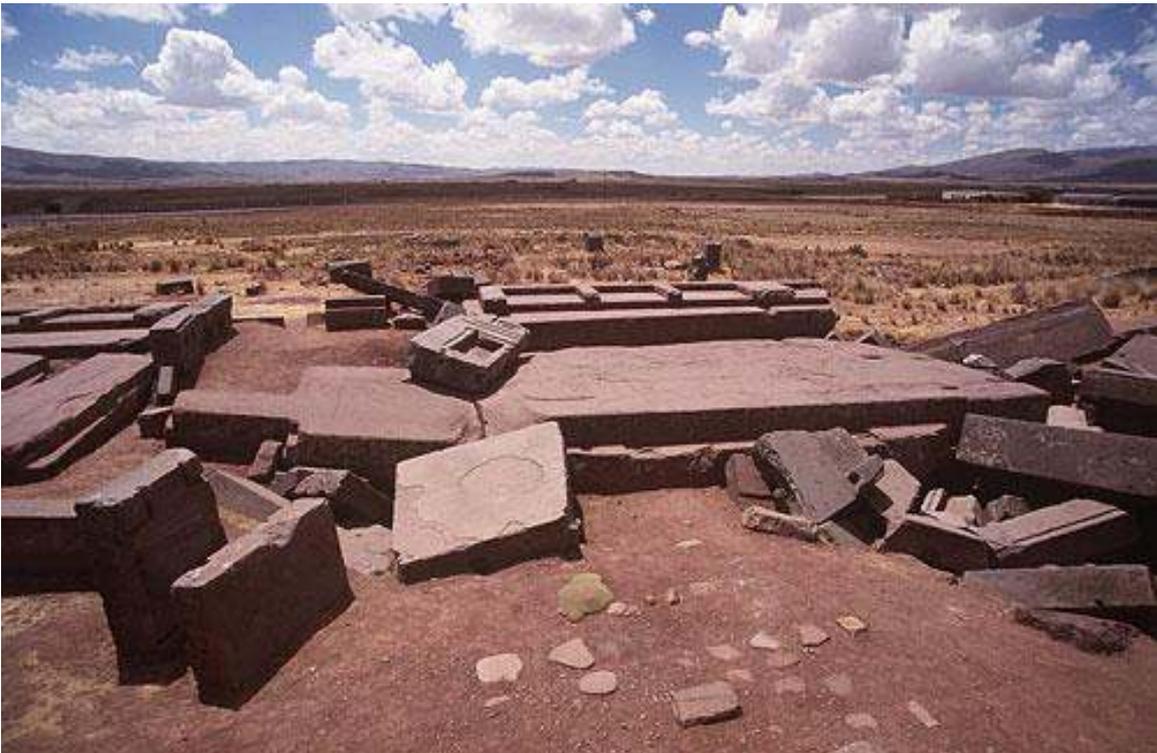
*Tiahuanaco and Puma Pumku Sites*



*Tiahuanaco Complex*



*Tiahuanaco*



*Tiahuanaco*



*Gate of the Sun - Tiahuanaco - 1903*



*Gate of the Sun (rear) - Tiahuanaco - 1903*



*Gate of the Sun - Tiahuanaco - 2006*

Entrance to the temple, showing the characteristic stone construction of the site. It was common for many huge, flat faced stones to be used to construct walls, and it is interesting to note that some of the stones show evidence of tooling that has never been satisfactorily explained.



*Tiahuanaco*



*Tiahuanaco*



*Tiahuanaco*



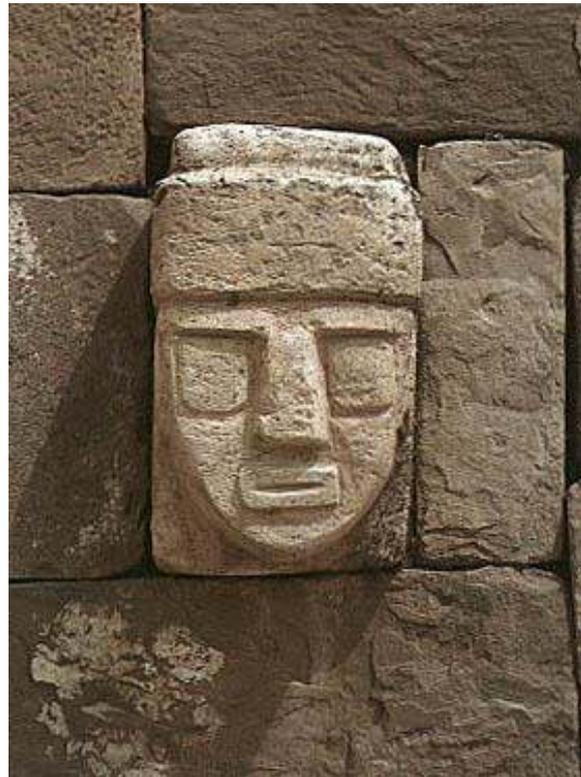
*Tiahuanaco*



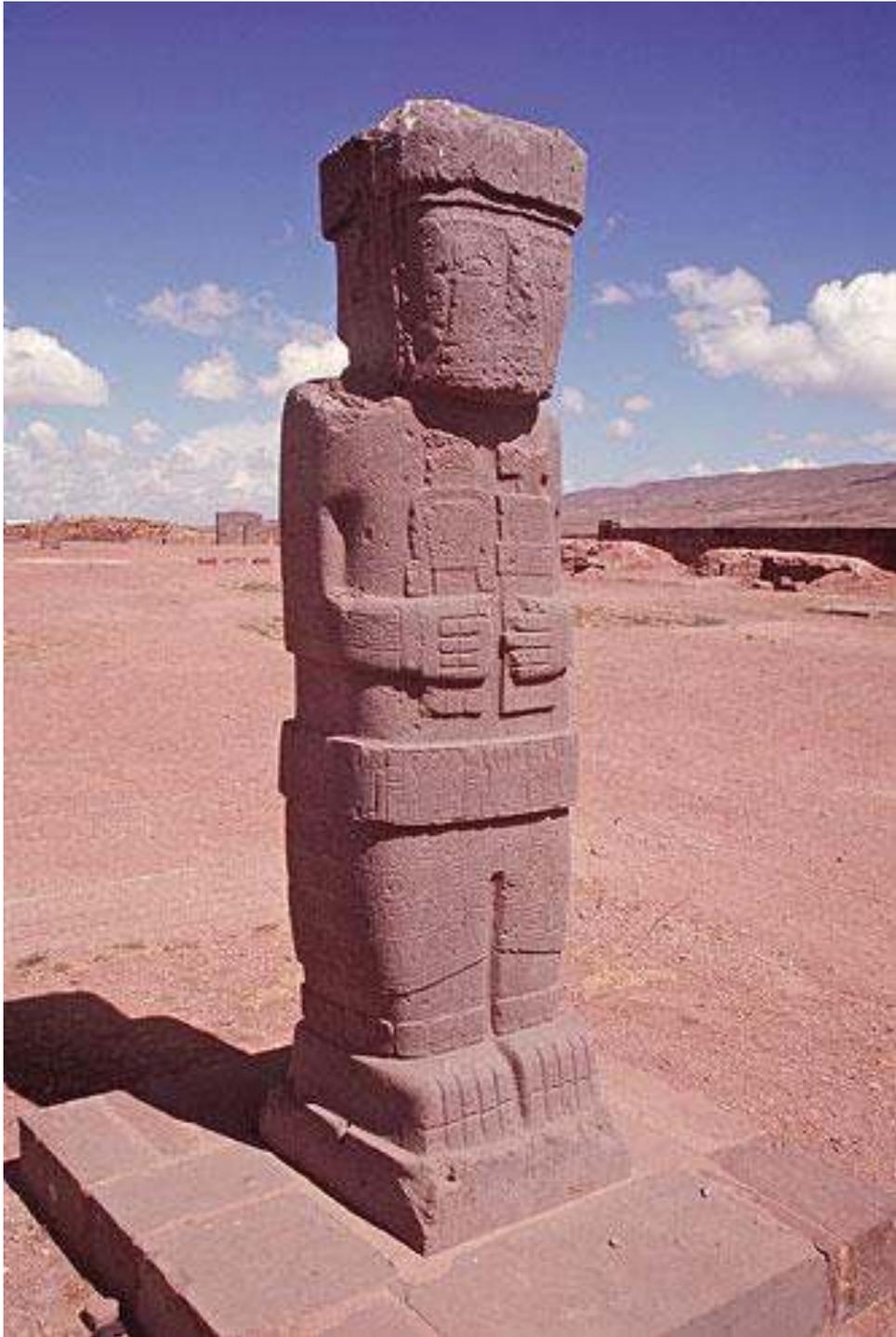
*Tiahuanaco*



*Tiahuanaco*



*Tiahuanaco*



*Tiahuanaco*

Large statues were often carved from single blocks, and were uniquely polished and finished by an unknown technique.

### **Dating the Tiahuanaco Complex**

The age of Tiahuanaco is difficult to assess and very controversial. Polish-born Bolivian archaeologist Arturo Posnansky has concluded that the Tiahuanaco culture began in the region at about 1600 B.C. and developed until at least 1200 A.D. His disciple, Professor Hans Schindler-Bellamy, believed Tiahuanaco to have reached back 12,000 years before the present era, and other archaeologists have pushed back the date to 14,000 years ago.

The controversy arises because most of the datable artefacts are from the more recent past, and the stone megaliths and other structures do not subscribe to dating techniques like Carbon 14.

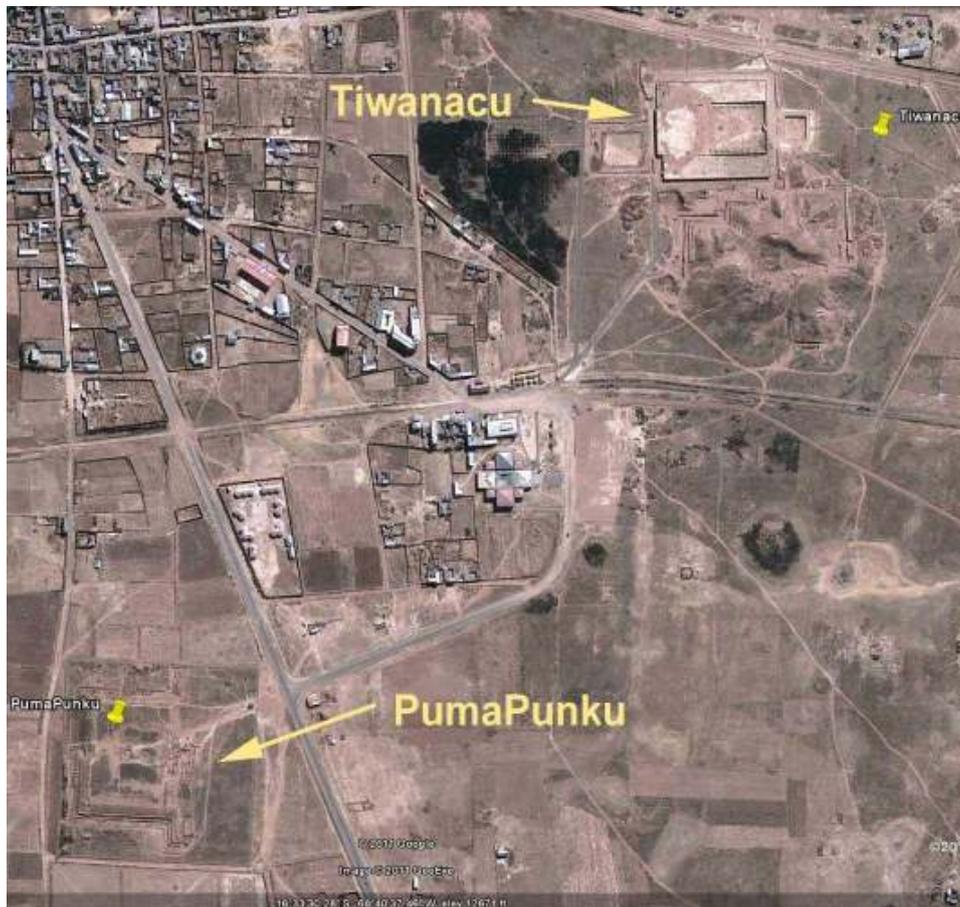
Many of the stone pieces have been uncovered from more than six feet of earth - the mountain ranges which surround the area are not high enough to permit sufficient runoff of water or wind erosion to have covered the ruins to such a depth. This suggests a very old date as the accumulation of sediment is very slow in this area.

There is also evidence that architectural structures exist at the bottom of Lake Titicaca, suggesting that civilization existed before the lake was formed.

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## Puma Punku

Puma Punku or Pumapunku is part of a large temple complex or monument group that is part of the Tiwanaku Site near Tiwanaku, Bolivia.



*Puma Punku and Tiahuanaco*

Puma Punku was a large earthen platform mound with three levels of stone retaining walls. Its layout is thought to have resembled a square.

To sustain the weight of these massive structures, Tiwanaku architects were meticulous in creating foundations, often fitting stones directly to bedrock or digging precise trenches and carefully filling them with layered sedimentary stones to support large stone blocks.[]

Tiwanaku is significant in Inca traditions because it is believed to be the site where the world was created. In Aymara, Puma Punku's name means "The Door of the Puma". The Puma Punku complex consists of an un-walled western court, a central un-walled esplanade, a terraced platform mound that is faced with stone, and a walled eastern court.

The Puma Punku is a terraced earthen mound that is faced with blocks. It is 167.36 meters wide along its north-south axis and 116.7 meters long along its east-west axis. On the northeast and southeast corners of the Puma Punku it has 20-meter wide projections that extend 27.6 meters north and south from the rectangular mound. The eastern edge of the Puma Punku is occupied by what is called the "Plataforma Lítica". The Plataforma Lítica consists of a stone terrace that is 6.75 by 38.72 meters in dimension. This terrace is paved with multiple enormous stone blocks. It contains the largest stone slab found in both the Puma Punku and Tiwanaku Site. This stone slab is 7.81 meters long, 5.17 meters wide and averages 1.07 meters thick. Based upon the specific gravity of the red sandstone from which it was carved, this stone slab has been estimated to weigh 131 metric tons.

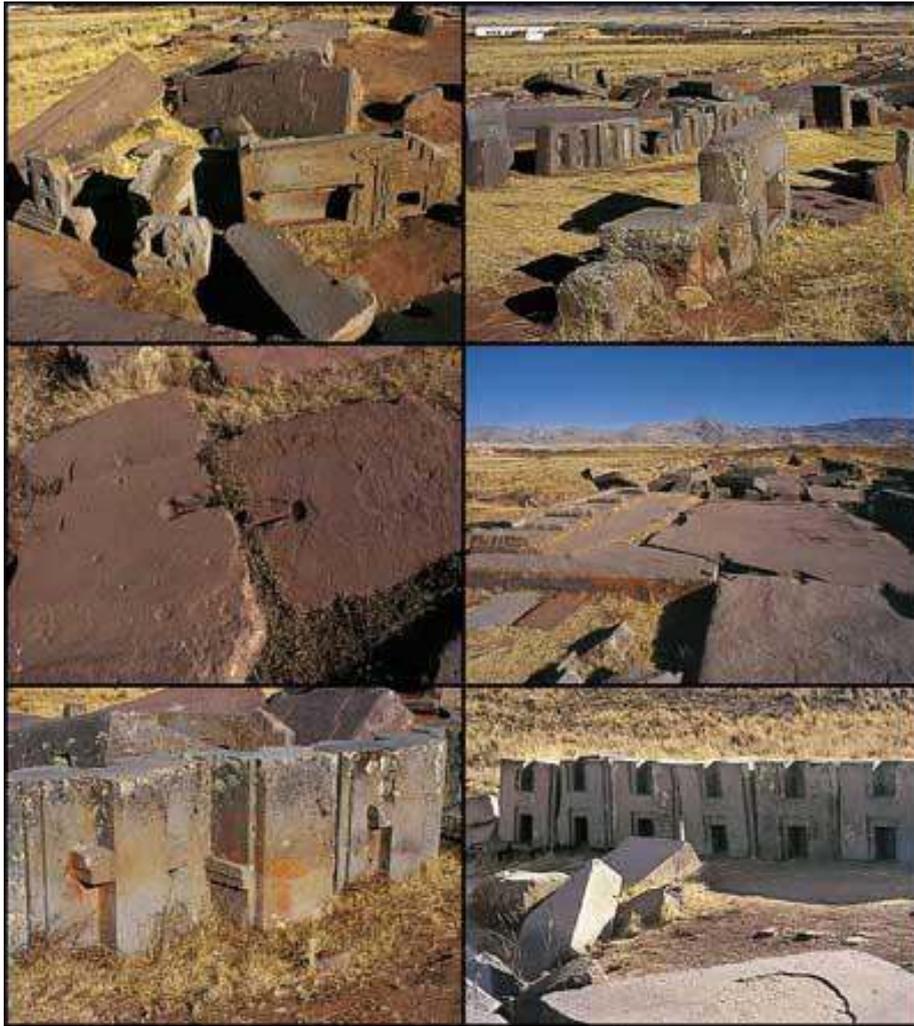


*Puma Punku Complex*

Notable features at Puma Punku are I-shaped architectural cramps, which are composed of a unique copper-arsenic-nickel bronze alloy. These I-shaped cramps were also used on a section of canal found at the base of the Akapana pyramid at Tiwanaku. These cramps were used to hold the blocks comprising the walls and bottom of stone-lined canals that drain sunken courts. I-cramps of unknown composition were used to hold together the massive slabs that formed Pumapunku's four large platforms. In the south canal of the Pumapunku, the I-shaped cramps were cast in place. In sharp contrast, the cramps used at the Akapana canal were fashioned by the cold hammering of copper-arsenic-nickel bronze ingots.



*The I-shaped cramps were cast in place*



*Puma Punku*



*Building block technique*



The modular blocks at Puma Punku appear to be mass produced on site and are assembled in various configurations. This technique appears fully developed and there is no indication of experimentation. The interesting thing is that this appears to be the only example of modular construction in the ancient world.



*A Stone block with a set of complex blind holes (Puma Punku)*



*An example of high-precision small holes (Puma Punku)*



A carved stone block at Puma Punku, with a precisely cut straight line and tooled holes within the line. The purpose of this is not apparent; however, it has been suggested that gold or bronze plates might have been affixed to the walls, or that stone blocks were locked together with metal clamps.



*Detail of "precisely cut straight line and tooled holes within"*

### **Dating the Puma Punku Complex**

Determining the age of the Puma Punku complex has been a controversy since the discovery of the Tiwanaku site. As noted by Andean specialist, Binghamton University Anthropology professor W. H. Isbell, a radiocarbon date was obtained by Vranich from organic material from lowermost and oldest layer of mound-fill forming the Puma Punku. This layer was deposited during the first of three construction epochs and dates the initial construction of the Pumapunku to CE 536–600 (1510 ±25 B.P. C14, calibrated date). Since the radiocarbon date came from the lowermost and oldest layer of mound-fill underlying the andesite and sandstone stonework, the stonework must have been constructed sometime after CE 536–600. The excavation trenches of Vranich show that the clay, sand, and gravel fill of the Pumapunku complex lie directly on the sterile middle Pleistocene sediments. These excavation trenches also demonstrated the lack of any pre-Andean Middle Horizon cultural deposits within the area of the Tiwanaku Site adjacent to the Pumapunku complex.

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### **Ancient Cramping**

In South American ancient building techniques, blocks were often secured together with metal cramps.

Grooves were carved in the top of the adjacent blocks, then molten metal was poured in which hardened and thus secured the two blocks. Other cramps were fashioned by the cold hammering of copper-arsenic-nickel bronze ingots. These techniques have also been noted in Egypt and in Southeast Asia.



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