

# ORIGINAL ARTICLE

## The Impact of Boa Village Aqueduct on People's Lives and Public Health

### Abstract

An aqueduct is a unique watercourse structure and one of the most common ways of extracting groundwater which is used in Iran and other dry parts of the world. The present article investigates the aqueduct of Boyasfli village and its role in the life of the people of this village. The aqueduct reflects the efforts, intelligence and ingenuity of the hardworking people of this village in the past to provide water for agriculture and other uses in this arid region of Kohgiluyeh and Boyer-Ahmad province. Employing a descriptive-analytical method and the interview method, the article seeks to find the role of the aqueduct of Boa village in the lives of the people of this village. The findings indicate that although the water of this aqueduct was not suitable for drinking, it affected the life quality and health of the people of this village. The destruction of this aqueduct caused the people of this village to migrate to neighboring cities.

**Key words:** Aqueduct, Boa village, Dehdasht, Groundwater, Quality of life, Iran

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## Introduction

Qanats, invented by Iranian well-diggers, have a long history and are as old as ancient Iran. Although Iran is a dry and arid land, our ancestors, adopting profound wisdom, made benefit of this arid climate and by digging qanat turned most of the dry parts of the land into green and beautiful gardens. Moreover, qanat supplied potable water of most regions in the same way. There is no doubt that the idea of extracting water by digging underground canals and constructing an aqueduct, formerly called "Gahriz", belongs to the Iranians. The word qanat has replaced the word Gahriz for no clear reason. Today, the word Gahriz is used only in Afghanistan (Smith, 1990, p. 160). As the documents show, there were qanats in ancient Iran in 722 B.C. One of the oldest known documents of the qanat is a cuneiform inscription of the second Sargon (Assyrian Emperor, 705-722 B.C.). (Afshar, 1987, p. 21) The inscription describes the qanats' waterworks system, near Urmia Lake. (Lassoe, 1951, pp. 21-32.) He adopted the method of building qanat in Assyr, and his son, Sanakharib (681-705 B.C.), started digging various qanats in Nineveh and Arbil. After this era, Medes, who were familiar with qanat's digging procedures in 700 B.C. and had already utilized the techniques and methods in Ekbatan to supply the water required (Goblou, 1963, pp. 18, 29), developed making qanat in the south and east of Iran. In the residential areas of the Iran plateau, before the arrival of the first Iranians, there were human communities that were far apart from each other. There was a considerable distance between the regions since they were settled in locations where springs or water sources were available. After the arrival of the Aryans, the Medes and Persia started making brilliant and royal cities, such as Ekbatan, Pasargad, etc. Persepolis and Rages (the current Rey) were among the highly populated cities that could survive through digging qanats. Then, it is assumed that building and developing cities in the Achaemenid Emperor were made possible because of the availability of water provided by qanats.

Due to the importance of the aqueduct in the life and growth of Iranian society, a book was written about the aqueduct and its rules and regulations. In the third century A.H., after the ongoing disputes over water and for protecting the aqueduct, at the request of Abdullah Ibn Tahir (Gardizi, 1984, p. 301. Feraie, 1984, p. 93), the jurists of Khorasan and Iraq wrote the book "Ahkam-e- karizha" (lit. Rules of the Kariz). Owing to the dryness of the land of Iran, those who were in charge of irrigation and canal purification were highly honored. (Mase, 1957, p. 260) The aqueduct in Iranian history and civilization was so important that breaking dams or destroying aqueducts was one of the signs of Iran's decline in the early seventh century A.D., which led to the defeat of the Sassanids and the lack of resistance of farmers to Muslim Arabs. (Mase, 1957, p. 265) As Iran had little running water, at the time of the enemy's attack, Iranians used to destroy the canals to repel the enemy's invasion. Hence, the enemy faced a shortage of drinking water, either being forced to retreat, or caught by Iranian forces.

During the reign of Shah Tahmasb I, in order to repel the attacks of the Ottoman forces, Iranians filled the qanats with soil and burned the grain of the land the enemy planned to attack. (Shah Tahmasb Safavid, n.d., p. 51) On the other hand, the aqueduct was so crucial in supplying the city with drinking water that even in Deylam and Tabarestan Mohtab, which had abundant rivers and water, there was a kariz and an aqueduct. (Estakhri, 1989, p. 170) In the year 148 AH., the ruler of Tabarestan built an aqueduct for carrying drinking water from the mountains into the city (Tamshiyeh?). (Eshpuler, 2000,





p. 195) There were water canals or aqueducts, especially in the northern and eastern cities, such as Neishabour, Merv, Ghaen, Gonabad, Ghohestan, Rey, Qom and then Zarang, Shiraz and Darabgard. (Ibn Hugal, 1966, pp. 168, 170, 180; Eshpuler, 2000, p. 195) As naturally water flows underground, then, the aqueduct initially functioned as a well dug at the foot of the mountain or near the foot of the mountain to have access to the water that was collected at the bottom of the rocks over time. After this point, an underground road (Koureh) was dug to transfer water to the village, which was sometimes tens of kilometres away. At a certain distance, another well (well shaft) was dug, connected to the underground road, covered with a large stone, and whenever necessary, it was removed to clean the underground passage. The reason for creating this underground road was to prevent water evaporation while flowing over long distances. (Boniface, Mash, and Kerush, et al, 1967, p. 18) In fact, a qanat is a series of underground wells with mild slopes, less than the land's slopes, carrying the water in watery layers of the earth to the inferior ones, without using any thermal or electrical energy, tension force, or even natural flows. In other words, a qanat can be considered a kind of underground drainage that brought accumulated water to the surface for irrigating lands or drinking purposes.<sup>1</sup> Anthony Smith writes in his travelogue: "The aqueduct is an exceptional engineering structure which Iranians used to bring the deep waters of the earth to the surface." (Smith, 1990, p. 439) A famous tourist and historian, who lived in Iran for many years, described the way a qanat was dug, as follows: to find water, Iranians dig wells at the foot of the mountain, and when they find some, these wells will carry water from the upper land to the lower parts of the land so that it can flow better. No nation is found to save water as Iranians do or be so proficient in digging watercourses. (Petroshefski, 1965, p. 213) The extraordinary engineering of the aqueduct really astonishes one; surprisingly, the mother well, the wells and the subterranean Koureh Qanat have no protection or cover. Unfortunately, this civilized phenomenon is fading. (Maleki, and Khorsandi, 2005, pp. Introduction) When the Boa's Qanat was ruined in 1970, the writers, sorrowful of this ignorant and inattentive action, considered it crucial to register this qanat and its impacts on the villagers of Boa Sofla.

1- The flow on the ground was called branches. In Sarqand, water pipes consisted of lead pipes. (Eshpuler, 2000, p. 195).

### **Geographical and Natural Location of Kohgiluyeh and Boyer-Ahmad Province**

Kohgiluyeh and Boyer-Ahmad province is in the southwest



of Iran. The province's highest point is the summit of Dena, 4409 meters in height, and the lowest point is Lishter, with a height of only 500 meters. Regarding the geographical conditions of the province, the mountain's height, rain rate, and air moisture have decreased significantly as we go from the northeast to the southwest. This natural condition provides a twofold climate and divides the province into a cold and a warm region:

The cold region, with an area of more than 6500 square kilometres and a mean height of 2100 meters from the sea, is located in the north and east part of the province and its neighbors are Fars, Isfahan, and Chahar Mahal Chahar Mahal va Bakhtiari Provinces. The falling, mostly snowing, season starts in November and continues to May. In the southernmost area of the humid Zagros, this region is covered with vast and beautiful jungles of oak trees and is the headstream of large and watery rivers, such as Karoon and Maroon. The icy season starts from September and continues to late March.

The warm region, with more than 8000 square kilometres, is located in the south and west part of the province and has a warm and sub-arid climate. The rainy season starts in November and continues to May. Raining in these regions is relatively low, compared to the cold region. Furthermore, the weather is rarely frosty there.

#### **The location of Kohgiluyeh (Dehdasht) Town in the Kohgiluyeh and Boyer-Ahmad province**

Kohgiluyeh is one of the province's cities whose northern neighbors are Izeh and Boroujen. The eastern neighbor is Boyer Ahmad (Yajouj), the southern one is Gachsaran, and the western neighbors are Behbahan and Ramhormoz. Dehdasht has a warm and arid climate. Boa Sofla is an urban village of Kohgiluyeh and is in the warm and dry area of western Dehdasht.

#### **Appropriate Places for digging Qanats**

A place with the following features shall be considered valid for digging qanats: 1. the underground water should not be profound. 2. Underground water clearly exists. 3. If we start digging in an area near a river, the source of supplying water should be the river. 4. The place should not be in the vicinity or territory of another qanat or well. 5. A land with a high slope is necessary so that the qanat's length and consequently the digging costs reduce. 6. The place's alluvial diameter should be small. (Bani Taba, 2003, p. 39)

#### **The geographical location of an appropriate place for digging qanat**

The geographical location for digging qanat generally is of two types:

A mountainous area

Alluvial and plain areas

Qanats of mountainous areas are dug in the valley' paths, on the hills, on the mountains, on the Limestone Mountains with springs, and sometimes on stone mountainous areas. In the alluvial and plain areas, the mother well is dug in the heights, but most parts of the qanat continue in the plain. (Bani Taba, 2003, p. 40)

#### **Different parts of a qanat**

Qanats comprise various parts whose most important sections are:





The mother well is the first well of the chain wells connected to the water table.

The well shaft: all of the other wells between the mother well and qanat's Mazhar that supply the air and control the qanat's path.

Koureh: a horizontal channel that connects the bottom parts of the shafts. The digging starts from Mazhar and continues to the mother well. Kourehs are drilled in a perfectly straight path unless they encounter an obstacle, forcing the diggers to bypass these obstacles. The subterranean furnace is without any cover and support. The channels are all unprotected.

Mazhar: the lowest point of the slope where koureh ends and the water flows on the ground.

Haranj: an open tunnel that directs the water from Mazhar to the point of division.

### **Boa Sofla' settlers**

The settlers and the landowners of this village are sayyids of Hosseini Dehdashti Aghamiri whose ancestor was Molana Sayyid Alinaghi, known as Imamzadeh<sup>2</sup> Aghamir and his ancestors ultimately trace back to Imam Zenolabedin (peace be upon him). The shrine is in the northwest of the ancient city of Dehdasht, known as "the old city" or "Belad Shahpour", and is located beside Naghal's hill. These sayyids, before migrating to cities like Behbahan, Dezful, Yasouj and other regions like the village of Boa<sup>3</sup>, were the main owners of Dehdash (Belad Shapour) and the headmen ( kalantar, in Persian) of the region. (Moosavi Sough, 2009, p. 191) They were considered wealthy people. Currently, only a few of them live in the city. However, they are known as the principal owners of the cities. As research indicates, the main reason for their migration is the other tribes' invasion of the south of Iran. As such, we can refer to the invasion of Afshar (Valeh Isfahani, 1992: 643) that led to the sayyids' migration to the village of Boa, the Siverghal<sup>4</sup> of their descendant, Aghamir. (Hosseini, 2016, February 19) His offspring live in the village and are known as the main owners of the village. This village, located in the warm and arid area of the town, is one of the most essential agricultural poles of Dehdasht.

### **The ancientness of Boa's qanat**

Boa's qanat is very old. As local people claim, it was built in the age of Gheberian<sup>5</sup> (Hosseini, 2016, February 19; Yazdanfar, (Hosseini Dehdashti), A., 2016, March 29) and later was given as a Siverghal (lit.fief) to Aghamir. Before his offspring migrated to the village, some Turk and Arab people

2- Offspring of an Imam

3- This village is located eleven kilometers west of Kohgiluyeh (Dehdasht).

4- The benefits of a land that are given to people instead of their salary. (Moein, 1971, Vol. 3, p. 663).

5- That is, fire-worshippers, Magi Means Zoroastrians. (Moein, 1971, Vol. 5, p. 445).



settled there; however, no one used the qanat's water for agricultural purposes. Arabs used the straws grown in the land near the qanat, and Turks utilized the water for their stocks.

When the sayyids of Hosseini Dehdashti, the offspring of Aghamir, who was forced to migrate from Dehdasht after Afshars' invasion, moved to the village of Boa and started farming in the lands near the qanat. They used to live in a city and were not familiar with matting or stock raising, so they started farming (the same). Some others believe that this qanat was built in the age of Mohammad Shah Qajar and Aghamir's offspring (sayyid Hosseini Dehdashti) bought it from a Jewish woman in "Sanghar Abad"<sup>6</sup> (Boaei, 2016, January 30) As the buildings of this village had an arch, called "tou<sup>7</sup> Ghebri"<sup>8</sup> in the local dialect, the point claimed by Mr. Mir Mohammad Hosseini can be considered more valid, and from Mr. Boaei's report, it is understood that, in the era of Mohammad Shah Qajar, the qanat was bought from the Jewish woman and was reconstructed later.

### The Boa's qanat

This qanat is in an alluvial and plaid area, and the mother well is located in less than one kilometre far from a type of hill range, called "Bænd"<sup>9</sup> in the local dialect. According to locals, the place to dig an aqueduct should be close to the mountain because the mountain absorbs water from snow and rain, and by digging an aqueduct on the slopes and near these mountains, water can be brought to the surface. (Bazargan, 2018, April 9) The distance between the mother well and Haranj is 1500 meters. The mother well, the access shaft, and the Koureh are in a plaid land. This qanat is a "female" one. The water in female qanats move slowly and with low pressure and flows in 12 months. In contrast, high-pressure water of "Male" qanats move fast. The headstream is in the same mountain range, or "Band", and in a place located in "Kouhlæh ræzi"<sup>10</sup>. "Kouhlæh ræzi" is a deep and fairly wide well with a spring and is considered the headstream of the qanat. As Zeinal Sepahdar puts it: in the 1950s, Mir Hossein, one of the owners of the qanat, to make sure that "Kouhlæh ræzi" was the headstream of the qanat, threw some rice bran in the well and later found its trace in the mother well. Hence, he concluded that "Kouhlæh ræzi" is the headstream of the qanat. (Sepandar, 2017, March 30; Boaei, 2015, December 9) This is an artesian qanat wherein the mother well's starting point was much higher than the access shaft and from the mother well to the aqueduct, it had a gentle slope. The mother well is in the middle of the village, and it appears that

6- The current Changelwa, which is located four kilometers from the village of Boa Sofla.

7- Means a house and room in the local dialect.

8- That is, the fire-worshiper, the Magi refers to the Zoroastrians. (Moein, 1971, Vol. 3, p. 445).

9- It refers to the same mountain range that continues as a band or rope.

10- Kouhlæh in the local dialect refers to a well and ræzi denotes a grapevine. It is a deep well with grapevines included.



this qanat is different from other qanats investigated since whereas the first access shaft is less than 10 meters after the mother well, the second one is not located after it but is at a 500-meters distance parallel to the mother well. There is a trap shape between the mother well and the second well, and the access shafts of the following wells are located after it. Because of this design, it was long assumed that the second shaft might be the mother well and not related to the main one in the middle of the village. However, this idea faded out after changing the qanat to an underground channel through a cooperative project of the owners and the Jihad Sazandegi. Considering that the artificial channel is in line with the first well and its water is less than the previous qanat, some local people still stick to the old idea. Since the aqueduct channel is basically drilled in a straight line, and because this channel is in a straight line, the well bars are also placed in a straight line. Therefore, if in some places, the aqueduct furnace and wells deviate from their original path and become a trap shape, this is mainly because the diggers predict the collapse of the aqueduct Koureh<sup>11</sup>, or face the rocky and hard ground and hence they would change the path and detour the obstacles. (Smith, 1990: 437) As a result, the furnace and the shafts of the Boa aqueduct wells probably fail to be placed in the straight line for one of the above reasons, and the aqueduct channel has taken on a trap shape between the first and second well shafts.

If the second access shaft is not considered a separate mother well, this qanat has five access shafts connected through a Koureh. The last well, a small and shallow one, was called "chæh fæghiro"<sup>12</sup> in the local dialect. Mazhar, or the entrance was lower than the last well, or "chæh fæghiro", where Koureh ends, and the water flows in the surface. This place was called "Kom Derded"<sup>13</sup> among local people. Unlike wells, from which water had to be pumped out of its mouth, water in the aqueduct was constantly flowing. If we follow the aqueduct's path and reach the end, we will reach the main source of water or the main water tap. Most of the aqueduct's water flows from that place and along the way; the water seeped from the walls of the canal joins the aqueduct's water. Boa aqueduct koureh had different heights in different places. Mohammad Jahan Kohan says: One of the pastimes<sup>14</sup> of his youth and other young men of the village was to go to the aqueduct koureh and walk through the koureh. He says: when walking in the direction of the Boa aqueduct furnace, we first started from the entrance of the aqueduct, sometimes we had to bend down and sometimes we could walk upright.

11- If the roof collapses, the place is filled with stones first, so that water has no way out; then, a new side road is dug in a semicircle next to it. This sub-channel redirects the water to the main path. (Smith, 1990, p. 438).

12- A small and shallow well.

13- "in the local dialect. Mazhar was lower than the last well, or "chæh fæghiro", where Koureh ends, and the water flows in the surface. This was called "Kom Derded"

14- Because there were many scary sayings and stories about the aqueduct among the villagers, it is possible that the young people of the village went to the aqueduct Koureh to bet on the lack of fear of the person entering the aqueduct Koureh.





But he never remembers anyone going beyond the rod of the second well to the mother of the well because, in the koureh between the rod of the second well to the mother of the well, there was a large “barm<sup>15</sup>” of water that no one dared to enter this part of the aqueduct furnace for fear of drowning. (Jahan Kohan, 2016, April 9)

Furthermore, people were afraid of entering the aqueduct because they believed that beavers and giant water snakes lived there; the village’s young people always carried weapons when entering the aqueduct. Of course, in addition to this, there were fish and reptiles in this aqueduct. (Bazargan, 2017, April 7)

Wind and thunderstorms were influential factors in increasing the qanat’s water. As sayyd Ali Yazdanfar and Mir Mohammad Hosseini claim, the water of the aqueduct got muddy and increased significantly after wind and thunderstorms. (Yazdanfar (Hosseini Dehdashti), A., 2016, March 29; Hosseini, 2016, February 19) Sayyd Ali Yazdanfar stated that in 1969, a harsh and strong wind blew, with no rain, and after that, the aqueduct’s water increased significantly. (Yazdanfar (Hosseini Dehdashti), A., 2016, March 29)

### Using the qanat’s water

In 1991, the villagers, together with some members of Jihad Sazandegi, and one of the owners, Mir Abdollah Boaei<sup>16</sup> (Hosseini Dehdashti), worked on this qanat, turning it into an underground and artificial channel (Tarighi Nejad, 2016, April 3) but, unfortunately, the qanat was ruined. The shape of this channel resembled the old qanat. The mother well of the artificial channel was precisely like the mother well of the qanat: the first access shaft was near the mother well, lower than the first access shaft, but not lower than the second one that was 500 meters away from the main one. Therefore, the flow path was in a 500-meters-distance from the flow path of the qanat. The access shaft of this channel was so narrow that two people could hardly stand next to each other. The shafts were made of cement and concrete. The entrance was always covered, except when it planned to be dredged. The access shafts of this artificial channel were connected using an artificial Koureh. The walls, roof, and floor were made of cement and concrete. The width of less than one meter and the height of 1.5 meters made dredging difficult for dredgers. Regarding the difficulties, dredging needed much effort, and hence, it was usually mud-loaded, and the channel would gradually get ruined. The considerations in making qanat were taken into account when the underground channel was

15- In the Lori dialect, Barm is referred to a deep and almost wide place where water collects.

16- The son of Mir Hossein, the grand owner of the village and the one who collected the tribute for the government. He had two sons, Mir Najaf and Mir Abdullah, who were main owners of the village, known as the Boai family. Mir Abdullah had a child named Gholam Hassan Boaei and Mir Najaf had two children named Ibrahim and Ismail. These three people, after the execution of land reform and division of their lands among those who did not have land, now have about 200 hectares of village land with a larger share of aqueducts (artificial canals).





made. The channel's Mazhar was the point where the water flows on the ground's surface. Therefore, the previous qanat and current channel can be considered two ends of a thread tied together, but the ends are separated at a 500-meters distance. Qanat was outside the village; however, the artificial underground channel was in the middle of the village. The road of the neighboring villages passes on the qanat and is currently located on the channel.

Qanat's water was used for various purposes, namely:

1. Agriculture: as the authors observed and the local people endorsed, a relatively wide piece of land used the qanat's water for agricultural purposes, mostly rice planting twice a year, spring and autumn rice. Onions and beans were other crops planted and harvested in the late winter and early spring, using the qanat's water or the artificial channel. People used to consider these products as the heir of sayyids in the region. Harvesting onions and beans were restricted to some parts only; however, the rice, known as "Charam<sup>17</sup>" rice, was quite popular. Some other agricultural products of this area included barley, wheat, gumbo, alfalfa, tomato, and cucumber.

2. Washing and bathing: the qanat's water was used for washing and bathing purposes. People entered the access shafts for washing and bathing. The access shafts had stairways to enter, wash, and bathe. "Mazhar" was also used for washing purposes; however, the time and season of using them for this purpose was different. People favored the bath a lot because in summer it was cool and in a closed place; the access shafts were used in the summer for bathing. "Wells" were more favorable for bathing because their shafts were located in closed space, making them more suitable for bathing than the "Mazhar Qanat" which was located on a flat land, exposed to the villagers.

Apart from this, what is certain is that in the summer, using the water from the wells to wash and sometimes lifting the water by the bucket from the mother well and using it there has been the easiest way to spread all kinds of diseases. Therefore, the qanat water was less, dirty and unsanitary when it reached the "Mazhar Qanat". Finally, in the lowest part of the village, neither there was a trace of clear water, nor there remain the muddy remnants; In fact, the water of the qanat, when reached there, had already been used till the last drop for different uses.

In winter, however, as the stairwells of the wells had no cover and were made of mud, it was easier and safer to use the "Mazhar Qanat" for washing. Moreover, as water flowed on the surface and the sun shone, washing clothes and dry-

17- A region within a 12-kilometer distance from Dehdasht and has very fertile soil for agriculture. Moreover, it is the center of agriculture and rice work of this city.



ing them became more manageable. Therefore, it can be said that in winter, due to rain and elevated water levels in the aqueduct and the fact that wells were not used in winter, the water in the aqueduct was cleaner, and hence, there was less disease. The villagers did not pay the owners for water for washing, not because the owners of the aqueduct were generous, but simply because it was impossible to ask money for washing purposes. Qanat's water was salty and was not appropriate for drinking. People believed that the headstream, "Kouhælehræzi", originated from gypsum and was salty. The villagers had found that the water was not potable, so they used other resources for drinking. (Yazdanfar (Hosseini Dehdashti), M., 2016, January 31)

3. Using for livestock: "Kom derdeh" where Mazhar was located and the livestock such as cattle, horses, and mules used the water flowed on the surface. Sheep and goats could only drink the qanat's water when the lands were not used for farming. Their passage through the land could damage the crops. However, they drank its water in other seasons. (Yazdanfar (Hosseini Dehdashti), 2015, December 20)

Stockmen had to use other water resources for their stocks. Before shearing, in the spring, the sheep needs to be washed. A stony pond, named "Sængo<sup>18</sup>", had been made for this purpose. (Yazdanfar (Hosseini Dehdashti), 2015, December 20)

4. Watermills: qanat's water was applied for two watermills down the farmlands. One of them belonged to sayyid Agha Mir's daughter, "Bibi Shæhr Banoo". Some parts of it still exist down the village, in "Bourkæli<sup>19</sup>". Another watermill was near the same area, called "Kæri Kæri Yel<sup>20</sup>" (Hosseini, 2016, February 19; Khadempanah, 2018, June 30) Two watercourses, "Særbæs watercourse<sup>21</sup>" and "Sheikh Ghasemi watercourse<sup>22</sup>", located after Mazhar, were directed toward the farmlands. Særbæs watercourse, after watering the farmlands, ran into the holes, "Kæri Kæri Yel". However, Sheikh Ghasemi watercourse, after watering the farmlands, was applied for "Bibi Shahr banoo" and another watermill near that. Water first entered a reservoir called "Tanire assiow", so that the water pressure increases, turning the "wheel spoke" and the "watermill's stone". "Tanire assiow" was a deep reservoir that was always full of water and turned the wheel spoke and the stone. The reservoir must be above both the wheel spoke and the stone to be able to spin it. As the findings indicate, the owners posit that the "Bibi Shahrbanoo" watermill used the qanat's water. Having passed "Sheikh Ghasemi's stream" and watering farmlands, the water entered "tanire assiow" and thereby spun the watermill. The watermill still exists.

18- A water basin made of stone.

19- Bour means pond and æli means Ali. So, the pond had been for a person named Ali.

20- Kæri means a hole in Lori, and Yel is a plural marker. So it means a kind of land with so many holes.

21- Means border in Lori and is denoted to a watercourse that is the border of farmlands.

22- As the authors' investigations showed, no one attributed it to "Sheikh Ghasemi".





The watermill building is a square and archer room with a dome called “tu gabri”, in the local dialect. (Tarighi Nejad, M., 2017, June 30; Shayanzade, 2017, June 30) As nothing is left from the reservoir or tanire assiow of “Kæri Kæri Yal” near the watermill, one cannot be certain. Some people believe that the source of the watermill was a valley near it. (Satha, 2017, July 1; Tarighi Nejad, J., 2017, June 1) However, observations denote that Boa's qanat was the source of supplying the watermill's water. “Sheikh Ghasemi's watercourse” continued to a place near the watermill, and the valley's slope was lower than the watermill therefore transferring water to a higher location seems impossible. Nothing is indicative of water entering into the valley's water. (Figure 1)

The point is that one of the reasons for the existence and life of this village, like many cities and villages in Iran, such as Kerman, Yazd ... was due to and dependent on this aqueduct. The continuous flow of water of Boa aqueduct, despite all natural disasters, continued its flow for hundreds of years. But unfortunately, by turning the Boa aqueduct into a concrete canal and without considering the correct principles of construction of this canal, making dredging almost impossible, the water of this concrete canal is drying up and the agriculture of the village of Boa Sofla, which was once prosperous, is reduced to small crops, like onions, beans.



*Figure 1. The Bibi Shahrbanoo's watermill reservoir (Tanire Assiow) in the Lower Boa. (The photo is taken by Parvindokht Jahan Kohan)*

### **Qanat and people's social life in the Boa's village**

This qanat is one of the most prominent buildings of the village intertwined with people's life. As mentioned above, this qanat was one of the most crucial places for washing and bathing purposes. In fact, it acts as a public bathroom for the villagers. This had been a place for women to spend their leisure time. They spent many hours talking about different topics, including their personal life and domestic issues, in the access shafts and



Mazhar. Listening to the women's chatting, young girls were proposed to marry.

Having worked in the farmlands, men also comfortably rested and talked on a large stone known as "Bærd"<sup>23</sup> A one-meter scaffold in the access shaft was used for washing and bathing. This village was located in a warm and arid place, but people went, and even slept, in the qanat to escape warm weather. Haj Maoumeh, a very old woman in the village, stated that one of the owners of the qanat, "Mir bozorg" in Ramadhan used to sleep in the access shafts in summer. (Keshavarz, 2016, February 29)

This qanat was a good place for men and women to get together; however, it was also a scary place for some villagers, especially for children and coward settlers, as they believed Jinn and beavers and giant blue snakes living there. This belief prevented villagers enter the qanat before sunrise and after sunset. (Keshavarz, 2016, February 29)

### Conclusion

Iran is an arid land, but our ancestors, adopting profound wisdom, changed this dry land into fertilized land. They, by digging qanat changed most of the important parts of the ground to green and beautiful gardens.

"Boa" is a village in the arid part of Kohgiluyeh and Boyer-Ahmad . The settlers, who used to live in Dehdasht (Shapour's land), were forced to migrate because of the invasion of Afshar and other tribes. Some of them settled in "Boa", which they considered the siverghal of their great ancestor "Sayyid Agh Mir".

As they used to live in cities and were not familiar with matting or stock raising, they began to use the qanat's water and the lands of their ancestors for farming. They could change the village to a crucial place in planting crops, such as rice, onions, beans, tomato, cucumbers, which need a lot of irrigation water.

Besides making farming better, this qanat was an important place in anthropology. As this was a local one, people spent their leisure time there, and this was a useful way to find their mates, discover people's source of fears, the real owners, the qanat's old history, water sharing system and the like.

One of the most important functions of Boa aqueduct for the villagers was its hygienic function. In the past, when the technology of modern baths was not yet common, and the construction of public baths was very expensive for the villagers, the water of this aqueduct was used for bathing. Apart from bathing the water of the Boa aqueduct, it provides the

23- Beard: In Lori dialect it means stone.





drinking water of the people, and since healthy drinking water has a significant role in people's health, this aqueduct was very important. Washing clothes and dishes was another hygienic function of the water of this aqueduct.

### Conflict of Interest

None.

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