

Divine Staging. The Civil Engineering Peculiarities of the Hittite Spring Sanctuary Eflatun Pınar

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Figure 1. The main monument of Eflatun Pınar after excavation 2001 (P. Oszvald)

INTRODUCTION

Architectural staging in the aim of creating the visualization of divine presence is a phenomenon that is commonly brought in connection with masterworks of baroque architecture. A well known example is the famous „Trasparente“ in Toledo created by Tomé, that increased with the means of spatial overlay and effective illumination the effect of a holy figure in a supernatural way. Only recently discovered in its entire dimensions, the spring sanctuary of Eflatun Pınar shows that already in the Late Bronze Age divine staging was a common feature of ambitious architecture and was realized at considerable constructive expense (fig. 1). The important and for Hittite culture extremely innovative peculiarities in the field of civil and hydraulic engineering will be attended in the following, but first the spring sanctuary with its research story should be introduced.

THE SANCTUARY AND ITS RESEARCH STORY

The Hittite spring sanctuary of Eflatun Pınar lies about 100 kilometres west of Konya (Turkey) close to the lake of Beyşehir in a hilly, quite arid landscape, that is used agriculturally. At the top of a little river valley, that flows in the further progress into the lake, the „lilac colored spring“ (translation of Eflatun Pınar) produces an astonishing quantity of ice cold, clear water. Directly next to the spring, a relief-covered wall of huge boulders was erected more than three thousand years ago. Standing upright over all times, the wall that will be called main monument in the following, was already in the early 19th century a destination for research trips. William Hamilton published in a travelogue, which appeared 1842, a woodcut as the first image of the main monument (Hamilton 1842).

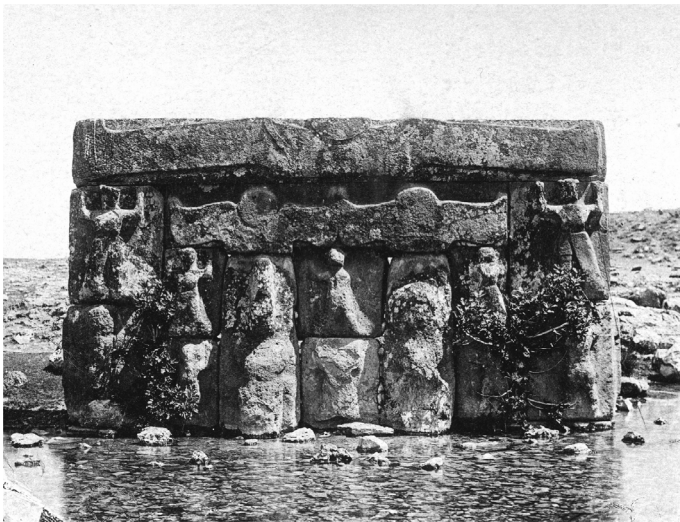


Figure 2. First photograph of the main monument from 1884 (Ward 1884, p. 48)

1884 the first photograph (**fig. 2**) was published (Ward 1884) and in this time the main monument was identified as a product of Hittite culture (Perrot 1887). In the 20th century, the scientific investigations in Eflatun Pinar increased. In the vicinity of the head monument, the remainders of two large sculptures were found, which were included in the reconstruction considerations to the obviously unfinished relief wall (Mellaart 1962 and Orthmann 1964). The investigations led also to an exact interpretation of the relief representations. They were recognized as a hierarchical organized image of the Hittite Pantheon with a sitting couple of head goddesses, that was framed by an Aedicula consisting of atlant figures wearing a winged sun disk (Bittel 1953). The relation to the source was unambiguous and so the sanctuary was considered as a constructed rock relief (Hirschfeld 1887 and nearly hundred years later Kohlmeier 1983). For usually Hittite spring sanctuaries had been carved everywhere in Anatolia in the natural rock, but in this case obviously the missing rock had to be erected artificially in order to be able to mount the relief.

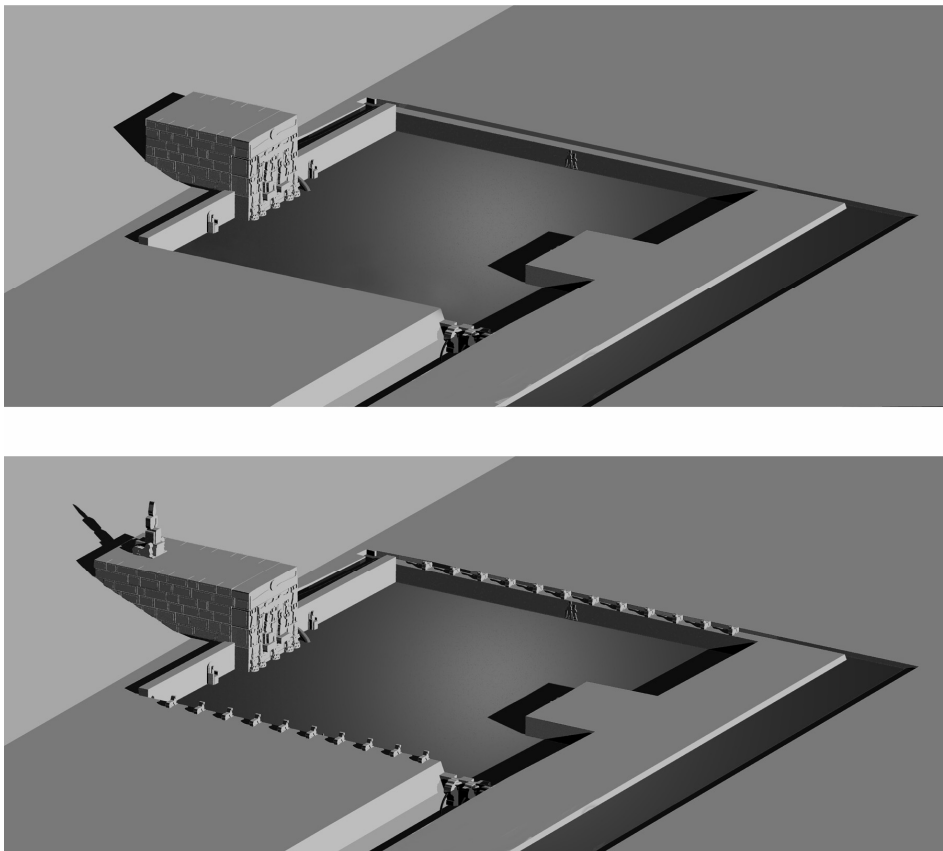


Figure 3. Reconstruction of the basin without and with the new found sculptures

DESCRIPTION OF THE NEWLY DISCOVERED STRUCTURE

This conclusive seeming interpretation of the main monument must be revised by the results of a rescue excavation, that was carried out 1996-2002 by the museum Konya under the direction of Sirri Özenir (Özenir 1998, Özenir 2001, Bachmann and Özenir 2005). The main monument has been shown to be part of an extensive 34 metres by 31 metres large basin structure, whose northern wall it faces. Now fully excavated it reaches up to the impressive height of over 6 metres and was original part of a closed fountain house made of huge ashlar masonry (**fig. 3**). The main monument possesses an equivalent on the south side of the basin in form of a flanging terrace (**fig. 4**). The walls of the basin are erected from carefully joined large ashlars of andesite (**fig. 5 and fig. 6**). Up to four courses of the rectangular squared and frequently rusticated stones are preserved. The eastern section of the north wall and the east side of the basin are accompanied by a canal, through which most of the water springing to the northeast is led around the basin. The exterior walls of the canal are erected of coarsely prepared limestone sheets from local provenance. Directly beside the main monument, a large inlet provided the basin with water. The picture program of Eflatun Pınar was considerably expanded by the new findings. Primarily five mountain gods with the characteristic skirts with scales forming the bottom zone of the fully excavated main monument should be named (**fig. 1**). The good state of preservation of this about 2.35 metres high relief sculptures contrasts to the already long visible and weathered upper parts of the relief wall. The half figures are carrying the typical attributes of Hittite mountain goddesses, apart from the skirt with scales the high, towards the top rejuvenating tip hat, almond-shaped large eyes, strongly emphasized ears and the frontal bearing folding their arms before the breast (Bachmann and Özenir 2005, p. 96.). In spite of individual differences, the figures were produced obvious in the effort toward a homogeneous, serial image. However, an essential difference concerns the constructive execution. While both external figures were carved from the stone block standing behind them, the three middle mountain gods had been put obviously as prefabricated units into prepared openings. At the missing parts of the partly destroyed hats these prepared openings step to light. The skirts with scales of the middle figures have several, regularly between the scales applied drill holes of about 35 millimetres diameter through which obviously water should flow (**fig. 7**), it concerned therefore regular sculptures on a fountain. To the left and to the right next to the main monument, two sculptures of sitting spring goddesses were discovered, that cantilever out of the basin wall. They were obviously not completed as the raw surface indicates. A sitting couple faced also the front of the southern terrace, from which only the left figure representing a sun goddess has completely survived. Finally the centers of basin's lateral walls were accented by reliefs with stepping goddesses in side-face. A spectacular finding of the excavation is furthermore a block heavy over 22 tons with three bull protomes serving as a gargoyle (**fig. 8**). The fallen block was discovered in head-first position southwestern of the basin. Several sculptures of reclined animals were found in the filler of the basin, it concerned probably the execution of lions and deers. This rich supply of sculptures adds to the already more long well known remainder of a twin animals group, the so-called Aslantaş sitting above the main monument in fallen position.

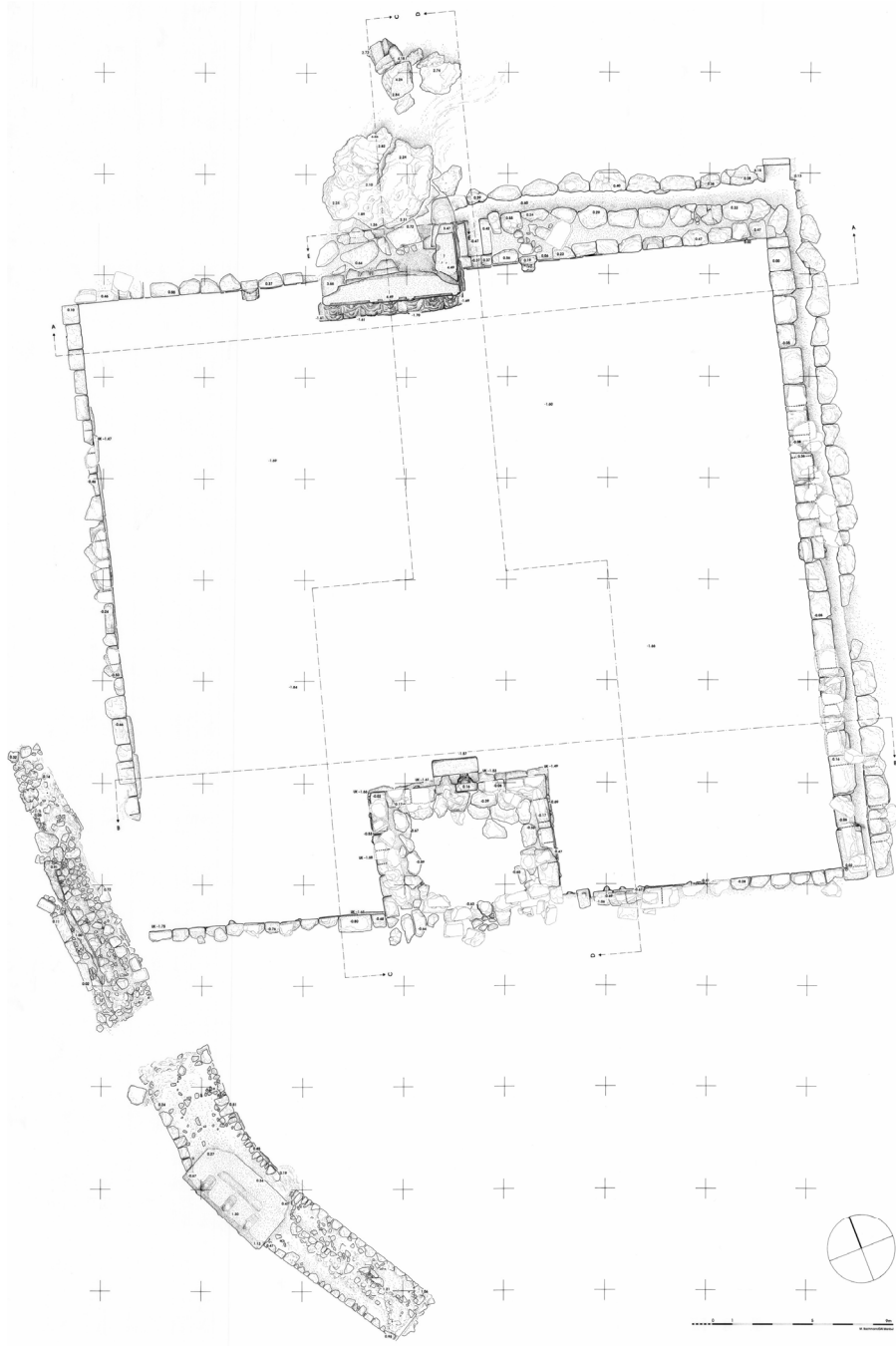


Figure 4. Ground plan of the Hittite basin

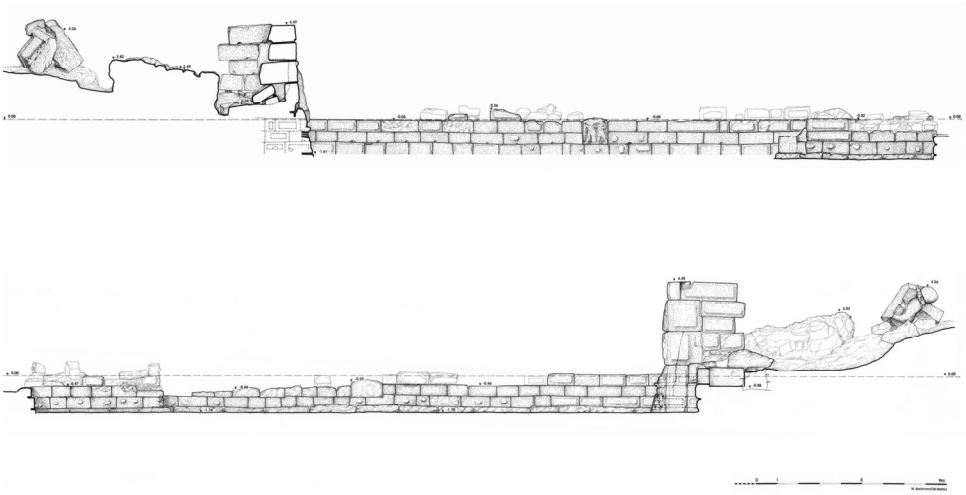


Figure 5. Eastern and western elevation of the basin

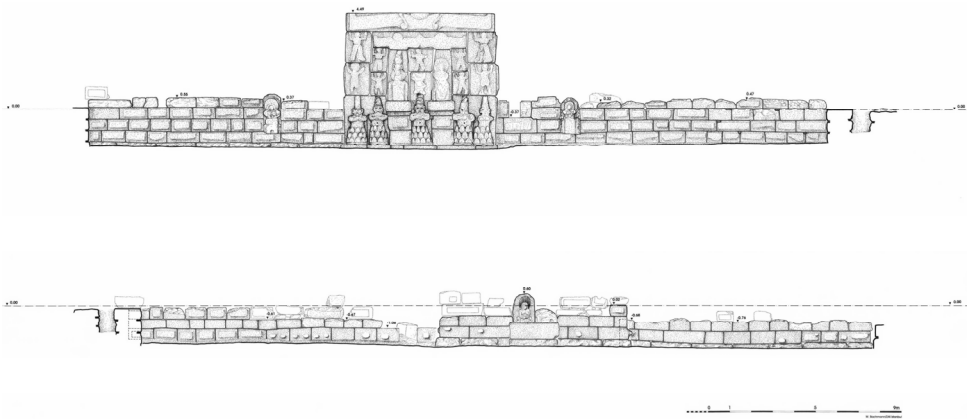


Figure 6. Northern and southern elevation of the basin

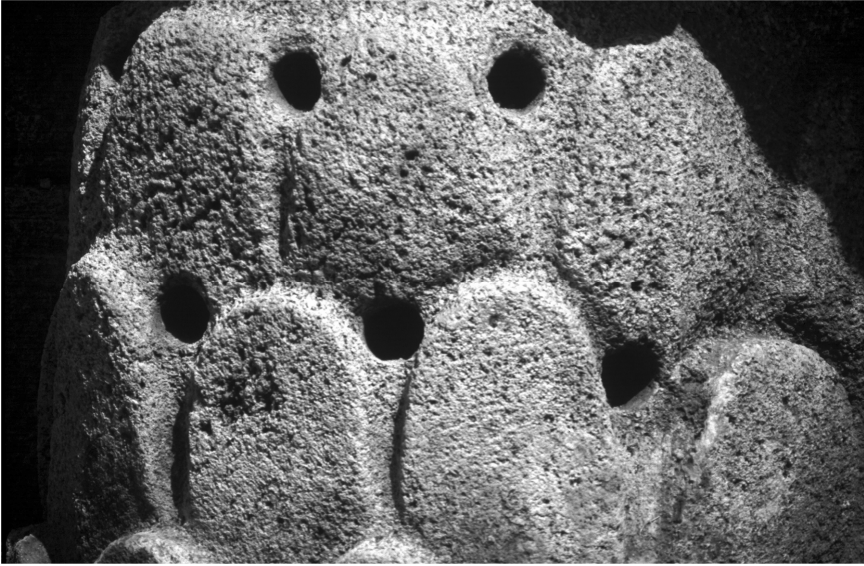


Figure 7. Detail from the mountain gods with drill holes



Figure 8. Great block with three bull protomes 2001 (P. Oszvald)

STRUCTURAL ENGINEERING PECULIARITIES

The basin in its new discovered dimensions must be considered as one of the most important, preserved examples of Hittite architecture. More than thousand tons of stone material had to be transported from an andesite quarry about five kilometers away from the construction site, that is an impressive logistical achievement (Kohlmeyer 1983, p. 34). The limestone available on the spot was obviously improper for such a building. An exact investigation of the related building technologies now bares considerable deviations to that, which previously was considered characteristic for the Hittite architecture (Naumann 1955). These rules of Hittite architecture were based essentially on observations at the monuments of the Hittite capital Hattusa or the nearly lain archaeological place Alaca Hüyük. At this places stones were mostly broken close to the construction site. Rectangular ashlar masonry had hardly been observed and therefore this kind of masonry technique generally was excluded from Hittite architecture (Neve 1991, p. 162). The large temples of the Hittite capital as well as the city wall and remaining town gates of Boğazköy and Alaca Hüyük (**fig. 9**) were erected of irregular boulders, whose joints are narrow and concise, whose surfaces however are worked out in soft forms like a pillow. The reason lies in the kind of working, for the stone dressers of Hattusa used stone hammers made of very hard material as Basalt or Diorite, with which sharp, right-angled edges hardly can be produced (Naumann 1955). Innumerable examples of these stone hammers were found at the excavations in Boğazköy (Neve 2001). The tiresome working technology forced to use the worked surfaces and edges of the boulders as economically as possible. Therefore only the visible areas were dressed and a masonry technique was selected in order to be able to use different stone formats. Chisels of bronze were known but they were very precious and were probably used rather as an instrument of the sculptor than as a working device of the stone dressers. Beside the stone hammers in Bogazköy simple drilling machines of bronze tubes and stone saws, that worked after a pendulum principle, were as working techniques in use. The drill holes frequently were used to fix the wooden frame work of the big buildings at the stone socket (**fig. 10**). The same drilling machines also came in Eflatun Pınar to use, so for example at the described openings of the mountain gods, which enabled them to serve as fountain figures. The experimental archaeology in Boğazköy was recently able to prove the high effectiveness of these simple machines. The bronze tubes were brought to rotation with a rope and the drilling was supported by fine sand as an emery. The chisel in Eflatun Pınar obviously was the preferred working instrument of the stone dressers as it can be recognized at the shape of the work stones. The sublime margin draft that most ashlar show is the result of a usual intermediate working step that is applied during the gradual dressing of stone blocks with the chisel. At the later stages of antiquity this drafted margin or also rustication even became an independent mean of design, that was supposed to underline the monumental impression of the ashlar masonry building in this technique. In Eflatun Pınar the drafts rather indicate the incompleteness of the structure, for at several places, the ashlar are completely dressed, not only on the margins. Dressed are also the bedding joint planes and rising joint planes of ashlar, which was indispensable for the density of

the basin, however does hardly ever occur in the masonry of the Hittite capital (Bachmann and Özenir 2005, p. 112).



Figure 9. Masonry detail from Alaca Hüyük



Figure 10. Drill holes in Boğazköy

A yet clearer reference of the use of the chisel is delivered at some very unusual repair places of the basin walls of Eflatun Pınar. At the north wall of the basin several of such repair places are visible (**fig. 6**). They commonly were necessary in masonry, when during transport and arrangement of structural members such as ashlar small damages occurred. The irregular damaged place is expanded by the stone dresser to a right-angled cavity and is closed by a perfectly fitting work piece. Such repairs are usually associated with very much later epochs, since they can only be carried out with very precise working, metallic instrument. In Eflatun Pınar this kind of repair work was probably necessary not only for aesthetic reasons but also for the density of the basin.



Figure 11. Lifting ancones at the southern terrace of Eflatun Pınar

Also for the arrangement of the ashlar in Eflatun Pınar means were used, that normally are linked of much later epochs. On several ashlar of the basin walls, lifting ancones (also known as bosses) are preserved (**fig. 11**). Around these protrusions ropes could be fixed for lifting the ashlar. Besides for lifting the ancones could also be used for shifting and placing the ashlar to their exact place using levers. Such ancones or bosses are preserved in numberless examples of antique architecture but in the Anatolian Late Bronze Age they are rather unusual. In the Hittite capital, the stone blocks were rather equipped with cavities as sockets for levers than with projecting ancones. Very many of those cavities can to be observed at the pedestal of Temple I (**fig. 12**) in Hattusa (Neve 1995). Interestingly the same cavities also are to be found in Eflatun Pınar, especially at the rear parts of the large stone blocks of the main monument (**fig. 13**). And even more these work pieces are also worked in the soft forms which are typical for the stone hammers work. Stones with ancones or with drafted margins can also be found in Boğazköy. However they are comparatively rare and represent probably a new developed, innovative technology that in great extent was used first in the monumental building task of the spring sanctuary of Eflatun Pınar. Parallel to the new technologies

older means of drilling, the stone hammer and the cavities for lifting were in use at the construction of the spring sanctuary, demonstrating that we are here in a time of transition in building technologies.



Figure 12. Cavity as socket for lever at Temple I in Boğazköy

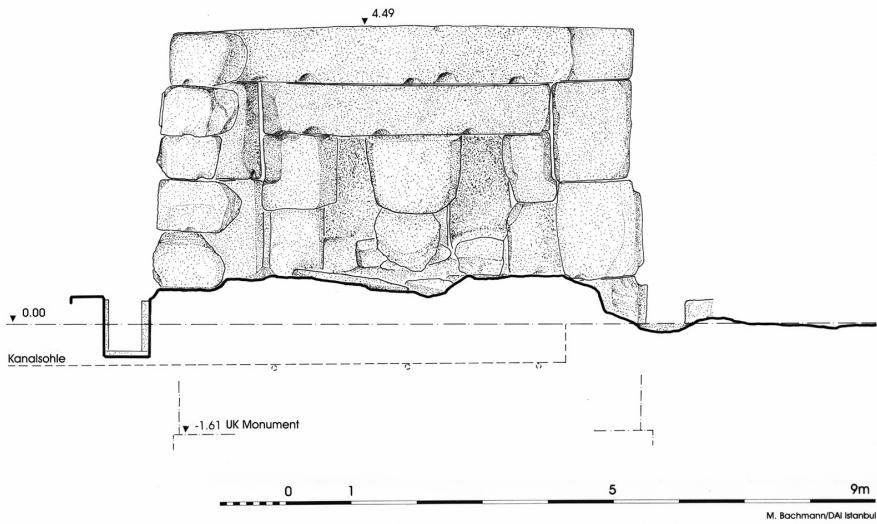


Figure 13. Northern elevation of the main monument in Eflatun Pınar

WATER STRUCTURAL ARRANGEMENTS

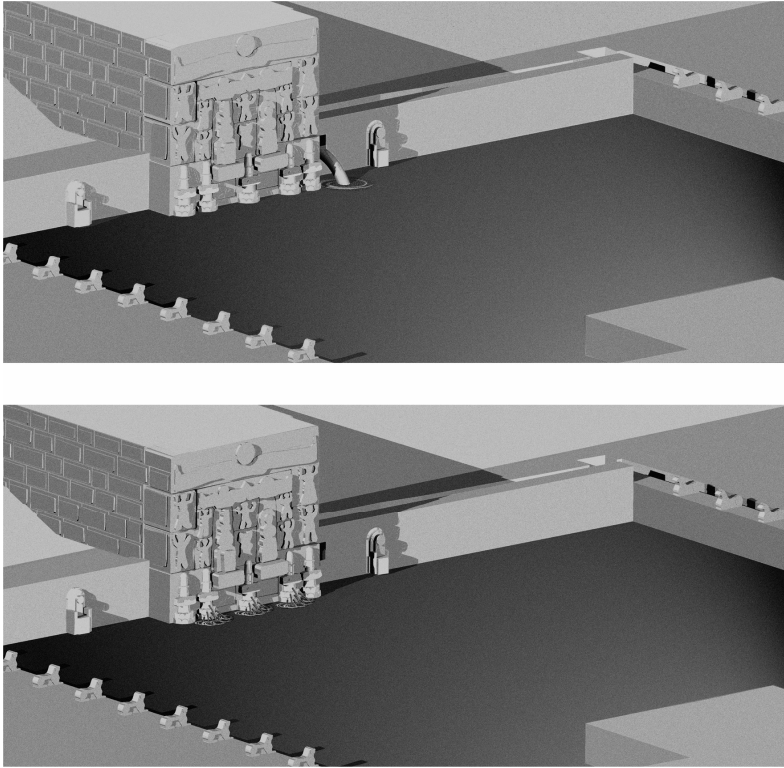


Figure 14. Reconstruction of the water structural arrangements

Regarding to its hydraulic arrangements the spring sanctuary was also extremely innovative, whose function shall be explained now. The canal, through which a part of the spring water was directed from the northeastern spring around the basin and then into the natural river course, has already been mentioned. The remaining water was led over the also mentioned large inlet beside the main monument into the basin. This inlet is equipped with grooves to fix a barrier in order to regulate the flow of water or to lock the inlet completely. In this case the water was dammed behind the northern basin wall and led over a concealed continuation of the channel into the interior of the main monument. Here pipings then could be opened at the backs of the mountain gods so that these with the aid of the described holes were transformed to real fountain sculptures (**fig. 14**). The operation of the figures probably only took place occasionally, connected with certain cult actions. A comparison with the picture of the mountain gods in the relief of Yazılıkaya in Boğazköy (**fig. 15**) shows that one of the main attributes of these gods was the sprouting spring between the scales as stylized mountains (Bittel 1975, p. 128). In Eflatun Pınar, these fountains were transferred now into virtual reality and the impression on the contemporary observers must have been enormous.

The platform opposite the main monument offered an especially good observation point for this event . Probably the howsoever organized religious ceremony was directed from that place. In context with the water engineering structures the large block with the bull protomes has to be mentioned as it was thought probably as the outlet from the basin in the river. The overflowing water should run out of the beheading of the bulls and return to the natural course of the river. This process is described in a relieved jar from Inandıktepe (Özgüç 1988).

That the Hittite culture had a large knowledge about water engineering is also known through findings from Boğazköy. Here a structure was found east of Nişantaşı consisting of several oblong ponds, which were connected together and had served as a water depot (Seeher 1997). The seal of the basins as well as the canal system expel the builders as true water engineers (Trémouille 1998). A Hittite cult-basin is also preserved in Yalburt, a place that is only 60 kilometres away from Eflatun Pınar (Özgüç 1988). Yet the water structural arrangements are here very simple and can not be compared to those in Eflatun Pınar. In one point however the two structures are nevertheless similar: the basin of Yalburt is erected of large ashlar, that are stacked up in several courses. In a hieroglyphic inscription at the basin walls great king Thutalia IV. (1240-1220 B.C.) is delivered as the builder of the basin of Yalburt (Özgüç 1988) and it seems possible to assume him also as the author of the large state monument of Eflatun Pınar.

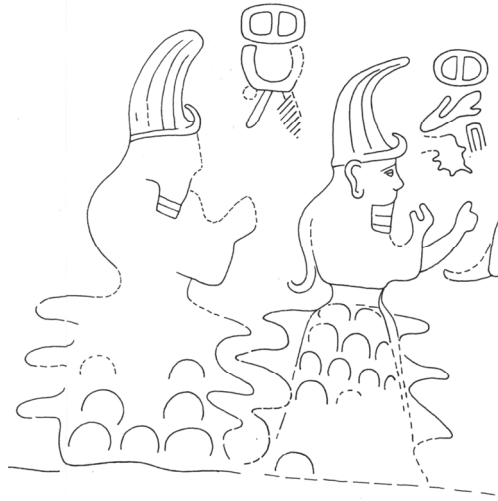


Figure 15. Relief of mountain gods in Yazılıkaya (Bittel 1975, fig. 56)

SUMMARY

In its civil engineering peculiarities, the spring sanctuary of Eflatun Pınar must have been erected in a time of transition, in which older Hittite means of stone dressing and masonry were replaced by new techniques. Especially the chisel of bronze was now favored over the stone hammer as

preferred stone dressing instrument. Much preserved are the ancones or bosses as an aid for lifting and placing of the stones. The meaning of the monument is underlined by the reinforcement of technical innovations. The claim to power that stands behind such a building task is expressed in the provision of all technical possibilities of the time. This concerns especially the costly water structural arrangements, that should suggest divine presence in a way similar to baroque architectural staging. The civil engineering peculiarities and the location at the west border of the Hittite empire makes an origin in the late empire period, probably in the second half of the 13th century B.C. possible.

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