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Aesthetic Historical Renovation Plan of Anahita Temple in Takht-E-Solomon (Solomon Throne)

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Abstract: This research tries to introduce and investigate aesthetic - historical renovation plan of Anahita temple of Takht-e-Solomon. Aesthetic renovation is based on selectingthe most beautiful parts and historical renovation is based on historical documents and combining these two styles with Schultz's ontology is performed based on morphology, typology and topology. Research method is a combination of qualitative (case to theory: inductive) and quantitative (theory to case: deductive) methods. The research concludes that this temple doesn't have ceiling, several roofs exist on pillars and the big entrance is not covered.

Key words: Aesthetic renovation · Anahita temple · Takht-e-Solomon (Solomon throne) · Typology · Morphology · Topology

INTRODUCTION

The E hall of Takht-e-Solomonlocated in eastern part of quadrangular of the temple, considering similarity of architecture style and the evidences revealed has possibly been a place for worshiping "Anahita" Goddess of water. This square shaped temple has some similarities to three other structures attributed to Anahita. Materials used in this structure include well-cut stones from the bottom of walls and pillars to the starting point of arch bases and it continues with square-shaped bricks and gypsum mortar. A square temple with the sides around 22 meters which is 27 by 27 considering 4 rectangle parts around it. The thickness of the walls is about 2 meters and it contains 8 pillars.

After archeological excavations, the place has received the least protective and investigational measures.

Goals:

- Physical identification of Anahita temple and recognizing its place in Iran's architecture
- Introducing the Palimpsest of Anahita temple in Takht-e-Solomon
- Reviving the lines of architectural elements in order to restore glory of the past to their frame

Anahita Temples Scattered in Iran: Nahid is a young, beautiful, strong, shapely lady with white arms as robust as a shoulder of horse, raised breasts wearing a tight belt, beautiful jewels and pleated Persian dress, with a long plait and serrated crown. Among quadrupeds, bull was a symbol of Anahita. Goddesses had a very important part in beliefs of people in ancient times. A believe in generative and inseminating power of woman is manifested in symbols and legends remained from those times. Worshiping and cherishing Goddess get back to mother-oriented times. Anahita was the Goddess of land, sky and fertility waters and a trainer of animals and plants [1].

Anahita Temple in Parthian Time: As we know, Anahita, Protector Goddess of water, was very important for Iranian and specially Sassanid people, in a way that at the outset of Sassanid dynasty, Ardeshir and Shapoor were responsible for supervising the Anahita temple and Anahita was considered as Sassanid dynasty's Goddess. Even in a cameo of Naghsh-e-Rostam cameo sets it is seen that Nerse receives the ring of power from Anahita and this scene is an evidence for the importance of this Goddess to Sassanid dynasty and Iranians [2].

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Fig. 1: The locations of Anahita temples in Iran
Source: (Authorss, 2010)

Fig. 2: Anahita goddess
Source: (Authorss, 2010)

Anahita Temple in Kangavar: Nahid temple in Kangavar is in a square tetragonal shape with three platforms over each other, the first one with a diameter of 18.5 meters and anunstable height is based on natural events of schist rock where the structure is built on. The diameter, depth and interior part of wall are filled with wreckages, non-geometrical huge stones and gypsum mortar. Above this wall, there have been round pillars with 475 centimeter spaces between them (pivot to pillar pivot). Due to northern-southern slope of the rock, pillars contain variant height from 345 to 414 centimeters in order for them to stand on a level line. The diameter of pillars ranges from 135 to 145 centimeters and they include bottom, shaft and crown parts. Second platform is actually the central one with 932c width and 94c length. The architecture belonging to different Islamic eras for 1400 years has been built on this platform. In addition to foundation strength provided, it has been an elevated and appropriate place with a full view of the environment around. The highest platform contains a square-shaped area as a place for the holy fire and it lacked any pillars, corridors or similar elements. There is a small space with the remains of a high platform in the form of corners with a 90 degree angle. Based on these remains, we can imagine it as place and a temple for fire related to Parthian era [3].

Fig. 3: A panorama image of southern view of Anahita temple in Kangavar
Source: (Authors, 2009)

Anahita Temples During Sassanid Dynasty

Bishapoor'sanahita Temple: No doubt, Anahita temple in Bishapoor is one of the most incomparable ones in the country with a unique appearance in addition to a special climatic architecture of the temple and its location in a perfect complex confirms this fact that this structure belongs to an important period of this land's history. During Sassanid dynasty, due to open-mindedness of the rulers, there have been a variety of religions. This structure was built during the last Iranian dynasty and before Islam entered the country and includes some important secrets related to the kind of worshiping Gods at the time of pre-Islam Iranians[4]. Yet, unfortunately, this important temple has not received enough attention. Grischman, famous archeologist, after several excavations in this area and publishing 2 valuable books about decoration, palace and mosaic hall didn't mention anything about this temple. Just in one of the maps he introduces the place as a temple which, considering water path existing in this structure, is not true.

The kind of architecture in the temple and the excavations performed, this point is revealed that it had been built before all other structures. All the stones are well-cut. The diameter of walls is 2.35m. the interior part of walls have been filled with Sassanid gypsum mortar and stone particles. But the exterior stones are connected to each other without mortar, so metal fastenings have been used to fix the stones. At the intersection points of walls, stones are joined in a zigzag form. The structure's architecture inspires from majestic architecture of Achamenidae dynasty. This issue is provable considering several points. First, well-cut stones and metal fasteners, second, in the entrances of temple's portico toward the main hall, some stones have been used as portal horseshoe which are very similar to those used in Tachar palace of Takht-e-Jamshid (Persepolis) and finally, bull statues placed on the four walls of the structure. But today, only two statues are remained which are considered as symbols of the temple. Bull, however, is an animally symbol of Anahita, Goddess of water and Goddess of this temple. The architecture of the temple suggests a special religious respect toward Protector Goddess of water. Worshiping water and God of light or brightness is miraculously combined with a feeling of respect and shows itself with kindness. Bishapoor'sAnahita temple is symbol of a water worshiping place, so it can be considered as a place for purification and water patting. Current of water in running brooks into the main hall causes circulation and purification.

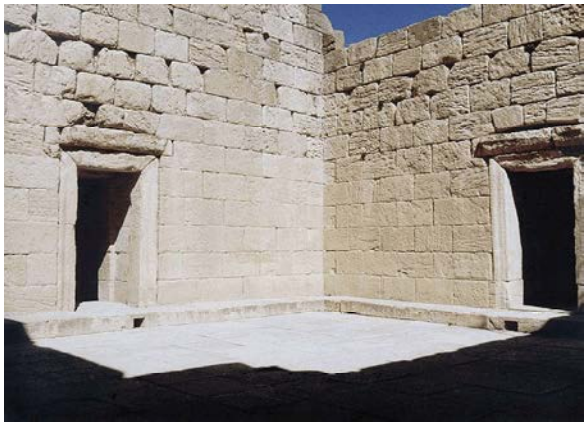


Fig. 4: Anahita temple of Bishapoor
Source: the Authors (2008)

Fig. 5: Stone bull located in Anahita temple of Bishapoor
Source: the Authors (2008)

Anahita Temple in Takht-E-Solomon: The space of E hall or Anahita temple has a pillared square-shapehall. This space can be divided into three main micro-spaces. The most central space in the temple is a place detached from the second space, which is a porch around hall, by eight arches and pillars. This space contains four rectangular and four cruciform pillars. Rectangular pillars of the structure have been placed along four main directions and they block a direct sight through temple entrances toward inside the hall. The other four cruciform pillars show four geographical peripheral directions [5].

In the third layer, the temple has a porch which includes the main hall. The porch contains four entrances along rectangular pillars. Possibly, the porch in north and south lacked any canopy. Just two arches in east and two in west parts of northern and southern ward of entrance have been the only covers of porch which still exist.

Fig. 6: Anahita temple in Takht-e-Solomon and Solomon's prison mountain
Source: Authors 2009

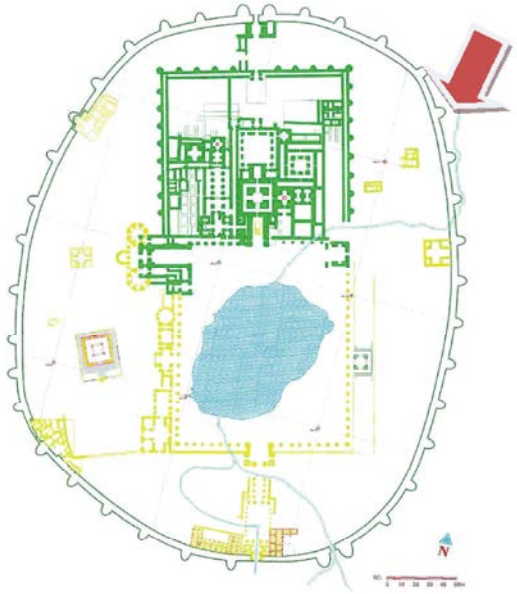


Fig. 7: A plan of historical complex of Takht-e-Solomon and the position of Anahita temple
Source: (Archive of Takht-e-Solomon complex) [7]

The outer layer of temple is a space formed by four rectangular rooms along temple sides which separate temple space from other spaces and result in a delayed sequenced entrance into the temple space. A door in southern part connects eastern room to royal museum and another door connects western room in south-west to northern yard of Azargoshtasb temple. The materials used in Anahita temple are the same as ones used in west portico (Khosro portico). Both structures contain stone pillars. Applying the stone due to suitable loading capability and less erosion compared to bricks in heights accessible by human has been a wise choice [6].

Fig. 8: Anahita temple in Takht-e-Solomon and Belgheis Mountain
Source: (Authors, 2009)

Arches which form upper part of pillars have been made of bricks. The reason is that due to ease and accuracy of implementation and also less weight of brick, this material, compared to stone, is a better choice to do the arches.

Considering entrances, porch and rooms around, the structure of the temple show an accurate design. All additions in this space have been designed in a way that they cause a special turning.

The area of the temple and the accuracy when using materials and also the design, all denotes the importance of this space in Takht-e-Solomon.

Palimpsest is a context composed of different layers, their remains and clearances, transparencies and confusions, additions and removals, overlapping and intermixing of subjects, reprocessing and rearrangement of old elements and …

Palimpsest Concepts Can Be Applied in Architecture in Three Forms:

- Using old monuments or their remains (or even their explanations) as an idea, structure, origin or sub-design of a new design
- Designing a new structure in a way that previous one or its remains is physically recognizable and applicable, this issue happens automatically in reconstruction and renovation projects.
- Submitting a design including soul, concepts, efficiency or memories of previous structure's life.

Diagram 1: Topology of Iran's Anahita temples [8]

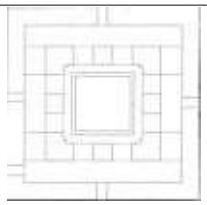
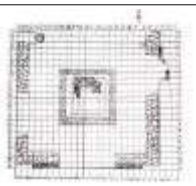
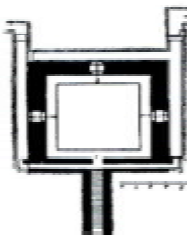
Site Image	Plan	Manner of water circulation	Placement situation	Geographical location	Anahitatemples
		A pool in the center of temple	On a limy platform with around 20 m height	West-Azerbaijan The city of Takab	Takht-e-Solomonb (Solomon Throne)
		A spring on 2nd floor of the temple	On a schist hill with around 30m height	Kermanshah - city of Kangavar	Kangavar
		The runnel around the temple	Under the ground (25 stairs toward the bottom)	Fars- city of Bishapoor	Bishapoor

Diagram 2: Typology of Anahita temples in Iran [9]

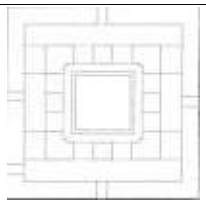
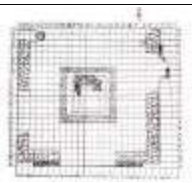
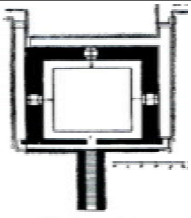
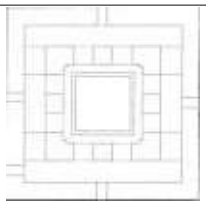
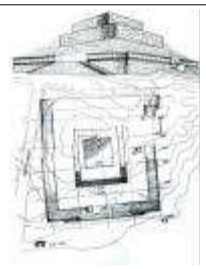
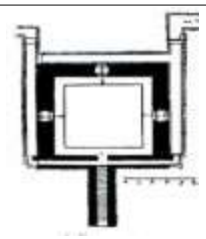
An image of temple entrance	Plan	Manner of water circulation	Manner of people circulation	Time of construction	Anahita temples
		A pool in the center of temple	Entrances form all 4 sides	Sassanid	Takht-e-Solomon (Solomon throne)
		A spring in the central part of temple	Entrances form all 4 sides	Parthian	Kangavar
		The runnel around the temple	An entrance door from south	Sassanid	Bishapoor

Diagram 3: Morphology of Iran's Anahita temples [10]

An image of temple	Plan	Manner of water circulation	Size of stones	Exterior materials	Anahita temples
		A pool in the center of temple	30-20 (centimeters)	Stone and brick	Takht-e-Solomon (Solomon throne)
		A spring on the 2nd floor of the temple	Huge stones	Stone	Kangavar
		The runnel around the temple	Stones with the same sizes (50centimeters)	Stone	Bishapoor

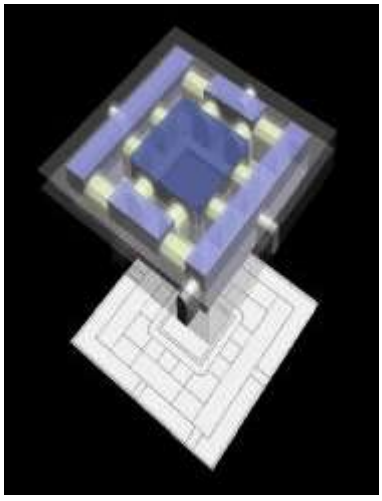


Fig. 9: Main parts of Takht-e-Solomon's Anahita Temple, Designed by Authors

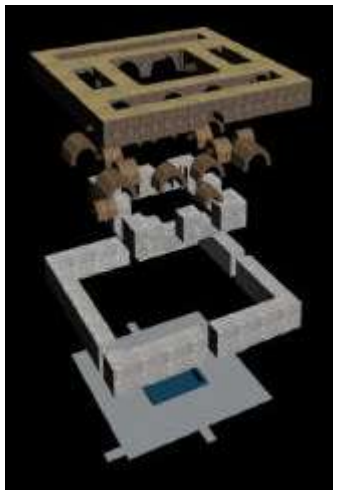


Fig. 10: Mold explosion of structure Designed by Authors

Pathology: Considering much preferences like; historic, cultural and aesthetic properties historic structures contain, they are much susceptible so more care should be devoted to them. There is a possibility that the damage occurred for a historic structure is not exclusively related to materials or stones, bricks and structures like; walls, arches or … but it can be a damage to history, art, traditional skills and in one word; the heritage remained in

structures. Therefore, considering this crucial point, interfering and threatening elements of historic structures should be identified and, adopting an appropriate protection and renovation based approach, these elements should be omitted and sustainability of the structure should be guaranteed. Moisture, plants growth, inappropriate maintenance tasks, general damages caused by human, suddenand sever natural events e.g. earthquake, blood, … are all among these damaging factors which separately or simultaneously cause harms for the structures specially historic ones and lead them destroy. Today's serious damages and problems of clear-cut stones of the site include a combination of internal and external elements which caused severe damages for stones.

Internal Elements

Problems Caused by Building's Structure: The architecture performed in this site is in the form of platforms built on lake's sediment. Stones used here were exploited form Chaltappeh mines and they contain relative resistance. But the veins formed during the time and environmental erosion has resulted in many problems which will be mentioned in the following. Another issue is the deformation of pillars and walls caused by vertical pressure due to excessive load and functional changes made in spaces during later period (Ilkhanids).

Problems Caused by Materials: Kind of materials is the most important inherent factor of erosion and ruin in historic structures. About Anahita, problem of material is mostly related to the kind of stone, exploitation, preparing, priming, stone cuts and back mortar. Selecting kind of stone in the site has been partially successful but applying veined stones can be considered as their inherent problem. This problem together with moisture, rain and soluble salts has added to erosion and weathering of stones during the time.

In addition, the method of exploitation and kind of cuts has resulted in certain tensions in stones which play an important role in erosion trend. Tensions include: using veined stones and applying them in lower parts of walls which bear more load and the manner of exploitation and cutting of the stones which resulted in very thin and narrow cracks on stone surfaces.

Narrow cracks are a potential and serious danger in stones which, in stones of this area with high porosity and water- absorption capacity, increase moisture permeability and problems caused by appearing soluble salts, freeze and oxidation of stones.

Fig. 11: A crack in pillar caused by vertical pressure and foundation sagging
Source: Authors (2009)

The other serious problem among clear-cut stones is permeation of soluble salts from back mortar to the stones and salt crusts formed on the surface during the time has been a crucial factor of stone erosion.

External Elements: Among natural disturbing harmful elements, moisture has been always playing an important role which includes falling moisture resulted from rain, air moisture and rising moisture resulted by waters and earth moisture. Other natural damaging elements can be earthquake, storm, flood, fire, wind, biologic elements e.g. algae, fungus and also roots of plants, animals and their droppings and … These elements can damage a historic structure separately or simultaneously (sometimes in the form of several elements) and identifying their separate or simultaneous effect has an important role in removing these disturbing causes.

Fig. 12: Moisture in temple and plants' growth
Source: (Authors: 2009)

Fig. 13: Falling moisture on walls, caused by snow
Source: Authors, 2008

Fig. 14: Falling moisture on walls, caused by snow
Source: Authors, 2009

Moisture and Rainfall: The moisture in Anahita temple functions in 2 ways:

- Falling moisture: it washes away the carbonate existing in limy stones and includes permeation of moisture into the stones and problems caused by freeze and oxidation.
- Rising moisture: remaining water at the bottom of stone walls results in permeation of moisture into the stones and the mortar behind stone wall and it also prepares conditions for weathering, freeze and mortar erosion. It leads to plants growth and presence of animals as well.

Disturbing Role of Moisture in Anahita Temple Can Be Divided into Several Categories:

- Permeation of moisture into foundation and sagging of foundation and walls
- Materials wash-away and compilation of debris during the time
- Effects caused by freeze and stone oxidation: the effects caused by these problems include swelling and crusting in stones, erosion by soluble salts

Fig. 15: Falling moisture on walls and the ground, caused by snow
Source: Authors, 2009

Fig. 16: Stone weathering
Source: (Authors, 2009)

Fig. 17: Plants grown within materials
Source: (Authors, 2009)

- Plants growth on materials: the pressure caused by their roots result in materials' breaking and smashing.
- Moisture makes a suitable condition for variable animals and insects to live in materials

Fig. 18: Animals nesting
Source: (Authors, 2009)

Fig. 19: Pillars in northern yard which are similar to the ones in the temple
Source: (Authors, 2010)

Wind: Wind can cause erosion in 2 ways: it hits fine sand and gravel to stones surfaces and causing erosion, it prepares conditions for moisture permeation. Also, wind is one of the most important elements which intensifies freeze and stones weathering and this increases the speed of evaporation and formation of soluble salts and effloresce phenomenon appears. It also results in an intensification of freeze and weathering and stone crusting.

Humane Elements: The most important reason of ruin and sever erosion in Anahita temple has been human activities during the time. Different wars, political and social changes occurred in the history of the area and it led to changes in the function of structure and using materials of the site for these changes, desertedness of the site and nomadic settlement which accompanied with changing and demolition of materials. Human activities in Anahita temple ended in sever destruction of stones which are the main materials of the structure. Functional change ruined lots of scientific and structural evidences of the structure which are not recoverable.

Problems caused by humane elements in political, social, cultural and economic forms have a continual effect here.

CONCLUSION

- Consideringthe explanation of Anahita temple, it seems to be roofless. In this regard, mentioning a legend can show that the importance of water specially in Iran which is located in dry zone makes this more notable.

Physical reconstruction of the structure

Fig. 20: Anahitatemple in Takht-e-Solomon (Solomon throne)
Source: Authors, 2009)

According to legends, sky was considered as father, clouds were his desire, snow and rain were his sperm and earth was the mother. Then this sperm should be entered inside mother (earth) and cause life continuance. So making a roof for a temple which has always been important throughout the history is not acceptable. There are some similar ones both in Iran and other countries.

- There are some evidences about arch footages existing on pillars' slits which show several roofs on some slits (what we can see in physical reconstruction) and in other slits there are no evidences about these footages or any arches on these slits. If there was an arch, in order to control its drift, there should have been evidences of footages for other pillars as well.

- In order to cover this huge opening in Anahita temple, thickness of slits should be much more; because the diameter of opening is less and thickness of slits is more in fire temple (the diameter of Anahita temple's opening is 12.80m, fire temple's diameter is 10.55m and thickness of slits in Anahita temple is 3.10 and thickness of fire temple is 5.80).
- If there was an arch, considering the importance of fire temple, its height should have been more but according to the sizes existing there now, in order to cover such a big opening, the height of its arch should be much more
- According to existing sources about excavations performed in Anahita temple, there is no information about the kind of materials and the amount of digging, however according to their accuracy in excavations of other space, it should has been noted some about it.

Fig. 21: Pictorial reconstruction of the structure Designed by Authors

Fig. 22: Anahita temple in Takht-e-Solomon
Source: (Authors, 2009)

Fig. 23: Pictorial reconstruction of the structure Designed by Authors

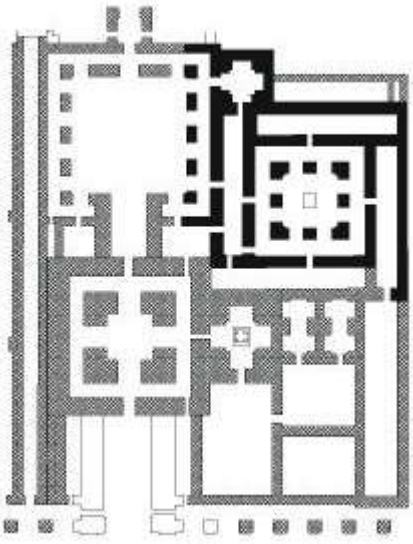


Fig. 24: An existing plan of Takht-e-Solomon's Anahita temple
Source: archive of Takht-e-Solomon

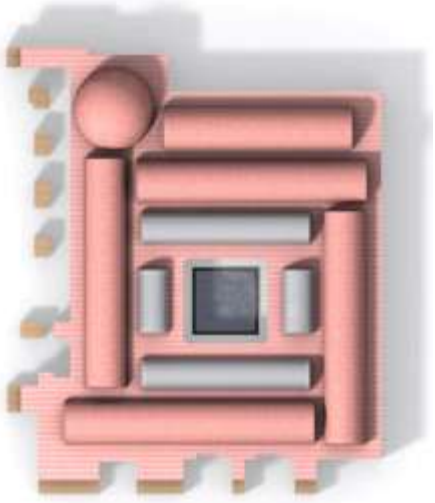


Fig. 25: Renovation plan of Anahita temple in Takht-e-Solomon Designed by Authors

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9. Typology is the second factors of Christian Norberg - Schulz’s ontology which belongs to plans.
10. Morphology is the third factors of Christian Norberg - Schulz’s ontology which belongs to skyline and elevations.