

A Research on Construction Method of Indian Parsis' and Iranian Zoroastrians' Dakhmas

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ABSTRACT

Zoroastrianism is based on preventing from polluting four sacred elements, water, earth, air, and fire; hence, they abandon corpses in an open space and away from polluting quadruple elements to be fed by the birds. The primary Dakhmas were built simply on top of a mountain. Although Indian and Iranian Zoroastrians have similar rituals and ceremonies in the tradition of Dakhma construction, eventually, there were differences in their construction method, the reason for which dates back to the early Islamic era. When the Islamic government took over, some Zoroastrians of Iran (Parsis of India) migrated to India and imported the tradition of Dakhma making into India and pursued it there. However, due to the social and governmental restrictions, Dakhma construction and its rituals were gradually changed among the Zoroastrians of Iran, while Parsis of India have fully performed the rituals and preserved them until now. This tradition, however, has been stopped for more than 50 years in Iran. The current research aimed to study and identify the construction methods of Zoroastrian Dakhmas and compare them in Iran and India. To this end, some questions were raised that how is the architecture and construction method of Dakhmas in India and Iran, and what are the differences between them? Is the construction method of the Dakhma merely to satisfy a ritual need and religious belief, or have practical and functional factors also been effective in the construction method? Is it based on satisfying a ritual need, or have social and religious issues and beliefs also been influential in their construction method? The research method was descriptive-comparative and field study, and in some cases, the Mobads (Zoroastrian clerics) and Zoroastrians were also interviewed. According to the observational findings based on the documents, research, and statements of valid religious leaders where field study was not available, Dakhmas were constructed based on the religious and rituals beliefs of Zoroastrians and functional needs. However, the construction method and ceremonies of Dakhma in Iran have been held briefly than in India.

Keywords: Dakhma, Ritual Architecture, Zoroastrianism, India, Iran.

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1. INTRODUCTION

Since the architecture indicates a part of the beliefs and rituals of the society's people, the process of the historical evolution of different buildings is considered in studying the history of culture and architecture of any society. Thus, religious and ritual monuments play a significant role in recognizing the history of the culture and architecture of that society.

In this regard, studying funerary architecture is of great importance as it indicates the ritual and cultural customs of a land. Accordingly, identifying and introducing forgotten Dakhmas will guide to know the culture of the behavior with the Zoroastrians' deceased and Iranian's religious beliefs before Islam. Dakhmagozari (burial) is particularly performed by the Parsis of India and Zoroastrians of Iran. Perhaps, it might seem that the construction method of Dakhmas¹ is similar in all the countries that perform Dakhma Gozari (burial ceremony). However, the architecture of the related building in the countries is different. In line with the current research, there are limited resources in Iran; because the minority of the Zoroastrians in Iran have had social and governmental restrictions. As a result, there are no ancient written and visual resources about their construction method. On the other hand, since the religious minorities in Iran had social and governmental restrictions at their time, the construction method of Dakhma in Iran was performed simpler than the Parsis of India. Also, there are no ancient written or visual resources about their construction method. It must be noted that ritual beliefs played a significant role in all Dakhmas. Accordingly, the construction of Dakhma has always been associated with particular customs, and observance of these customs has always been obligatory as they originate from the religious beliefs of Zoroastrians. As previously mentioned, there is no documented information about the construction method and architecture of Dakhmas in Iran. However, as we received the information orally and through generations and Mobads' descriptions, it is similar to the Dakhma construction in India. Yet, it can be certainly said that these ceremonies have been held in more detail and comprehensively than in Iran. The current paper attempted to identify the similarities and differences by comparing these ritual architectures.

2. PROBLEM STATEMENT AND RESEARCH QUESTIONS

In various religions and communities, human being's religious beliefs and attitudes on death and the afterlife determine how to treat the deceased, architecture, and ritual ceremonies. Dakhmas of Iranian Zoroastrians and Parsis of India are among these examples, which provide considerable information regarding Zoroastrianism's approach on death and afterlife and the architecture related to the behavior with the dead; thus, this information can be obtained by studying them. Following achieving this information and when

facing Zoroastrian Goor-Dakhmas (burial mound), in particular, Dakhmas of Iran and India, the following questions are raised regarding their architecture that answering them can reveal the religious principles in designing and constructing them:

- What are the functional and religious principles in the formation of the architecture of Dakhmas?
- What is the difference between the architecture and construction of the Dakhmas in Iran and India, although both are based on the same religion and rite?

3. RESEARCH BACKGROUND AND THEORETICAL FOUNDATIONS

It must be noted that the conducted studies in this regard have not been extensive and have focused more on the Zoroastrians' burial rites and customs. Among the conducted studies are Darab Hormozyar's Rivayat by Manockji Rustamji, in which there are instructions and stresses on the construction of Dakhma. Also, Nasim Alipour (2006), in her book called "Dadagahe Cham", introduces Cham tower of silence (Dakhma-ye Cham) in Cham village located in Yazd. "Tower of Silence", written by Roya Shini Gholampour (2006), introduces Mankji Dakhma and Golestan Dakhma in Yazd, the architecture of Dakhmas, and their construction. Enayatizad and Amouzegar also compared the construction methods of Dakhmas in Iran and India. Another paper is the Dakhmagozari rite (burial) with emphasis on the architecture of Dakhmas in Iran written by Ahmadi and Mehrafarin. A book entitled Khorshid Nigrishn (2000), published in Bombay, and also explains the construction of Dakhma and its rite in Iran. Shokoohy (2007) also pointed out Dakhmas in Iran, and Rahbar, in a paper entitled "Bandian Fire Temple of Dargaz; once again" (2010), investigated Dargaz Dakhma and its architecture. Thus, Dadgah-e Cham, Tower of Silence books are on the Dakhmas in Iran and their construction method. KhorshidNigrishn also explains the Dakhma construction in detail in India, and Darab Hormozyar's Rivayat by Mankji Rustamji includes Dakhma construction and Zoroastrians' belief in both countries.

4. RESEARCH METHOD

The current research was qualitative and based on descriptive-analytical and field studies. Comparative studies, mappings, and recognition of the Dakhmas in Iran were conducted using library and field studies and visiting the site. Also, Dakhmas in India were recognized using library study and survey the Zoroastrians living in India. Then, it was concluded using the qualitative analysis method and based on the logical reasoning and comparative table.

5. BURIAL METHODS AND BELIEFS OF ZOROASTRIANS IN IRAN AND INDIA

The dead were treated in different ways in Iran. The behavior with the dead (funeral in general, which

is one of the most common ways of treating the dead) is one of the most important intellectual and behavioral matters of the human in dealing with death, emerging materially² (Shini Gholampour & Heidari Karimnejad, 2014, p. 68). Sometimes, ancient Iranian coated the corpse with wax and then buried it as it was conventional in the south of Iran. In the forest regions, such as the south coast of the Mazandaran Sea, due to the abundance of wood, the corpse was cremated (Azargoshasb, 1969). Also, the people used to cremate corpses due to the issues, such as coldness and icy ground, digging the ground and providing the grave. (The cremation took place in the past in Siberia and now in India). Sometimes the body was thrown into the water (southern Iran), and sometimes, it was placed on top of a mountain (western Iran). The kings ordered to be buried at the hillside after death. Another type of burial was in coffins and earthenware jars. With the spread of Zoroastrianism and its recognition as the religion of Iran, cremation, drowning, and burying the body were considered a great sin. In Airyanem Vaejah, a cold and mountainous land, which was the homeland of the Arians and Zoroastrians, due to the numerous mountains, lack of tree, and difficulty to provide the grave and digging it, Iranian used to abandon their dead on the top of the mountains. Similarly, Iranian, including Medes, built towers known as "Dakhma"³ on the mountains and places away from the people's gatherings, Zoroastrians called it the "Dadgah" (court) and the Parsis of India named it "dakhmou" (Mahdavi, 2000, 31), and the European called it "Tower of Silence. Avesta prohibited burring the dead. However, it did not prevent the dry bones of the corpse from being buried in a place called ossuary (Astudan) (Darmesteter, 2007, p. 195; Christensen, 1979, p. 137). After washing the dead, Zoroastrians took the corpse to Dakhma in a special ceremony and placed it in front of the sun (Khorshid Nigrishn ceremony), which is called Dakhma Gozari (burial practice).

6. ETYMOLOGY OF DAKHMA

Dakhma is a place where the dead are cremated. Some believe that this term is originated from "dag", meaning burning, and "dagh" is also originated from the same word (Dehkhoda, 1951, 290-288; Moein, 1996, 1499). Dakhma⁴ is called dakhmag in Avesta and Pahlavi; a crypt where the corpses are places; a tomb, underground room, which is used for burring the dead (Margin of Borhan-e Qate).

7. INFLUENTIAL FACTORS IN THE ARCHITECTURE OF DAKHMA

How to build a Dakhma? The answer is that a Dakhma can be rebuilt by water ... (Darab Hormozyar's Rivayat). The architecture of Dakhmas was strongly affected by religious beliefs, the attitude to the world, the afterlife, and their functions. Based on the conducted studies, the Dakhma was to prevent four principal elements of

nature (water, air, earth, and fire) from being polluted by the corpse⁵. On the other hand, Zoroastrians believed that one should not be attached to the dead and did not consider building a cemetery acceptable, which was realized by placing the dead in Dakhma; because there will be no remain from the people. According to their religious beliefs, similar to other Monotheistic religions, women, men, and children are the same before God. Therefore, to meet such a need, the best form of plan to build the Dakhma is a circle; because, in addition to having geometrical, structural, and physical strengths, the circle has no up or down, edge, corner, and the rich and the poor are all the same in the Dakhma. Also, the circle reminds of the sun, which has an especial place for Zoroastrians. In general, these faiths and beliefs related to the necessity for the peace of the soul in the first nights after death determine the architectural form of Dakhma. Finally, fixed and particular beliefs were considered in the construction of Dakhma in terms of religious perspective. However, although a great part of the features and specifications are structurally similar and common, the construction method and their architectural features were not accurately and fixed and the same tradition and the spatial conditions led to emerging some changes and differences in their architecture and construction method. Therefore, the influential factors in designing the Dakhma can be classified into two classes:

A) Religious factors

B) Functional factors

Also, four main principles were considered in the construction of Dakhma:

1. Being away from the city and humans' living places;
2. Exposing the corpse to sun rays to purify them (putrefaction of the corpse which is called Khorshid Nigrishn).
3. Not polluting the water, soil, air, and fire (quadruple elements);
4. Exposing the corpses to the firelight at night and guarding the psyche by fire and guiding it to the afterworld and judgment day.

7.1. Religious Perspective on the Architecture of Dakhma

Dakhma is circular because the circle is a sign of infinity and endlessness, and is a symbol of equality of the poor and rich, showing that all humans are the same before God.

Dakhma is built in a dry place away from the settlements and against the wind direction. There is an orifice near the entrance door and on the wall of Dakhma, which is called the light-absorbing eye. Its function is to display the light of the fire pit- guardian of the psyche- in the east of Dakhma⁶ (Mazdapour, 2004, p. 104).

7.2. A Functional Perspective on the Architecture of Dakhma

Dakhma is built by a circular think and high wall that

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its stone door (or metal) is opened to its eastern side and has a seven-stair slope stairway on the exterior. Inside the Dakhma is paved in a slope and circular way from the side of the wall to the center. There is also a big central well⁷, which is called “astodan” (ossuary) (Shini Gholampour & Heidari Karimnejad, 2014, p. 70).

The strong building of the Dakhma is made of hard and durable materials. The outside of the Dakhma is wide enough for Nasu Kasha (corpse-bearer)⁸ to be able to place iron-bier (Tab’at or Gahan)⁹ on it, which is then lifted by the Corpse-bearers¹⁰ and taken into the Dakhma. Urban water or well water, as well as rainwater, are used to clean the Dakhma (Shini Gholampour & Heidari Karimnejad, 2014) (Fig. 1).



Fig. 1. Golestan Dakhma, Yazd

Dakhmas were established on dry and infertile land. To be more specific, Dakhmas were built on top of a hill or a high place (as advised in Vandidad) and away from the human settlements. Zoroastrians (Parsis) build a garden at a relatively far distance around it. A Dakhma is established in the center of this infertile area. The habitat of the scavenging birds must also be in the adjacency of the Dakhma, if possible, or a breeding center of these birds must be built.

8. THE CONSTRUCTION METHOD OF DAKHMA IN INDIA¹¹

In 1300, Parsis of India established the first Dakhma in Bharuch city located in Gujarat in India due to the society's demand. The primary Dakhmas of Parsis were constructed similar to the Iranian Dakhmas. The Parsis first adopted the construction method of Iranian Dakhmas, and in cases of ambiguity, they consulted Iranian Mobads (Enayati & Amouzgar, 2017, p. 95). However, considering the restrictions for Zoroastrians of Iran, the Dakhma construction and holding ritual ceremonies were reduced in Iran while it was fully held in India. Like Iranian Dakhmas, Dakhmas in India

have also some characteristics, such as circular plan, high walls without any decorations, underground wells (In these four underground wells, the bottom of which is covered with thick layers of sand for purification, the water dries over time), etc.

The structure of the natural Dakhma in India consists of three parts:

- Slope circular platform consisting of places to expose the corpses to the sun rays.
- The central well, in which the remaining bones of the corpses are dumped.
- Four underground wells that direct the water (Naryman, 2000, p. 167) (Fig. 2).

Although Dakhmas were initially constructed in a simple way in India, the number of Dakhma construction increased over time and due to economic prosperity.

The following rituals were held to build and sanctify a Dakhma in India:

- A) The ceremony of digging the ground to found the Dakhma by shoveling the ground;
- B) Tana¹² ceremony for laying the foundation and the ceremony after Dakhma construction.



Fig. 2. A Circular Pit is Dug to Prepare for the Construction of Dakhma (Salsette Dakhma of India and Andohen)

(Godrej & Punthakey Mistree, 2002)

8.1. The Ceremony of Digging the Ground

The circular and dry region on which the Dakhma is constructed must be fully purified, and Nirang¹³ must be poured on the ground (to disinfect the area). Then water is sprinkled on the ground three times. In the center of that circular area, two rectangular canals (several inches deep) are created in the ground for the ceremony to take place. This circular area is also surrounded by the installation of curtains:

“After performing Bareshnoom (a ceremony for purification that Mobads perform) and preparing before Bahram fire¹⁴, two Mobads go to the circular region in the center of which two square channels are built. They hold the rituals and ceremonies of the earth by five Barsam¹⁵ branches. Then, after reading Avesta 21 times; they shovel the ground 9 times and dig the ground (Fig. 2). A thin thread is used to determine the construction area of Dakhma and preparing the

Dakhma plan, i.e., the external circle of the Dakhma (wall) and the inner circle of Dakhma (well); also, four drainages¹⁶ are used to direct the water and benchmark through nailing. The foundation of Dakhma is dug in a depth of 8 feet¹⁷. 301 metal nails with different sizes and weights are prepared by a Mobad (each of four directing nails has three holes and the rest of the nails have no hole). Mobad cleans the metal nails using a steel brush and disinfects them using Nirang or a chemical disinfectant. Then, he washes them three times with clean water. These nails are consecrated by Avesta the day before”.

8.2. Tana Ceremony

One day is set for the laying of the Dakhma. Then, that morning, two Mobads go into the dug-out ground and prepare a rectangular space, which is a narrow quadrangular channel and is some inches deep (Naryman, 2000) (Fig. 3).

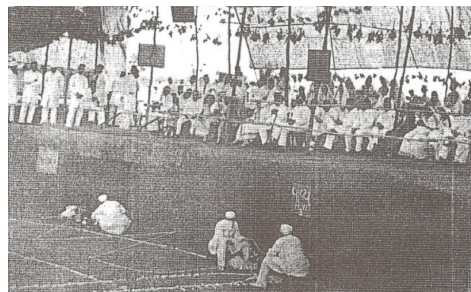


Fig. 3. The Ceremony of Pounding Nail on the Ground to Build Dakhma
(Naryman, 2002)

Two Mobads drive 301 nails with different sizes and weights on the ground. Each of the last four nails is nailed on one of the directions of the inner central wall, which is called Bahandar¹⁸. Therefore, the nailing ends (Fig. 3).

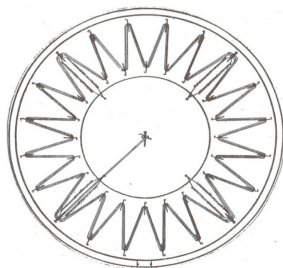


Fig. 4. Strings Tied to Nails
(Naryman, 2002)

When the (Tana¹⁹) ceremony is finished, the new Dakhma will not be used according to the tradition. The diameter of the cylindrical and stone building of Dakhma vary from 8 to 30 centimeter. The platform of the Dakhma is at least 3-4 meters higher than the ground level and has a completely opened ceiling. Dakhma has a single stairway, leading to a door which is always towards east and sunrise. There are two small lids on the two sides. These lids provide the entrance of the firelight of the court and an oil lap within it which was turned on by the believers. The depth of the floor of the ossuary in the middle of the Dakhma is almost

one and a half meters. The platform of Dakhma is divided into concentric rings separating by a pavis²⁰ and extend radially and concentrically, creating three rows of platforms, each the size of a human corpse. Traditionally, the bodies of men are arranged around the outer ring, women in the second ring, and children in the innermost ring. The circular platform of Dakhma is sloping towards the center, in which there is a well with a diameter of 2-4 meters leading the underground. The vertical surface of the central well has four drainages passing through four main directions. Drainages penetrate deeper into the soil and extend up to about eight meters beyond the outer wall of Dakhma. At the opening of each of these drains, there is a latticed stone that acts as a filter for contaminants that pass through the drain (Fig. 4) (Godrej, 2002, p. 67). Now, Dakhma is ready to place the deceased body.

Four underground drainages functioning under the central well are dug and built underground to which the dead's impurities and blood are directed. The produced water by the purification is dumped into the great central well²¹. Finally, the water enters the four underground conductors and passes through the filters, and then reaches the four underground wells. The advanced or normal filters²² are used to filter the water after disinfecting the infected materials and before the water enters the underground wells (Figs. 5-8 show the completed plan and cross-section of Dakhma).

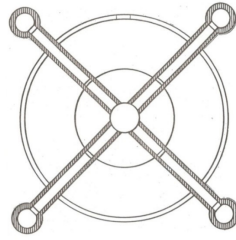


Fig. 5. The Cross-Section of the Four Tall Underground Drainages Functioning Under the Central Well. This System Has No Longer Been Used Since a Long Time Ago
(Naryman, 2002)

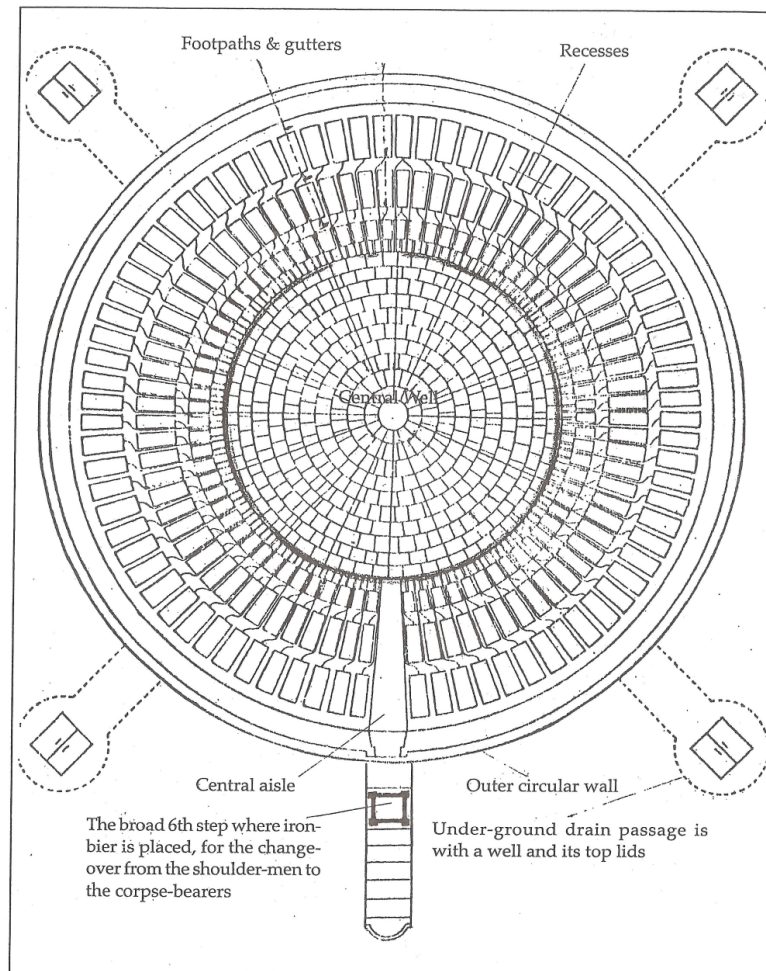


Fig. 6. Plan of Dakhma
(Naryman, 2002)

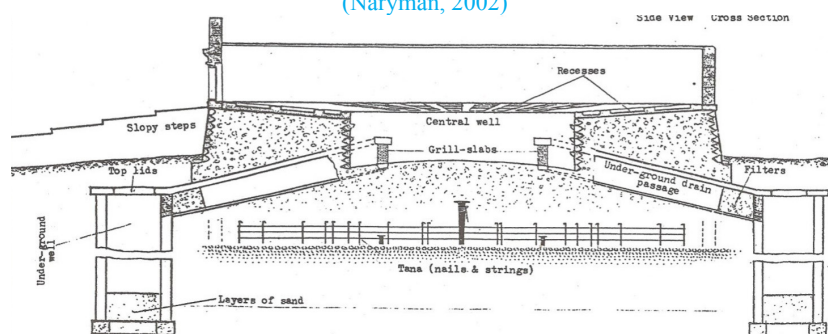


Fig. 7. The Finished Section of Dakhma after Construction
(Naryman, 2002)

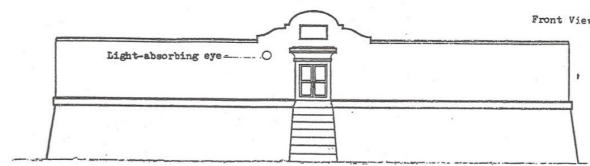


Fig. 8. The Finished Façade of Dakhma after Construction
(Naryman, 2002)

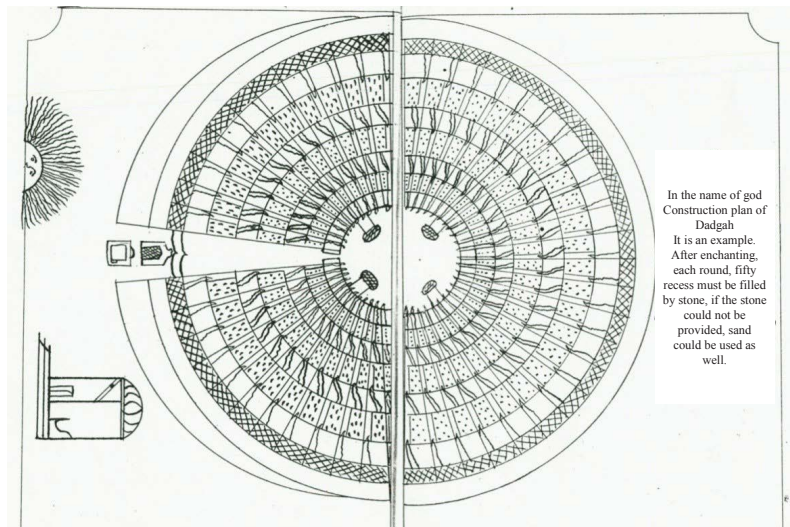


Fig. 9. The Plan of Dakhma Based on a Design by Mobad Mehregan Siavakhsh Who Presented the Dakhma Door to be towards the Sunrise (East) Away From the Settlement, Pavis of Women, Men, and Children, and Four Drainages in the Ossuary
(Mehregan, 2012)

After the Tana ceremony, the dug area, along with nails and strings, will be remained untouched for two to three weeks so that those who did not have a chance to watch it would be able to do so. Then, laying the foundation of Dakhma begins, and the nails and strings remain and are covered under the foundation of the building. Then, the construction of Khorshid Tower begins using stone (Naryman, 2000, p. 39).

Stone drain passages in four directions of the central well are extended until the deep underground stone wells out of Dakhma. The length of each drainage is one and a half times the diameter of the circular slopy platform. Four stone walls on four sides of the Dakhma are built outside it that have 7 feet depth. The diameter of each well is one-sixth of the diameter of the Dakhma (the end of each well is covered with thick layers of sand, fine and coarse-grained gravels. Each well is covered by a cap). Therefore, the construction of Dakhma ends. The land surrounding Dakhma must be maintained clean and dry to some specific distance. A flower garden whose trees are planted in the northern and southern sides must be established near these lands and around Dakhma to keep the air clean. Fragrant plants are planted in this garden. A specific day is determined for the sanctification ceremony of Dakhma which lasts for four days. The sanctification ceremony is usually held in the dry season as this ritual is held in an open space and under a temporary shade and cannot be paused because of rainfall or snow. On the fourth

day, which is the opening of Dakhma, a celebration is held in honor of Ahuramazda in the presence of a large number of Parsis who have gathered to watch the ceremony. The name of the donator whose donations were used to construct Dakhma is mentioned, and they pray to Ahuramazda. Then, the Dakhma was known and used as "Khorshid Tower of Silence"²³. Due to the sacred ceremony of founding the Dakhma, light-absorbing eye, and also praying to the angel Soroush, who is the righteous angel of Ahuramazda to protect the dead, no pollution, evil spirit or hellish angel can ever approach Dakhma²⁴.

9. THE ARCHITECTURE OF DAKHMAS IN IRAN²⁵

Despite the field studies and interviews with informed people and library studies, no source was found to explain the construction method of Dakhmas in Iran comprehensively. Considering the evidence and knowing that the Parsis migrated from Iran to India and imported the Dakhma tradition into India, it can be understood that the ceremonies of Dakhma construction in Iran were similar to India yet not in its comprehensive form. In general, it can be mentioned that all Dakhmas had ossuary in their center, made of materials in their construction, and had three pavises for placing the corpses, and all of the Dakhmas were built in a high place. For many, due to the social, religious,

and governmental restrictions, on the one hand, and reduction in the population of Zoroastrians, on the other hand, and the difficulty in building the Dakhma

based on the religious teachings and adjacency with the Muslims, the construction method of Dakhmahas not many details and is simpler.

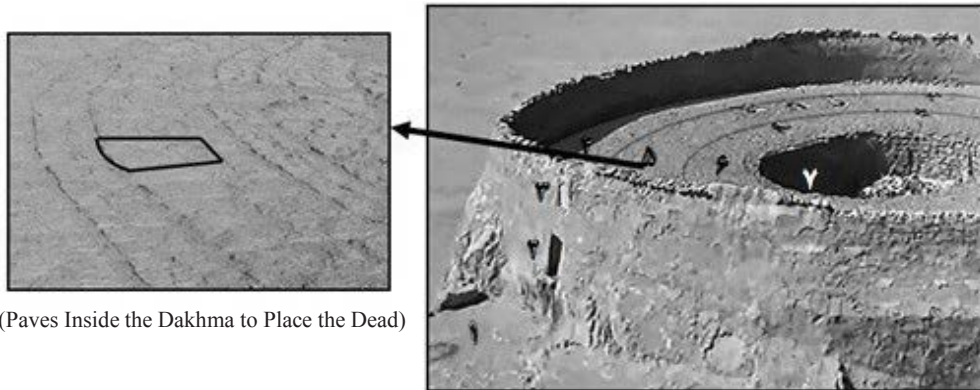


Fig. 10. Mankji Dakhma before Repairing the Stairs, 1. Road of Dakhma. 2. Stone Door. 3. The Place for Install the Inscription of Dakhma, 4. The Ring of Dead Men. 5. The Ring of Female Dead. 6. The Ring of Dead Children. 7. Ossuary (Astodan)

(Maserat, 1997)

Currently, several Zoroastrians' historic Dakhmas have remained in Iran, particularly in Yazd, Kerman, and Tehran, the oldest and simplest of which architecturally is Kavous Dakhma near Yazd. Also, the most prolific and complete form of Iranian Dakhmas is Cham Dakhma in Cham village of Taft city of Yazd province. Finally, the most beautiful and healthiest Dakhmas in Iran are Safaieh double Dakhmas in Yazd city. It is noteworthy that Iran has architectural diversity in Dakhmas.

Unfortunately, there is no valid evidence regarding Dakhma construction in Iran due to some reasons, most important of which are the reluctance of Mobads and Zoroastrian scholars to write their ritual beliefs about the construction of Dakhma or their distrust in providing this information with non-Zoroastrian people, or destruction of this type of evidence throughout the history due to some factors and restrictions. The authors gathered their few findings by field and library studies.

According to the studied Dakhmas in Yazd and Ardakan, the general features of Dakhmas can be classified as follows:

1. The plan of Dakhma is usually circular and has been rectangular or polygonal in rare cases. Probably, due to the topographic conditions of the land, some Dakhmas were constructed in polygon form, such as Jamshid Dakhma (located in Yazd, Safaieh neighborhood), which is located near Golestan Dakhma (located in Yazd, Safaieh neighborhood) and has been destroyed.
2. Dakhmas are constructed on the high places, except for Sharifabad and Torkabad Dakhmas in Ardakan that have been built on the ground. The reason for this can be considered the far distance of the highlands from the village.
3. They were built away from the agricultural lands (regarding Deylam Dakhma in Ardakan, it must be

noted that probably, Dakhma has been placed among the gardens and farms due to the expansion of the agricultural lands).

4. They were built away from the people and the city.

5. Dakhma has high walls to prevent its interior from being seen while enclosing it.

6. They were usually made of stone and cob except for some Dakhmas, such as Sharifabad, Dargaz, Torkabad, in Ardakan that have been made of adobe and clay. It seems that the Dakhmas located on the top of a mountain were made of adobe. It is because of the abundance of stone and its durability against climate factors and not polluting the four sacred elements, and the flooring of pavis are made of rubble stone, and the materials of adobe were available in the plains.

7. Dakhma has only one entrance, and only the guard of Dakhma (Dakhma-Ban) is allowed to enter the Dakhma through this door.

8. The entrance door of Dakhma is opened to the east, i.e., sunrise. (In the Iranian's beliefs before Zoroaster, such as Mithraism, the dead were buried towards the east, and the altar of the Mithraism temples is directed to the east).

9. All Dakhmas have ossuary (astodan) - a place to dump the dead's bones-.

10. In addition to the above features, Cham Dakhma has a lighthouse.

11. Some Dakhmas, such as Mankji, Golestan, and Cham in Yazd, have a light-absorbing eye on the wall of Dakhma.

12. Dakhmas are usually without any decorations.

13. Dakhmas are not covered; the walls prevent the interior from being seen.

14. To be more stable, the thickness of the walls is reduced from the bottom up.

15. The Dakhmas have three concentric pavises at the center of the Dakhma plan. The first and largest are

for men, the second is medium-sized for women, and the third is the smallest for children. The corpses were placed on pavis to be exposed to the sun and birds, except for Rey Dakhma, the pavis of which is a pit and is rectangular (Comparative Table 2).

16. Except for Mankji, Golestan, Elah Abad in Rostagh, the rest of Dakhmas lacks a specific and separate space

as a room for the guard of Dakhma. Also, the room of the Dakhma guard has been built inside the Dakhma tower in Elah Abad Dakhma (Shini Gholampour & Haidari Karimnejad, 2014, p. 78) (Figs. 10-13).

17. Dakhmas have drain passages in the middle so the dead's impurities and blood would pass through it, such as Rey Dakhma (Comparative Table 2).

Fig. 11. Plan of Mankji Dakhma

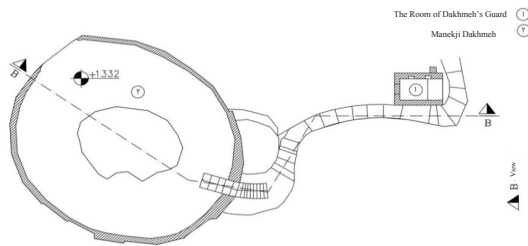


Fig. 12. Section and Façade of Mankji Dakhma

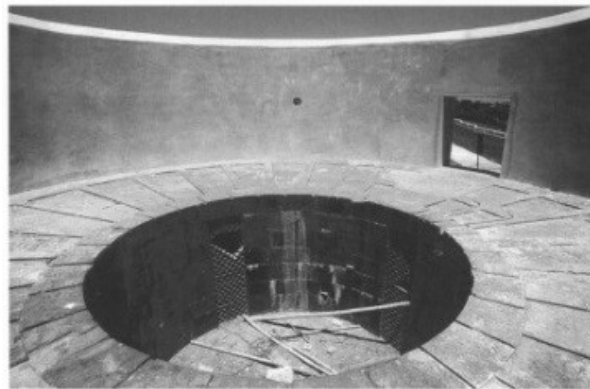
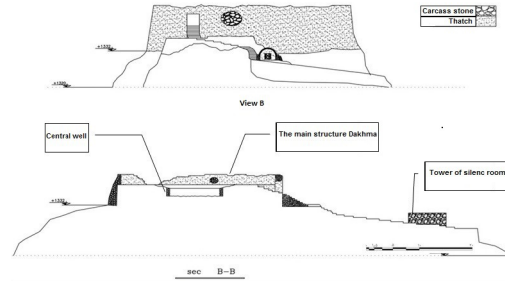


Fig. 13. Inside Dakhma: Pavis and Central Well
(Shokoohy, 2007)

10. FINDINGS: COMPETITIVE STUDY OF DAKHMAS IN IRAN AND DAKHMAS IN INDIA

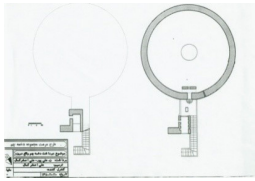
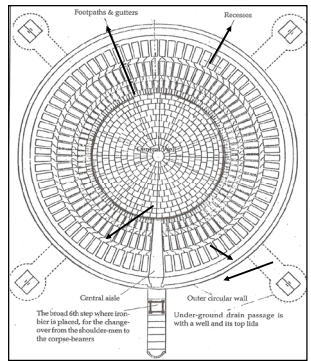
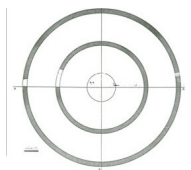
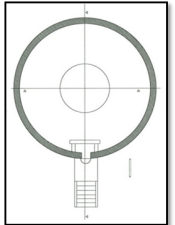
According to the conducted studies, the reason for constructing Dakhma in Zoroastrianism was to prevent from polluting the four elements of nature (water, air, earth, and fire) and destroying the dead body, which is worthless and the center of the devil's influence in Iranian teaching. On the other hand, based on the religious commands of Zoroastrianism and Zoroastrians' beliefs, as long as a person is alive, his body and psyche are valuable. After separating the psyche from the body, the body must be destroyed in the best possible way, which has been Dakhma Gozari (burial ceremony); because, using this method, the necrolatry, and attachment to the dead, and eventually, turning the ground into the tomb, which was not acceptable, were prevented. Like other monotheist religions, women, men, and children all are the same


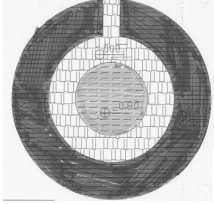
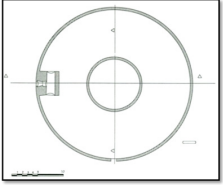
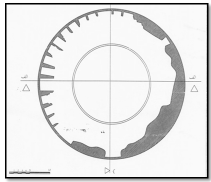
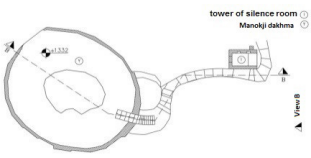
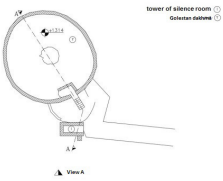


before God in Zoroastrians' beliefs. Thus, to satisfy this need, the circle was the best form of a plan for the construction of Dakhma; because, in addition to its geometrical strength of structure and body, the form of the circle has no upper and lower and edge or corner, and the rich and poor are all the same in Dakhma. On the other hand, the circle is also a symbol of the sun, which has a particular place for Zoroastrians. Indian and Iranian Dakhmas were constructed similarly, and their difference was the complexity of the performance and the rituals of their construction. Construction of Dakhma in India was implemented in more detail than in Iran, such as having four wells to remove impurities and blood of the dead, a central well called Bahandar, a nailing ceremony, and threading (Tana) under the foundation of Dakhma. For a clearer comparison between the two countries, a comparative table has been prepared that presents the differences and similarities in a simpler way (Tables 1 & 2).

Table 1. Comparative Studies of Iranian and Indian Dakhmas

| Feature | Iran | India |
|--|---|-----------------|
| The Ceremony of Digging the Ground to Lay the Foundation of Dakhma or Shoveling the Ground | Yes | Yes |
| Tana Ceremony | No | Yes |
| Hammering 301 Nails | No | Yes |
| Threading through 301 Nails | No | Yes |
| Building Stone Circular Structure | Yes | Yes |
| Four Underground Wells to Direct Water | Yes | Yes |
| Ossuary (Astodan) | Yes | Yes |
| Building Dakhma towards the East | Yes | Yes |
| Reading Avesta after Constructing Dakhma | Yes | Yes |
| The Site of Construction (Away from the Settlement and Humans) | Yes | Yes |
| Materials of Dakhma | Rubble Stone, Adobe, and Clay | Rubble Stone |
| The Circular Structure of Dakhma | Yes | Yes |
| Light-absorbing Eye | Yes | Yes |
| Pavis (Men, Women, and Children) | Yes | Yes |
| Form of the Plan | Close to Circle, Polygon | Circle |
| Location | On the Highland, and Rarely on the Ground | On the Highland |
| Decorations | No | No |
| The Wall of the Dakhma Tower | Yes | Yes |
| Astodan (Ossuary) | Yes | Yes |
| Stairways and Entrance Door | Yes | Yes |
| Double Glazed of the Plan | Zarch Dakhma | No |
| The Form of Pavis | Separated and Circular, on the Surface of Dakhma/ Pit | Circular |

Table 2. Comparing the Plan form of Iranian and Indian Dakhmas

| Age | Type of Plan | Iranian Dakhmas | Plan of Iranian Dakhmas | Descriptions |
|---------|--------------|-------------------------------|--|---|
| Qajar | Circle | Cham Dakhma |  |  |
| Pahlavi | Circle | Sharifabad Dakhmas in Ardakan |   | A Dakhma in India |

| Age | Type of Plan | Iranian Dakhmas | Plan of Iranian Dakhmas | Descriptions |
|----------|--------------|---|---|---|
| Qajar | Circle | Torkabad Dakhma, Ardakan |  | Existence of Radial Walls |
| Sassanid | Circle | Kavous Dakhma |  | |
| Qajar | Circle | Elah Abad Dakhma, Rostagh |  | |
| Safavid | Circle | Deylam Dakhma |  | Existence of Radial Walls |
| Qajar | Circle | Mankji Dakhma |  | |
| Pahlavi | Circle | Golestan Dakhma |  | |
| Safavid | Polygon | Jamshid Dakhma ²⁶ |  | Jamshid Dakhma Near the Golestan Dakhma in Yazd |
| Sassanid | Circle | A Dakhma in the South of Tehran Dakhma Gabri, Rey |  | Unlike other Dakhmas, its Pavis is in the form of a Pirt and Rectangle, and have Drainages (Shokoohy, 2007) |



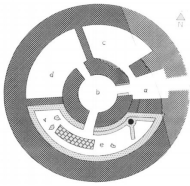
| Age | Type of Plan | Iranian Dakhmas | Plan of Iranian Dakhmas | Descriptions |
|----------|--------------|---|---|---|
| Qajar | Circle | Mankji Dakhma (Right) Sassanid Dakhma (Left) |  | |
| | | | (Khajepour & Raoufi, 2018) | |
| Sassanid | Polygon | An old Dakhma in Kerman (View from Mankji Dakhma) |  | |
| | | | (Khajepour & Raoufi, 2018) | |
| Sassanid | Circle | Bandian Dakhma, Dargaz |  | Existence of Entrance, Ceremony Room, and a Warehouse Simultaneously in a Dakhma- plaster and Soil Coatings on the Walls of Dakhma. |
| | | | (Rahbar, 2010) | |

Table 3. Comparative Studies of Iranian Dakhmas

| Dakhma | Location | Drainage | Pavis Form | Guard's Room | Era | Materials | Form of Plan | Situation | Specific Feature |
|----------------------|---|----------|------------|--------------|----------|-------------------------------|-----------------|--------------------------------|--|
| Mankji ²⁷ | Yazd | NA | Concentric | Yes | Qajar | Rubble Stone | Close to Circle | On the Highland | Having Ceremony Room Down Dakhma and the most Perfect Complex among Iranian Dakhmas |
| Golestan | Yazd | NO | Concentric | Yes | Pahlavi | Rubble Stone | Circle | On the Highland | Having Ceremony Room down Dakhma and the most Perfect Complex among Iranian Dakhmas |
| Cham | Yazd, Taft | No | Concentric | Yes | Qajar | Rubble Stone | Circle | On the Highland | Having a Lighthouse. |
| Kavous | Between Cham Dakhma and Safaieh Mountains | ? | Concentric | No | Sassanid | Rubble Stone | Circle | On the Highland | The Door of Dakhma is towards the West. |
| Elah Abad | Yazd- Meybod | No | Concentric | No | Qajar | Rubble Stone | Circle | On the Highland | - |
| Deylam | Yazd-Ardakan | No | Concentric | No | Safavid | Rubble Stone | Circle | Close to the Agricultural Land | It has been Built Near the Agricultural Lands, the Existence of Radial Walls Connected to the Interior of the Dakhma |
| Sharifabad | Yazd-Ardakan | No | Concentric | N0 | Pahlavi | Rubble Stone, Adobe, and Clay | Circle | On the Ground (Plain) | It has a Circular Fence Centered with Dakhma. |

| Dakhma | Location | Drainage | Pavis Form | Guard's Room | Era | Materials | Form of Plan | Situation | Specific Feature |
|--------------------------------------|---|----------|------------|--------------|----------|-------------------------------|-----------------|-----------------|--|
| Torkabad | Yazd, Ardakan | No | Concentric | No | Qajar | Rubble Stone, Adobe, and Clay | Circle | On the Ground | It has been Built Near the Agricultural Lands, the Existence of Radial Walls Connected to the Interior of the Dakhma |
| Jamshid | Safaieh Neighborhood, Yazd | ? | ? | No | Safavid | Rubble Stone, Adobe, and Clay | Polygon | On the Highland | Being Polygonal |
| Bandian Dakhma, Dargaz ²⁸ | Northern Khorasan | No | Rectangle | No | Sassanid | Clay Wall | Circle | On the Highland | A part of the Dakhma is Covered, and a Part of it is Coated with Plaster and Clay (Rahbar) |
| Gabri Dakhma, Rey ²⁹ | Northern Hill of Bibi Shahrbanoo Mountain | No | Rectangle | NO | Sassanid | Clay Wall | Circle | On the Highland | Its Pavis are in the form of Pit and Rectangular, it does not have Ossuary or Central Well |
| Zizagan Dakhma | Qom | N | Concentric | No | Sassanid | Clay Wall | Circle | On the Highland | - |
| Mankji ³⁰ | Kerman | ? | Concentric | Yes | Qajar | Clay Wall | On the Highland | On the Highland | Having Ceremony Room on the Down of Dakhma |
| Zoroastrians' Dakhma ³¹ | Kerman | ? | Concentric | Yes | Sassanid | Clay Wall | Polygon | On the Highland | Being Polygonal |

11. CONCLUSION

Belief in the afterlife is one of the most important ideological parts of the various religions. That is, in various religions, death and burial of the dead means the movement and journey from a world to a bigger and immortal world. Therefore, it is normal that this journey begins with special ceremonies and rituals. Thus, due to the Zoroastrians' strong belief in the afterlife, burial ceremonies took place in detail and accurately.

According to Zoroastrians' belief, Dakhma Gozari (burial ceremony) was performed to prevent from polluting the four principal elements of nature (water, air, soil, and fire) and condemning the construction of the tomb. In this regard, according to religious beliefs, the circle was the best form of the plan for building a Dakhma because the circle is a symbol of infinity and equality of the poor and rich before God. On the other hand, the circle was also a symbol of the sun, which has a particular prestige for Zoroastrians. Functionally, the structure of Dakhma was also in line with the Zoroastrians' religion as it consisted of strong and high walls and an entrance door towards the east. There is also a slopy platform inside the Dakhma containing a large well or ossuary (astodan). As previously explained, the burial ceremony and Dakhma Gozari are of particular importance in Zoroastrianism. Therefore,

the construction method of Dakhma was effectively influenced by Zoroastrianism's rituals and beliefs while observing the construction and functional principles. Currently, the two main concentration of Zoroastrians is in Iran and India. According to the migration of the Parsis of India from Iran, the main origin of the rituals of Dakhma construction was the same in Iran and India. However, the construction method and performing the rituals and ceremonies were more detailed than in Iran. Due to the social and governmental restrictions in Iran over centuries, ceremonies and rituals of Dakhma construction were brief and most of these ceremonies were forgotten.

Based on this research, construction method and related rituals to build the Dakhmas in Iran and India are similar in general and different in detail. That is, Dakhmas were constructed out of the city and on the highlands in both countries and the most important parts of the tower consisted of the ossuary, pavis, drainage passage, well, stairway, entrance door, and guard's room. In addition to using the durable and available materials, pavis and the placement of the dead, the circular form, light-absorbing eyes, and ritual and religious facilities for the peace of the soul were similar and same in both countries. On the other hand, the other details and construction steps of Dakhma, such as nailing, threading (Tana ceremony), purifying the ground, reading prayers, etc., are performed

accurately and more detailed in India, and apparently, these ceremonies were held briefly in Iran or forgotten. Also, as Table 2 shows, statistically, the architecture of Iranian Dakhmas is different than each other (Tables 2 & 3). Finally, in addition to the functional factors, the

architecture and construction of Dakhma and Dakhma Gozari (burial ceremony) are directly and broadly affected by the Zoroastrian religious beliefs. However, the social conditions and restrictions in Iran and India caused main differences in their constructions.

END NOTE

1. The construction of Dakhma is a historical event in the Zoroastrians' society and participating in it is a precious deed.
2. Regarding the philosophy of death in Zoroastrianism, refer to Razi, Hashem, and Death in Zoroastrianism, Ayandeh monthly journal, 17th year, 683-687, and notes.
3. Dakhma, Daxm: a dark and narrow place; a crypt where the dead bodies were placed (especially in Zoroastrianism) (Anvari, 2002, p. 3016).
4. Daxmag (Mackenzey: 1994); Daxma-e = Daxm, Pahlavi: Daxmak
5. The dimensions (area) of the Dakhmas in Iran were constructed based on the location in the regions, a situation of the land and its topography, as well as the population of the region; however, the main structure of that would not be changed and the nature of all Dakhmas was the same.
6. On the fourth day of death, in the sunrise, counting the good deeds and bad deeds begins on the Chinvat Bridge; a bridge similar to the Serat bridge of Muslims in doomsday; based on Vandidad Pahlavi, chapter 19, Vandihash: the basis of the Chinvat Bridge is on the top of Alborz Mountain in this world (Irani, 1936, 277).
7. This system has been abandoned for a long time.
8. In Vandidad Tesu, Nasu Kasha= corpse-corpse bearer or Nesasalar
9. Zoroastrians call the body "Vroon" as well.
10. Nesasalars= Corpse-bearers
11. It is a translation from Khorshid Nigrishn, written by Naryman Keykhosrwo, India.
12. Ceremonies of laying the foundation of Dakhma are known for "Tana Porovani Karia" in Gujarat language (Pheroza & Mistree, 2002).
13. Nirang: Nirang was called cow urine, which was made from cows that were kept separately by the Mobads and fed on watermelons and special herbs, and Mobads read the Avesta (Aurang).
14. Bahram or Vahram, the great and sacred fire.
15. Barsam: The cut branches of the Barsam tree should be made of plants such as pomegranate, tamarisk. Barsam is the narrow branches that should be cut from the tree as much as one span. They take the branches of Barsam to express their gratitude by reciting the prayer for the pleasure of plants, which is the nourishment of human beings and four-legged animals (Oshidari 2010, 162).
16. Drainages of Dakhma function as drainages of the garden, which conduct the blood and liquid to the exist (four exist lids).
17. Each foot is almost 30 centimeters. This, its depth was almost 240 centimeters.
18. Bahandar is a central well under the pavis of Dakhma, which is next to the four wells to expel the blood and pus of the dead and has been seen only in the Dakhmas of India.
19. A cotton rope or 101 strings as a sign of 101 names of Ahuramazda.
20. Pavis: where purified and sanctified by special ceremonies and rituals; here, it means the stones on which the dead body is placed.
21. The blood and pus of the dead
22. The filters in the Dakhma were called charcoal, ash, and sand, which trapped dead dirt and impurities and prevented dirt from being transferred to the ground, or soil.
23. A name which was given by tourists.
24. Interview with Zoroastrians of Nusratabad. If after a while you saw that the vultures had completely eaten the corpse, they would say that the person was rewarded for his work, and if the corpse remained, they would consider him guilty! The Dakhma would not be opened until the day the first corpse (Nessa) is placed in the new Dakhma who is assumed to be a pious person or a child, both of whom are presumed innocent, because the child has not committed a sin and after that Dakhma is open to the public (Naryman, 2000, p. 207).
25. To study the Dakhmas of Iran, see the paper entitled "Research in the ritual architecture of Zoroastrian Dakhmas, a case study: Dakhmas of Mankeji Limji tombs of Houshang Hatria and Golestan Banoo of Yazd", Shini Gholampour, Roya, Heidari, Dariush. (2014). Iranian-Islamic Journal, Academic Center for Education, Culture and Research, Tehran, 18, 67-79.

26. There are no remains of Jamshid Dakhma. The photo was taken from the Survey Organization (1964).
27. The Mankeji and Golestan Dakhmas are the most complete of the Dakhmas, followed by the Cham Dakhma.
28. An article from the Archaeological Quarterly, Archaeological Studies, 12 (1), 2020, 1 - 17. A study on the Zoroastrian Dakhma Gozari ritual based on the study of the architectural structure of Zoroastrian Dakhmas, Rasoul Ahmadi, and Reza Mehrafarin.
29. Rasoul Ahmai, Reza Mehrafarin.
30. Article from Bagh-e Nazar Monthly, 15 (61) 64-53 / July 2016, A Theoretical Strategy for the Reconstruction of Zoroastrian Dakhmas in Iran (Case Study: Zoroastrian Dakhma in Kerman), Mansour Khajehpour and Zeinab Raoufi.
31. In an article entitled "Bandian Dargaz Fire Temple, Once Again", Rahbar believes that Dakhmas in Iran in Iran do not date back to the Sassanid period: An article entitled: Bandian Dargaz Fire Temple, once again: At the British Academy Conference, I said that the Dakhmas of Yazd, Kerman, etc., dating back to the early Qajar period, not the Sassanid period. I stated that in the whole region of Iran, there is not even a single Dakhma of the Sassanid period, so similarly, in the Sassanid period, the burial of the four Dakhmas of Yazd and Kerman was done indoors in accordance with Islamic law. "Inside the stone or clay coffins, digging graves inside a rock, or burying a corpse on layers of plaster or inside a layer of conglomerate)".

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