

PHOTOGRAMMETRIC DOCUMENTATION AND ANALYSIS OF DARIUS' MONUMENT AT BISOTUN

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ABSTRACT

The photogrammetric and topographic documentation of Bisotun's old monuments has recently been performed by M. Zolfaghari at Tehran University for the Iranian Cultural Heritage Organization. It comprises seven different projects, the most important of which is concerned with the renowned relief and inscription of the Achaemenid king Darius I. The documentation of the Darius monument, just as two other ones of these projects, has been executed through photogrammetric methods. Thanks to its precision, the results can be used as a reliable source for various purposes such as: the design and execution of the conservation, restoration, reconstruction and international recording of the monument. In addition to a project review, this paper offers a presentation of the three-dimensional photogrammetric map of Darius' monument and an analysis of its inscription and relief.

INTRODUCTION

Bisotun is a village located in Western Iran, 30 kilometers from the city of Kermanshah on the ancient road to Hamadan. Besides the attracting sights, rivers and springs, the village of Bisotun is full of archaeological objects and monuments from different periods of Iranian history. The origin of the name Bisotun can be recovered from the Greek rendering Bagistanon – cited by Ctesias – as Bagastana, meaning “place or stand of Gods”. The name clearly shows that the place had been holy from time immemorial and Darius' monument was well known to the ancients, with its sheer height cliff sacred to Zeus-i.e., to the supreme god Ahura-Mazda.

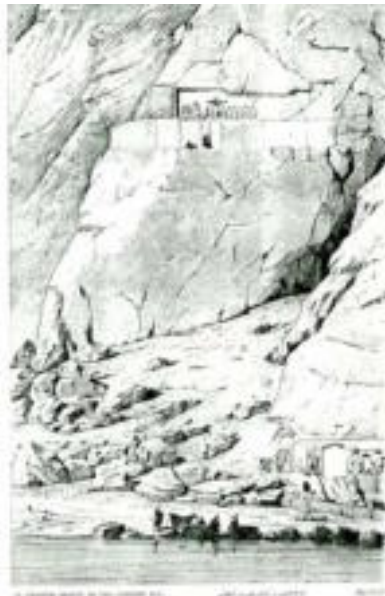


Figure 1: Darius' Monument situated at a height of about 80 meters above the terrain

BISOTUN'S MONUMENTS

At Bisotun, plenty of archaeological remains belonging to different Iranian dynasties have been identified or discovered:

- Prehistoric remains
- The Median fortress

- The relief and inscription of Darius (Fig. 1)
- The Seljukid figure of Heracles from 148 B. C., found during the Bisotun's main road construction in 1956
- Parthian remains: Relief of Gutarz-Mythridat (123-50 B.C.), obliterated by insertions of a waqf inscription by Sheikh Ali Khan Zangana
- Teras-e-Farhad
- Pol-e-Khosro (Sassanid remains)
- The Gamasab (Bisotun River) retaining wall
- The Mongol building
- The Safavid remains (caravansary and bridge)

A FORGOTTEN CIVILIZATION

Following the Greek occupation of Iran by Alexander, who set fire to the Achaemenid capital of Persepolis, the Persian Empire and its kings remained forgotten for a long time. Even in the Persian national epic – Ferdowsi's *Shahnameh*, narrating the mythical and historical past of Iran – the Achaemenid dynasty is not mentioned as such. Ferdowsi attributed Darius' palace to Jamshid – a mythical king – and Persepolis is referred to as *Takht-e Jamshid* (the throne of Jamshid).

However, important traces survived as a witness for the future generations, without which it would have been impossible to discover the mysterious history of the Old Persian Empire and of the nations under its rule.

One of these remaining vestiges is a set of tens of thousands of archival clay tablets buried and hidden under the ruins of Persepolis. They constitute a paramount source of information about the civilization of Achaemenids. Yet, even more important is the relief and inscription of Darius the Great at Bisotun.

DARIUS' MONUMENT AT BISOTUN

The Monument of Darius is a relief surrounded by the trilingual inscription in Old Persian, Elamite and Babylonian, representing the victory of Darius the Great over Gaumata and the nine rebellious kings. It covers an area of about 20 meters by 10 meters. There is no doubt that this is the most important document of the ancient Near East.

This monument, which has been engraved at the beginning of Darius' reign (521 BC), with an extreme precision of detail in

the carving that can be appreciated only from close up and it

DARIUS' RELIEF

This relief comprises the figure of Darius in his real size of 172 cm, stepping on the chest of the liar magus, his archer and lances behind , 9 rebels (the liar kings in front and above all of them the sign of the Supreme god Ahura-Mazda, to which Darius was always seeking mercy and help.



Figure 2: Darius' Relief

To choose Bisotun as the site for his triumphal rock relief, Darius was presumably inspired by a relief from Anobanini, King of the Lolobi tribes (3rd millennium B.C.) at Sar-e Pole Zahab and has portrayed himself and his allies Gobryas and Arta Phernes clearly distinguished from the small size rebels. From the historical point of view Bisotun inscription is unique, as it is a narration of historical events and a genuine *res gestae* on which Darius is proclaiming as the legitimate successor to Cyrus II and Cambyses II and giving his own ancestry and the oldest known list of the 23 lands provinces of the empire in 522 B. C.

The text continues with the accession of Darius to the throne in 520 B. C. and the activities of him in his First year that is a series of lights against the rebels in order to secure the crown. Although the sequence of the representation of the rebellious kings are chronological, but the inscription also gives the geographical setting of the events. The order on the relief is as follows:'

- 1-Gaumata, the first "False Smerdis"
- 2-Aeina Elam
- 3-Nadintabaira/Nidintu-Bel Babylon
- 4-Fravartis Ecbatan, Hyrcania
- 5-Martiya Elam
- 6-Cicantaxma/Tritantaikhmes
- 7-Vahyazdate, the second "False Smerdis" Persia Arachosia
- 8-Araka Armina
- 9-Frada Marv
- 10-Skunekha

THE INSCRIPTION

The monumental royal relief of Darius I, King of Persia, is surrounded by a trilingual inscription of 1119 lines, each about 2 meters length. The text is engraved in cuneiform characters in Old Persian, Elamite and Babylonian. This inscription appears to be the largest in the world and constitutes the major key to understand these languages. The Old Persian text alone made it possible to decipher cuneiform writing and opening the door to previously totally unknown ancient civilizations

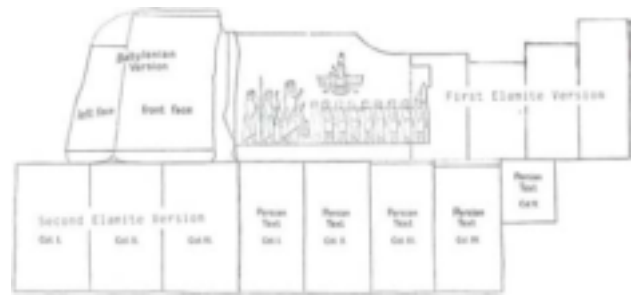


Figure 3: Darius Inscription

The more recent study shows that the preparation of the whole monument was executed in several successive stages and the Old Persian version of it is regarded as the youngest part. The three versions of Bisotun's text are not identical. In one of the paragraphs there are indications that the text was first written in an Aryan script the copy of which is existed in Elamite and not in Babylonian. Some of the events are recorded in Old Persian and are not mentioned in the Elamite or Babylonian Darius' fights against "Saka Tigraxawada" pointed-cap Scythians.

The text of Darius Bisotun inscription can be divided into 3 sections:

- A: An introduction
- B: The main text
- C: Conclusion

The Old Persian text is carved in under the relief, the first Elamite version is located to the right of the relief and the second Elamite text is engraved to the left of the Old Persian on the top of which the Babylonian version is situated. Some smaller pieces of inscription are engraved on the free zone on the top of the whole relief.

There were several stages in execution of both the relief and inscription as follows:

- 1- The relief without Skunkha, no main inscription, but minor DBa of Elamite minor Inscriptions DBb-J.
- 3- Babylonian 1-69 and DBb-J in Babylonian.
- 4- Old Persian 1-70, and DBb-j in Old Persian.
- 5- The relief of Skukha, the second Elamite text, and DBK in Elamite and Old Persian.
- 6- Old Persian 71-76
- 7- DBa, in Old Persian.

The whole monument was made between the first and the third regnal year of Darius (520-518 B. C.). The first part of the inscription is the Elamite version 1-69. The minor inscriptions related to the figures must have been carved as the main text: Elamite, Babylonian and the Old Persian. The eleven minor texts DBa-k related of the persons on the relief. DBa. The King DBb. Gaumata DBc-k The nine rebellious king. Although Darius has started the inscription by Elamite (521 B.C.), he ordered then to create the Old Persian writing with only 36 signs, much easier than Elamite with more than 300 signs and afterward the messages were first inscribed first inscribed in Old Persian and then in Elamite.

Decoding and Recording the Inscription

After 20 centuries of oubliette nobody could read the inscription nor understand the figure and the only source of information about Achaemenids were the remaining of the Roman and Greek writings.

In 15th century European tourists entered Persepolis and the investigation of the language and history of Persia began (Schlumberger,1963) and many orientalist tried to decode the

Persian writing. In 1621, the Pietro Della Valle (Italian), in 1674 Jean Chardin (French), In 1765 Neibur (Danish) have made copies of Bisotun's Document. Tichen (German) discovered the meaning of a letter. In 1802, Grotefend presented an important report; he found 13 different forms of proper names and distinguished the word 'vazarka' (big) and also the word Dariush. and also the word Darius. Finally due to the hard work between 1835 to 1844, Sir Henry Rawlinson succeeded to read first the Old Persian writing and then The Elamite and Babylonian. After Rawlinson other experts such as G.G.Cameron, R.G.Kent, L.W.King and R.C.Thompson have tried to improve it. Photographs and latex impression were taken. The Old Persian version was published in 1950 by R.G. Kent with an English translation. The later editions were made in 1951 and 1953, 1984 this time in German. The Babylonian Version was published in 1978 by E.N.von Voigtlanden and in 1923 and later in 1982 the Aramic translation was made and published.

As a base for all of these decoding activities, inevitably different type of documentations such as copying, moulding and photography are applied. But non of the methods could be used as a perfect and sure practical and technical solution. Even a high quality photograph is a two dimensional image and can not be used as a correct map of the object. A precise and reliable technical documentation of the monument is possible by topographic surveying and in our case only by close range photogrammetry and the 3D map obtained may be used for any purpose of design, conservation, restoration and even for reconstruction of the monument.

In this project a metric camera (wild P31) and as a geodetic instrument the set 1000 and for stereo-plotting the analytical plotter Leica SD2000 are used and in spite of the very difficult and inaccessible situation of the monument as well as complicated and riskful condition of the work the 3D maps in a scale of 1:5 with a horizontal and vertical precisin of one millimeter are obtained and hereafter some parts of the plotted maps are presented.



Figure.4:the semi-hanged scaffolding as the station for geodetic works at about 80 meter high



Figure 5: the photogram metric plot of Ahura-Mazda

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Figure 6: preparation of the work



Figure 8: Darius and his Lancer -Photograph



Figure 9: Darius and his Lancer –Photogrammetric Plot



Figure 7: Plotted Elamite writing