

Underground water galleries of Ganja city – kahriz

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Keywords	Abstract
agriculture gardens orchards and melon fields artificial irrigation	It has become clear from ethnographic studies that the material culture of the population has preserved many of the ancient traditions by developing through its own internal resources. A number of its archaic forms trace their roots back to the distant past. This has created the basis for the centuries-old traditional historical material culture examples of urban culture to be passed from generation to generation.

Ganja, which connects the northeastern foothills of the Lesser Caucasus Mountains with the wide Kura-Araz plain, is a city with a mild climate, abundant water, and fertile and fertile lands. Historically, the city has had a favorable natural-geographical position. Ganjachay, flowing from the Lesser Caucasus, was used for irrigation and domestic use. The climate of the foothills of the Lesser Caucasus, including Ganja, is hot, semi-humid, mild-cold, and cold-humid in the highlands. In the highland zone, alpine and subalpine mountain-meadow soils are spread in the direction of Goy lake, and mountain-forest soils are spread below it [1, p. 38]. This city has always been located on the caravan and trade routes, and at the same time it played an important role in the political, economic and cultural life of our people by ensuring the transition between the Muslim world and the Christian world. Passing the test of centuries and overcoming the disasters caused by nature and states, this historical city, which has preserved its ancient name, national and spiritual values, has been and continues to be one of the famous scientific and cultural centers of the East in all respects. Sources show that Ganja, being the last big city in the north of the Muslim world, also served as a guard post. The part of the city located on the right bank of the Ganja river was protected by a double fence, and on the left bank by deep ditches filled with water. In later times, the city's sewage system made of perfect earthen pipes, well-built drinking water ditches on the side of the streets, once again shows that even in the 10th-13th centuries, Ganja experienced a flourishing period of its development. Several technical methods were used to provide water to the city life. At one time, the city was bordered from the north by the right bank of the Kur and the Zayam river, a small branch of the Alazan river. It bordered the Karabakh and Iravan khanates from the south. The territory of Shamshaddil, inhabited by Azerbaijanis, was separated from Ganja by the Zayam river, and from Kakheti by the Kura river. A military unit was located in the area called the Castle in the central part of the city [2, p. 328]. Currently, the city is located 363 km west of Baku, connecting both banks of Ganjachay, the right tributary of the Kura River, on the Baku-Tbilisi railway.



Historian scientist MXSharifli writes that since the 9th century, a number of farms, gardens and orchards covered large areas, and the expansion of artificial irrigation networks conditioned the expansion of cotton cultivation. The dried fruits of Azerbaijan, grapes, figs, apples, pears, cranberries, chestnuts, etc., were popular in all Middle Eastern countries at that time [3, p. 101]. A. Sumbatzade notes that in 1882, the dried fruits of Ganjali Ibrahim Karim (abukhara, black plum, apricot, peach, cherry) were exhibited at an agricultural exhibition in Moscow. At one time, he grew grapes, pomegranates, figs, mulberry trees and melons in Ganja gardens [4, p. 280]. Ganja's yellow figs, almonds and goragis apples are famous in the region.

Artificial irrigation had a certain importance in the Ganja area, which was more favorable for the development of ancient agriculture and viticulture. Due to the hot climate in the parts of this place that are relatively close to the plain, there is a great need for artificial irrigation. The main water sources of the foothill zone, including the city, are rivers, streams, large ditches, etc. has been [5, p. 75]. During the conversation with the residents of Bagbanlar neighborhood, it became known that grapes were also stored in khehriz in Ganja. The advantage of these methods was that it did not require additional costs to store the grapes, despite the long storage, the bunches did not lose their freshness, taste and quality. The practice of keeping grapes and other edible food products cool for a long time in the summer season was also in the city of Ordubad. Perishable food products could be kept for a long time in the wall openings of the building called "centipede" built here - in the eye of Kahriz.

Usually, it was possible to irrigate croplands by leaving relatively small tributaries from rivers that take their source from mountain springs. Such rivers were used in the city both in ancient and medieval times. The procedure for using them did not require much labor. However, the history of such small ditches, which are much easier to build and require relatively little effort, is almost ancient. After the habit they gained in these small ditches, people started building bigger ditches in the plains. The maintenance and operation of the ditches for the artificial irrigation system required a lot of manpower.

Another irrigation system in the city was carried out through kahriz. GNoting that one of the artificial irrigation sources in Anjabasar region is kahriz, NAAbelov called it "underground water gallery" [6, p. 49]. It is known that "the creation of the kahriz system is one of the most valuable findings of human thinking in the field of agriculture. The expansion of the Khariz was probably related to the spread of morning culture. Kahriz have been known in Ganjabasar world since ancient times. Archaeologists around Shamkhorchay B.C. Excavating in the cemetery of the 1st century, they found the remains of an ancient tomb. Archaeological sources show the use of kahriz and Ganja water in the irrigation of agricultural fields around ancient Ganja [7, p. 67]. The Kahriz were struck in these areas as early as BC. Undoubtedly, one of the most widespread irrigation systems in the Middle Ages was the kahriz. Kahriz were used more widely in the foothills of the Lesser Caucasus Mountains, especially in Ganja and other areas. Although these mentioned irrigation systems were used in the part of the Dağatayi region, which is included in another mountainous region, they were not so important. Due to the rains, the cultivation of wheat has developed here [8 p. 39].

Kharizs belonged to private individuals and separate communities. In this regard, its water was either used communally, or kahriz owners allowed to take water from their kahriz under certain conditions. In parallel with the ethnographic field materials, certain different points are found in the scientific literature



in the excavation of the Khariz. Depending on the relief of the region and the water level, the depth of the khariz wells varied from 10 to 60 meters. First, a well would be drilled "presumably" to assume the presence of water in the area. After determining the presence of water here, 2-3 "sulukar" wells with plenty of water were dug in that area. The wells were 30-60 meters apart. The total length of the canal varied from 2 to 6 km. The last well of the river was dug in that area - the gode well, and then its gap. The place where the water came to the surface of the earth was called the eye of the river. There were 4-6 workers in the Kahrizgazan-Kankan detachment. They consisted of the chief foreman - kankan, assistant foreman - laghimbar, wheelwright, dolzu. The following tools were used in the excavation of the river: dolamacharkh (it is simply called a wheel), kulung, kejabel (in Ganja it is called chalov), dol (made from cow's heart), qirmag, rope, lamp or candle, scales, etc. With a wheel placed at the mouth of the Khariz well, the soil spilled from the sewer was lifted and taken out. The land was collected "dola" with chalov. A sewer was dug with an auger, and the direction of the sewer and its correct digging were determined with a light or balance. In addition, the cancan wears a special cap on his head, and throws a sheepskin blanket or felt over his shoulder so that the water and soil falling from above do not hinder him. The part of the canal where the water flows was called a sewer or a basin. The height of the sewer was about 1m 50 - 60 cm, and the width was up to 80 cm, so that the cancan could work comfortably. The water-flowing part of the sewer was dug straight, and the upper part was dug with an arch. In the parts of the sewer where there was a fear of flying, raft - shadeband, i.e. stone masonry, was built. In order to prevent the Khariz wells from falling or collapsing, the mouth (upper) part of them was lined with red bricks in an area of 3-5 m [9, p. 130]. According to the sources, in 1850, water was brought to the city gardens mainly through 10-12 khariz, which was distributed through certain canals within the city. There were about 40 bridges to connect both sides of the city. These bridges changed their places when the water was abundant. There were more than 50 mills on Ganjachay. In addition, about 70 water wells were used in the city. [10, p. 27]

In 1903, AXGrigoryev and AASTakman conducted research on water sources in large cities of the Caucasus. The results of the research were published in the monograph "Drinking waters of the Caucasus". The list of canals and canals of Ganja where water samples were taken during the research is also reflected in the work:

I. Nanasov river supplied with drinking water:

- 1.1. The fountain on Colonia Street,
- 1.2. The fountain at the corner of Colonia and Chavchavadze streets;

II. Common public sewers supplied with drinking water:

- 2.1. The first fountain on Kerezmanut Street,
- 2.2. The third fountain,
- 2.3. The fourth fountain,
- 2.4. The fountain on Bomi Street;

III. The mosque area supplied with drinking water:



- 3.1. Water collection kiosk in the market square,
- 3.2. The fountain in the courtyard of Juma Mosque,
- 3.3. The fountain behind the Russian Provoslav Church,
- 3.4. the spring next to the mosque gate on Toyugchular Street;

IV. Kehriz water pipes used for irrigation:

- 4.1. In the brick factories behind the local hospital,
- 4.2. on Imamli Street,
- 4.3. on Sofulu Street,
- 4.4. At the station;

V. Irrigation ditches along the Ganja River:

- 5.1. In the upper parts of the city,
- 5.2. Around the city bridge.

In the city, there was a firm rule among the families who used kahriz water. So, it was impossible to wash clothes and dishes in the water of Kahriz, falling into the sewer, and polluting it. Every family would build a special staircase in their yard to get down to the sewer and collect water. The cost of digging the canals would be paid by the neighborhood, city community or the entrepreneur who would use its water. The amount of Kankan team's labor fee would be paid in kind and money, depending on the negotiation and agreement. Each kahriz would have its own name according to custom. When determining its name, it was called by the place where the aquifer was dug or which neighborhood and area it supplied water to. Sometimes the kahriz was named after its owner: Haji aga Muhammad Taghi kahriz, Mir Gasim agha kahriz, Haji Bagir kahriz, Sayyid Hasan kahriz, etc. In Ganja, kahriz were mainly named according to the name of the neighborhoods. For example, Bagbanchilar district, Demirchilar district, etc. The water of the kahriz belonging to private persons was only at the disposal of that entrepreneur. The water of the kahriz, which was built at the expense of the community, was used (during irrigation) in turn by those who paid for the construction of that kahriz. According to the custom, every person could use the water of the well to drink and work. Sometimes, a few people would dig a well at their own expense and provide drinking water to the community of a neighborhood for the sake of merit. The gangs of kankan digging kahriz in Ganja would be mainly from South Azerbaijan. However, there were masters of this work in Ganjabasar and other regions. The kahriz, which operated in the city in 1850 and was destroyed during the siege by the Russian troops of Ganja, was restored. Not only did the Russians not engage in the construction of new buildings, but because they did not pay enough attention to the improvement of the city, Alexander Garden was built only in 1862 during the long period of occupation, which cost the hard work of the local population [10, p. 32]. Until the 20s and 30s of the 20th century, the kahriz irrigation network was important in agriculture. Every year, more than 50,000 desyats of cultivated land were irrigated with about a thousand kahriz water [11, p. 29]. The kahriz farm, which has been used by the local population since ancient times and is extremely difficult and complicated in terms of its own digging and operation, has had an



irreplaceable role both in irrigation and in providing drinking water to settlements, depending on local and natural conditions. Drawing the lines required great skill and practice. It is known from the sources that the European travelers standing in front of the Kahriz water, which was uncovered by its own stream from a depth of sixty meters and sometimes more, looked at it in amazement and considered the Kahriz a miracle of human action. The formation of the kahriz system was of great importance for the cities of the Middle East. The kahriz system, which created conditions for the development of urban culture, also made a positive contribution to the cultural settlement of the population. In 1868, drinking water in the city was taken from a spring located on the left bank of Ganjacy two versts above the market square of "Dik Street" and from about 20 water wells in the city. [12, p. 4].

In the late 1860s, there were 597 artisan shops, 11 caravansaries, 7 baths, 44 mills, 2 squares, about 50 water wells, etc. there was The number of streets in Ganja, which used to have only one street, reached 38 [13, p. 32].

The mentioned diversity of economic life played a special role in the formation of the city of Ganja as a settlement, and the process continued until modern times. [14, p. 45]. With the exception of the old central part of the city, people in some neighborhoods are still engaged in their own household chores. This traditionality, formed in the household, shows that the local population has been living in this area since ancient times.

Ganjachay, a mountain river, divided the city into two equal parts. Ganja was surrounded by large mulberry and other orchards [15, p. 5]. "The city of Yelizavetpol (Ganja), the center of the province, was surrounded by gardens in the 19th century. XIX In the first quarter of the century, there were 165 fruit and 27 mulberry gardens in the city. Apricots, peaches, cherry plums, quinces, pears, cherries, cranberries, cranberries, grapes, gooseberries, etc. are grown in these gardens. the fruits were growing." Abdurrashid Bakuvi (XVasr): "There is a castle called Herak (Shovel) one apartment away from Ganja. There are fragrant herbs, running water and gardens around it. The weather here is beautiful in the summer and the Ganja people move here. There is a big mountain and on it there is a plant called "har (khar)" similar to the pine tree. This plant is a medicine for liver disease. This mulberry is not found anywhere except Ganja and Shirvan.

Thus, the specialized economic life of the city population formed from the early Middle Ages had a positive effect on the formation of the city as a place of residence. It is also known from archaeological materials that the settlement process, which is considered one of the main principles of urban culture, directly depends on important economic factors. From this point of view, along with other economic fields in Ganja city, sericulture has become one of the main fields of commodity production economy and has taken a special place in the life of the city population. In the end, the formation of the city as a farm-type settlement made it possible for its products to reach the Russian markets. This also led to a change in economic relations and created conditions for the development of productive forces. The development of agriculture and trade has also led to the growth of the urban population.

The material culture of the city of Ganja is a product of long historical periods, and the natural and geographical conditions played a significant role in its formation. It is also possible to see the influence of socio-economic and cultural factors here. The material culture of Ganja has developed organically with the economic occupation of its population. In the mentioned period, it is known that the economic occupation



of the population created the basis for the development of crafts here. As can be seen from the ethnographic materials, employment has left its own deep mark on the material culture of the population. The development of socio-economic and cultural relations expanded the circulation possibilities of local markets, the formation of a new transport infrastructure in the 20th century, the expansion of material and technical capabilities, etc. such factors determined the development of monetary relations and the expansion of market relations. The qualitative changes that occurred in the field of socio-economic progress, in turn, developed the creative ability of the people and revealed their talent, which led to the creation of new material culture elements and the transformation of traditional material culture elements. The formation of new tastes, the spread of different examples of material culture in a wide context have had an impact on the cultural and household style of the city population.

Conclusion

It is clear from the study of the material culture elements of the city that the material and cultural heritage formed here has had a significant impact on the material culture of Azerbaijan. With the exception of a number of local characteristics, this material and cultural heritage has become a part of the material culture of All Azerbaijan. The common features with other historical-ethnographic regions of Azerbaijan are explained, first of all, by the historical-ethnic connection and mutual cultural contact between them. Urban culture formed in modern conditions is enriched on the basis of continuing the rich experience of folk artists, developing past cultural traditions. Ethnocultural processes in the globalized world are also showing their influence on the urban environment that is becoming richer. We would not be wrong if we say that individual peasant farms with a wide technical base have opened unlimited perspectives for creative work.

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Samples of Khariz



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