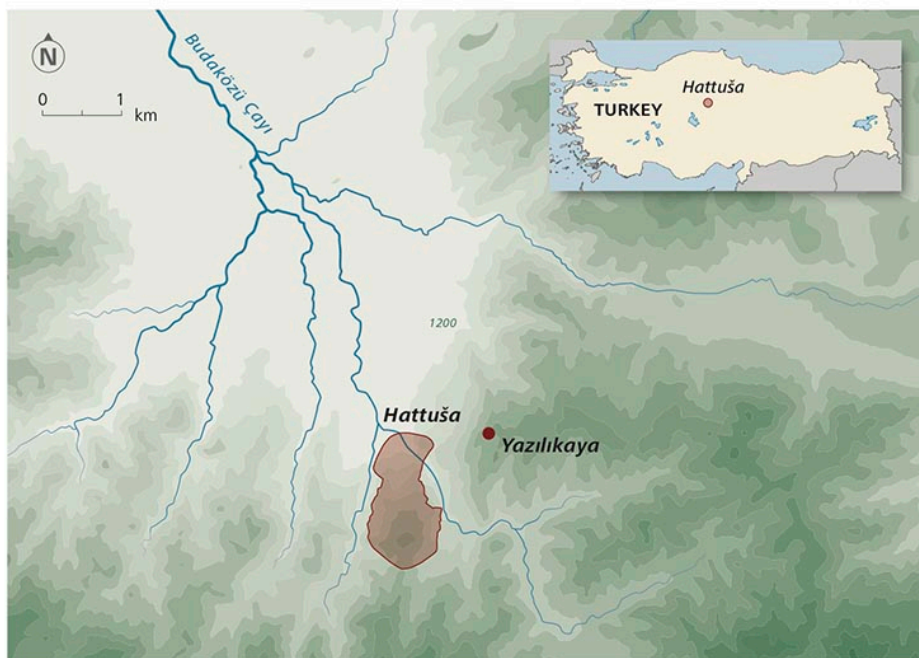




A Calendar in Stone: Hittite Yazılıkaya

By Eberhard Zangger and Rita Gautschy

A great deal is known about the Hittite culture that ruled over central Asia Minor from around 1600 to 1190 BCE, only to suddenly collapse and be forgotten for over 3,000 years. The curiosity of the educated classes was instantly aroused when, in 1834 CE, a European scholar first saw the massive architectural remains of the Hittite temples in the former capital Hattuşa, about 150 km east of Ankara in central Anatolia. Excavations commenced in 1906 and became so incredibly productive and insightful that they still continue today. As many as 33,000 cuneiform documents and text fragments have been retrieved from the former palace. The 6.8-km-long fortification wall protected as many as 30 temples.



Map showing location of Hattuşa. (© Luwian Studies)



Google Earth view of Hattuša showing location of Yazılıkaya.

The Hittites proudly reported that they lived in the “Land of Thousand Gods,” presumably to emphasize how divinely blessed they were. However, with wealth comes responsibility, and the Hittite Great King, as the gods’ chief representative on earth, was expected to participate in all the major festivals to honor them. Nurturing and pleasing the multitude of divinities also occupied a large proportion of the elites’ time throughout the year. There were no less than 165 religious festivals across the country. A keen observer visiting the land of Hatti was thus quite likely to see a royal entourage forming a procession in a ceremonial venue in which a statue of a deity, sheeted with gold, was retrieved from a temple and carried across open land to one or more sacred places. But remembering when to hold those festivals was a challenge.

There is a wealth of Bronze Age documents, most dealing with prayers and festival liturgies, as well as many studies of Hittite religion, including sacred springs, grottos and caves, rocks and mountains. So far, however, little emphasis has been placed on identifying the Hittites’ relation to celestial deities, even though their highest-ranking goddess was the Sun Goddess of Arinna, and the Great King of Hatti even used to refer to himself as “My Sun.”

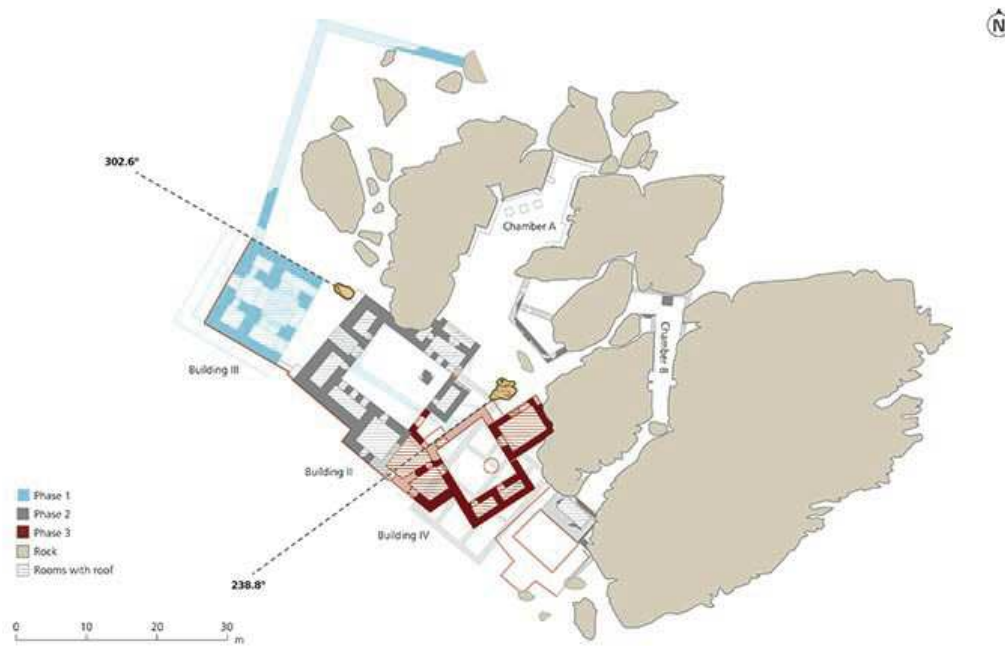
Probably the best depiction of the Hittite pantheon is preserved just outside the city walls of Hattuša in the rock sanctuary of Yazılıkaya, one of the most fascinating archaeological sites in the world and a World Heritage site.



Wall on the western inside of Chamber A with 12 identical gods (Reliefs 1-12) on the far left and Relief 34, the Sun god of the heavens as well as the Moon god (Relief 35) on the right. (© Luwian Studies)



Chamber B of the rock sanctuary Yazılıkaya with its 12-meter-tall western wall displaying the reliefs of 12 gods of the underworld. (© Luwian Studies)



Plan showing the location of Chambers A and B as well as the three phases of temple constructions. The gatehouse (Building III) is directed at the sunset during summer solstice. The northwestern wall of Building IV is aligned with the sunset during the winter solstice. (© Luwian Studies)

For almost two centuries, scholars have been puzzled by the procession of over 90 deities and mythical figures carved into the vertical faces of the natural limestone outcrop. Its artistic style is completely distinct from the examples familiar from ancient Egypt and Mesopotamia. Without doubt, this place was of utmost importance in Hittite religion; but what exactly were priests and the royal family celebrating at this spot? The archaeologists in charge of excavations at the site have long argued that the highest echelons of Hittite society celebrated the beginning of the New Year at this sanctuary.

I (Zangger) first saw Yazılıkaya in the spring of 2014 during a vacation to visit archaeological sites in Turkey. The local hostel where I spent the night had sold me the “Hattusha Guide” written by the German prehistorian Jürgen Seeher, who was in charge of the excavations from 1994 to 2006 on behalf of the German Archaeological Institute. Seeher states on page 157 of the guide that a particularly large relief of the Hittite Great King Tuthalija IV lies in the shade throughout the year, except for a few days around the summer solstice, when it is illuminated by natural sunbeams.



Yazılıkaya, King Tuthalija IV.

(<https://upload.wikimedia.org/wikipedia/commons/b/bd/YazilikayaSharumaAndKingTudhaliya8November2004.JPG>)

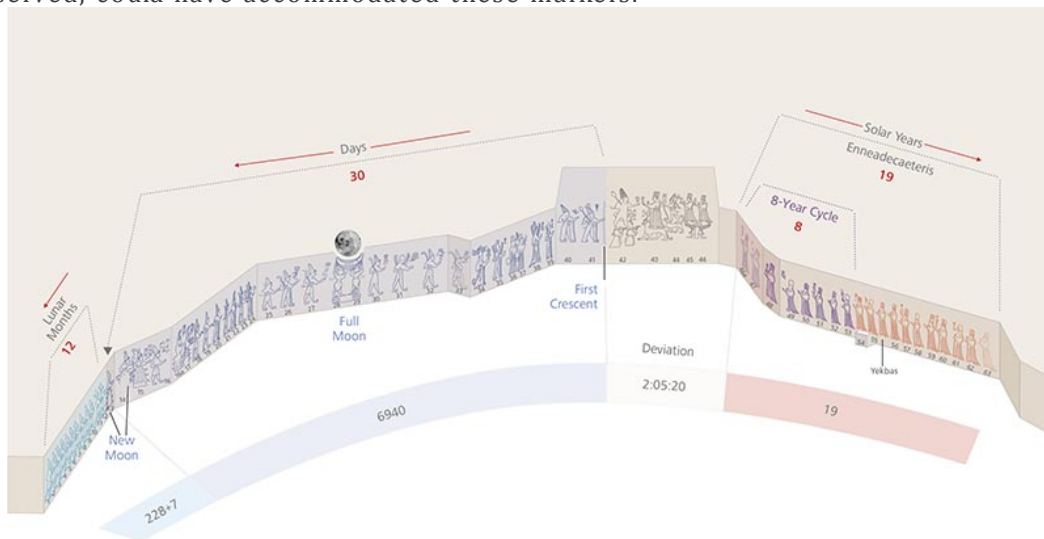
Absent-mindedly I made a note in the margin: “calendar?”. Little did I know that this spontaneous thought would keep me occupied for the next five years.

The rock sanctuary consists primarily of two chambers, for the most part natural, designated Chamber A and B. Chamber A has always been an open space, with dozens of reliefs carved into the limestone walls at eye level. Chamber B, on the other hand, contains a massive vertical face pointing almost due north. It looked so technical – the smooth face had even been extended with ashlar masonry in Hittite times – that I thought the rooms may indeed have had a technical function in addition to their religious and symbolic meaning. An astronomical application appeared to be a good place to start.

Upon returning to Zurich, I came into contact with Rita Gautschy, an archaeologist and archaeoastronomer at the University of Basel. We decided to jointly pursue an investigation of the sanctuary. Little by little we worked towards an interpretation of the groups of figures and the deities themselves, until we eventually understood how the whole system may have been used. In our view, it is a tool to operate a calendar based on celestial events. To make sure that their festivals fell in the right season, the Hittite priests had to keep track of the beginning of each year and month. This is what we think Yazılıkaya was used for – and could still be used for today, since the system works in perpetuity.

We distinguished four groups among the 63 preserved reliefs of deities in Chamber A, beginning with 12 identical male gods on the west wall at the entrance. These, in our view, were used to count the 12 lunar months of a year – an idea that had already been brought forward in 1973 by the ancient historian Friedrich Cornelius. Next, to the right, is a group of 30 deities, which we interpret as keeping track of the days of a lunar month (alternating between 29 and 30 days). Since a lunar year comprises 354 days (12 times 29.5), a leap month had to be inserted approximately every three years in order to keep the lunar calendar synchronized with the seasons.

We think that days and months were counted and marked from right to left, following the path of the moon across the sky. The Hittite priests most likely used wood or stone columns to indicate the current day and month. A carefully shaped sill, still well preserved, could have accommodated these markers.



Technical reconstruction of the use of the reliefs in Chamber A to keep track of lunar months, days per lunar month and years. (© Luwian Studies)



Artist's reconstruction of Chamber A at around 1230 BCE. (© Rosemary Robertson)



3D-visualization of the temple at Yazılıkaya showing an epiphany effect during a religious service on the day of the summer solstice in 1250 BC. (© Oliver Bruderer / Luwian Studies)

The eastern wall nowadays shows 17 female deities, but originally there were at least nineteen. One of the two today missing figures is gone, with only a hieroglyph on the wall with its name indicating that it used to be there. The other missing figure was found in the neighborhood in 1945, and is now displayed in a nearby museum. If the group indeed consisted of 19 reliefs, it could have been used to mark a 19-year solar cycle. Such a 19-year solar cycle is a perfect tool to align solar and lunar calendars.

The symbolic role and possible technical function of the five deities in the main scene is not yet explained – we are planning to take up this task in due course. Chamber B, too, requires more scholarly scrutiny. Like Chamber A, it contains a group of 12 identical gods, which we interpret to indicate the lunar months. With the chamber pointing almost due north, the sharp natural rock edges could have been used as a star clock – a system that had been in use in Egypt for over a thousand years by the time Chamber B was created.

This new interpretation of Yazılıkaya serves as a starting point for a better understanding of Hittite religion. Celestial deities played a paramount role in the Hittite religion that acted as an amalgam of different local Anatolian beliefs and rites on one hand, and of concepts of stargazing that were for the most part adopted from principles first recognized in Mesopotamia.

Eberhard Zangger is president of the Luwian Studies Foundation. Rita Gauchsly is a senior research associate at the Department of Ancient Civilizations, University of Basel, Switzerland.