Intl. J. Humanities (2010) Vol. 17 (1): (109-125)

The Analysis of Factors Affecting the Architecture of Isfahan *Bathes* from Safavid to Qajar via SPSS

Javad Neyestani[1], Saeid Amirhajloo[2]

Received: 25/5/2009 Accepted: 23/1/2010

Abstract

Public bathes have much importance in Islamic cities, after the most significant structures like mosques and schools. There are a number of factors affecting the construction of bathes among which temperature regulation, humidity, access path, location in the urban texture, watercourses, and construction of exit paths are the most important.

This study tries to make a comparative analysis of the architectures of bathes during Safavid and Qajar in order to reveal factors affecting their construction as well as the types of architecture implemented. Consequently, 13 public bathes were recognized and examined. The data elicited was then subjected to SPSS for further statistical investigation. Nonparametric Spearman correlation test was utilized to know the relationship among the variables and the factors affecting the architectures. The findings reveal a number of factors to be in statistically high correlation.

Keywords: Bath; Garmabā; Islamic Architecture; Isfahan; Safavid; Qajar

1. Assistant Professor in Archaeology, Faculty of Humanities, Tarbiat Modares University, Tehran, Iran, E-mail: jneyestani@modares.ac.ir

2. PhD Student in Archaeology, Tarbiat Modares University, E-mail: S_hajloo@yahoo.com

1. Introduction

Baths, as part of charity buildings, have been of particular importance and often accompanied great mosques, schools, and bazaars. The constructors of these baths were governors, the nobles, and charitable people who constructed them for charity and public utility though some might have built for business. The former group, often, endowed the buildings to religious institutes or charitable deeds. On the other hand, baths have been among the most significant elements of urban and rural organizations which, like other urban architecture types, their presence in the texture of the cities is not haphazard and random. In other words, baths were usually built at the center of the cities, center of the neighborhoods, or close to bazaar or the main pathways so as to make them more accessible to people. Also, because of their location in the urban texture and the users, baths had various functions. For instance, baths located in bazaar were for men's use or the biggest, the most luxurious, and the best baths of a town were built at the center of the city, or baths in the smaller neighborhoods were usually smaller and simpler, thus offering little service to the users.

Public baths are usually composed of different elements, allowing users do various phases and processes of bathing along with others tasks. Some of these elements are central to the baths, which are common in almost all public baths, and some are special ones existent in some baths depending on the type of their functions. In general, shared locations and elements in all baths and the planning include: portal, vestibule, Sarbinā, Mian dar (the space between Sarbinā and hot-house), hot house, and reservoir(s) in the hot-house.

Other spaces and rooms, including small bath, Chal howz (pool), toilets, Nooreh kesh khaneh (shaving room), and alcoves are absent in many baths. In addition, foundations spaces, like kiln, fuel room, channels and chimneys for transmitting heat and smoke, Gav row (cow way), well, water reservoir, and sewage are other major elements of baths.

Often, required water was provided from the streams, aqueducts, or wells. However, wells were the most important source for providing water for public buildings in a lot of cities (Abd-Al-Sattar Osman, 1376: 264). The procedures for providing and storing water was first, water was elicited making use of animal, then it was directed toward a basin or water tank usually located on the roof, and later it was transferred into water reservoirs via barrel-drains, under the pressure of the height. The water was also heated by kilns, which were below or behind the Toon (water reservoir) (Pirnia, 1378: 199).

Since, in the past it was not possible to directly heat the building [(1)], heating system was designed in a way that the fire heat and smoke

were spread all over the floor through canals built at the bottom and then sent out through the sideway chimneys (Ahmadi & Mo'taghed, 1384: 256). Water distribution in different spots of the bath was also carried out by the pressure caused by the difference between the bottom of the bath and the bottom of the water reservoir on the roof. At the floor of the tank, there were a number of routes each of which provided required water for a few pools in the bath. Each route was blinded by a sphere-shaped cap. Toon tap [(2)], person in charge of firing the kilns, who was aware of the direction of these routes, took the caps off, when necessary, to fill up the relevant pool (Tabasi, 1386: 156).

After Isfahan was selected as the capital of Safavid, a number of baths were built in the city which were larger compared to the ones constructed in the previous era, introducing a new style to the architecture of these buildings. In the new style, movement is always in the main large spaces in the middle of the Sarbinā or hot-house and stillness is in the lateral small spaces, like arcades and platforms (Fakhar-e-Tehrani, 1384: 20). As the underground water level is high in Isfahan, the city baths, contrary to the past, are built above the ground, and as the baths became larger, their stance was affected, and therefore a big space was designed in the middle of Sarbinā or hot-house surrounded by smaller spaces, such as vestibule, cloakroom arcades surrounding Sarbinā dome, Mian dar, toilet, shaving room, and private room. Among other effective reasons for building larger baths was the type of utilizing fuel, which allowed temperature to be controled all around the bath (Ibid.).

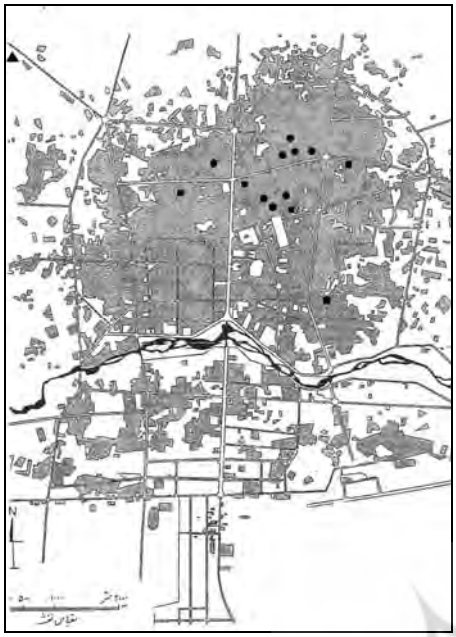
2. Sampling

In order to study and analyze the baths structure and their characteristics in Isfahan as well as their development of processes during Safavid and Qajar, 13 baths were randomly selected. Following criteria were implemented for choosing the pool of the samples:

- The baths constructed during Safavid, or at least, most of the remaining part of the building goes back to this period,
- At least one sample is selected from each bath type located at the centers of the city, neighborhood, big and small neighborhoods. In addition, for comparison, some baths outside the city and from the rural spaces close to the city were selected.

3. Spearman Correlation Test

SPSS was used to perform the statistical analyses. After the data was fed into SPSS columns, due to the small sample under the study, spearman correlation test was utilized. In such a population, stronger relationships are required, to prove existing correlation.



Map 1 Dispersion of the baths under the study in Isfahan – Safavid, Zandieh, and Qajar baths are shown via circles, triangles, and rectangles, respectively. (Sketched by authors)

4. Samples under the Study

The baths in Isfahan from and the pre-Safavid period include: Shah-Ali bath, Shah bath, Ali-Gholi Agha, Vazir, Dardasht, Jarchi, Sheykh Bahaei, Dehno, and Haaj Banan [(3)]. Shah-Ali bath is among the oldest baths in Isfahan, which is located in Jamaaleh neighborhood, near Ali mosque and the Great Mosque. Its primary structure is attributed to Ali-Shah, son of Takesh – governor of Kharazm – in the 6th Higira (Honarfar, 1344: 370).

Shah bath is located close to Naghsh-e-Jahan square, in the steel-makers bazaar and it is apparently one of the buildings attributed to Shah Abbas I. This bath used to be one of the best baths in Isfahan:

"The third best bath of this city is Shah Bath. It is not known why it is called so or who its constructor was. This bath, which is located near Shah crossroad, is perfectly firm and it is a big royal bath." (Arbab Isfahani, 1368: 80)

Shah Abbas I had let common people use this bath on a few days of the week (Jenab, 1376: 172).

Ali-Gholi-Agha bath is located in Bid-Abad locality, close to Ali-Gholi-Agha mosque. It was constructed by Ali-Gholi-Agha, one of the masters in Shah Soleyman and Shah Sultan Hossein, along with the nearby mosque (Haji Ghasemi, 1383: 54). In the endowment deed left in Ali-Gholi-Agha mosque, near the bath, it is mentioned that the small and the big baths of Ali-Gholi-Agha were constructed in 1125 higira and its revenues were endowed to the mosque.

Vazir bath is situated in Dardasht district, at Haj Mohammad-Ja'far Abadehei bazaar and street. It used to be the part of a complex including a small bazaar, caravanserai, and two mosques. According to a petrography in the bath, this complex was constructed by one of the ministers of Shah Abbas II.

In Dardasht district, there is another bath known as Dardasht bath. This bath is located near Agha Nour Mosque and was constructed by Agha Mo'men, brother of Agha Nour, in Shah Abbas and Shah Safi periods and was endowed to Agha

Nour mosque. This bath was previously famous with the name of its constructor, Agha Mo'men (Honarfar, 1344: 502).

Jarchi bath is placed in the Great Bazaar of Isfahan, behind Hakim Mosque, and near Jarchi mosque. According to the historical inscription in the mosque, the bath was apparently constructed together with the mosque in 1019 higira by Malek Sultan, the herald of Shah Abbas I.

Sheykh Bahaei bath is one of the famous baths in Isfahan, located in Nezamieh locality, near bazaar and the Great Mosque. It is one of Safavid works, attributed to Sheykh Bahaei. Rafiei Mehrabadi refers to this bath and states:

"…It is said that the door of its kiln was always closed till the Afghan attack, and no fire could be seen there. Everyday, fresh water was poured into the cauldron, yet the water was always warm. The secret was revealed after Afghan attack secret. They saw a lamp litting under the cauldron. As soon as they opened the door, the fire was extinguished. Most of Isfahanis believe in this event" [(4)] (Rafiei Mehrabadi, 1352: 397).

Dehno bath is located in Dehno village – which is nowadays part of the city – and probably its structure goes back to Safavid period. Recently, due to the growth of population, in the western side, another bath with hot-house and Sarbinā was built for men and the old bath was allocated for women.

Haj Banan bath is located in Golbahar neighborhood near Naghsh-e-Jahan square and at the beginning of Hafiz street (eastern side of the square). This bath, probably from Safavid, was used in Gajar and Pahlavi period after it was renovated many times. Haj Banan bath is still being used.

There are also some other baths left in Isfahan from Zandieh and Qajar periods: Rehnan bath, Jannat, Haj kazem, and Sheykh-Al-Islam. The twin baths of Rehnan together with the mosque and the nearby bazaar was constructed by Agha Mohammd Renaani, governor during Zandieh (Haji Ghasemi, 1383: 36). The complex of Rehnan bath, with 1400 sq. meter, is sited in Rehnan neighborhood, which was previously a village. A major feature of this bath is its large Sarbinā in which, contrary to the other baths, stillness is in the center (central pillars) and movement is situated around (Zaker Ameli & Esfanjari, 1384: 379).

Jannat bath is in the old texture of the city, near Kohneh Square, and is probably one of the baths constructed during Qajar which, according to the native people, was at work till 1373 higira. Haj Kazem bath is located in Shish, a section of Bid Abad district, near Seyyed Mosque. This bath, according to the present custodian of the mosque, was constructed around 140 years ago (1290 higira) by a person named Haj Kazem. Finally, Sheykh-al-Islam bath is a very small one

located in the close proximity to the Sheykh-al-Islam's historical house. The construction of this bath goes back to Qajar period.

Table 4-1- Overall attributes of the bath under the study

*	**Period**	**Urban Location**	**Neighborhood Population**	**Plan Type**	**Frame Type**	**Endowment**
Shah-Ali	Kharazmshahi to now	Big parish	Over-populated	Irregular	Binary	Undevoted
Ali-Gholi-Agha	Safavid to now	Big parish & center of parish	Over-populated	Almost regular	Binary	devoted
Shah	Safavid to now	Bazzar & city center	Over-populated	Fully irregular	Single-royal	Devoted
Vazir	Safavid to now	Big parish & parish center	Over-populated	Almost regular	Binary	Devoted
Dardasht	Safavid to now	Big parish & bazaar	Over-populated	Fully regular	Single	Devoted
Jarchi	Safavid to now	Big parish & bazaar	Over-populated	Almost regular	Binary	Devoted
Sheykh Bahaei	Safavid to now	Big parish	Over-populated	Almost regular	Binary	Undevoted
Jannat	Qajar to now	Small parish	Under-populated	Regular	Binary	Undevoted
Haj kazem	Qajar to now	Small parish	Under-populated	Regular	Binary	Devoted
Haj Banan	Maybe safavid to now	Big parish& city center	Over-populated	Regular	Single	Devoted
Rehnan	Zandieh to now	Rural	Averagely populated	Fully regular	Binary	Undevoted
Dehno	Maybe safavid to now	Rural	Under-populated	Regular	Binary	Undevoted
Sheykh-Al-Islam	Qajar to now	Small parish	Under-populated	Regular	Single	Undevoted

Table 4-2. Dimensions and size of different spaces of bathes

*	Total Dimensions	Area	Sarbināns Area	Hot Houses Area	Sarbina's Alcoves Area	Hot House's Alcoves Area	Shaving Rooms Area	Toilets Area	Pool (Chal howz) Area	Small Baths Area
Shah-Ali	34×31	1070	35	35	35	17	12	11	65	140
Ali-Gholi-Agha	33×30	981	120	98	9	40	30	8	162	152
Shah	40×25	1049	81	70	105	45	28	12	96	-
Vazir	32×42	1420	106	75	45	38	16	24	-	87
Dardasht	26/5×40	1060	56	90	78	35/5	11	16/5	78	-
Jarchi	28×49	1372	164	46	12/5	98	43/5	24	-	161
Sheykh Bahaei	32×38	1224	48	36/5	48	74	3	10	-	170
Jannat	15×30	450	70	51	Uncertain	18	8	4	Uncertain	42
Haj kazem	25×35	875	54	48	Uncertain	8	5	6	-	120
Haj Banan	11/5×26	298	60	72	Uncertain	26	8	7/5	-	-
Rehnan	30×48	1440	400	128	-	24	34	26	-	232
Dehno	12×24	300	Uncertain	114	Uncertain	Uncertain	7	9	-	86
Sheykh-Al-Islam	14×21	294	76	25	16	8	7/5	6/5	-	-

Table 4-3. The number of peripheral and lateral spaces in each bathe

*	Hot house's Alcoves	Sarbina's Alcoves	Toilets	Shaving Rooms	Cloth Washing Room (Long shoor khaneh)	Pool (Chal howz)
Shah-Ali	2	6	1	2	-	1
Ali-Gholi-Agha	2	1	1	1	1	1
Shah	2	4	1	1	-	1
Vazir	1	2	1	1	-	-
Dardasht	2	4	1	1	-	1
Jarchi	3	1	1	2	-	-
Sheykh Bahaei	2	2	1	1	-	-
Jannat	1	Uncertain	1	1	-	1
Haj kazem	1	Uncertain	1	1	-	-
Haj Banan	Uncertain	Maybe 4	1	1	-	-
Rehnan	1	-	1	2	-	-
Dehno	Uncertain	Uncertain	1	1	-	-
Sheykh-Al-Islam	2	4	1	1	-	-

5. Findings

In the present study, in order to analyze the structure and characteristics of the architecture and the factors affecting them, data was first collected for the structures under the study, and then all the data was organized into comprehensive tables (Tables 6-1, 6-2, and 6-3). In these tables, all bathes were first categorized based on the period(s) they were built and their antiquity. Then, all the information about the areas of the bath, Sarbinā, hot-house, alcoves of each of these spaces and their numbers, area and the number of these spaces and the lateral rooms including Nooreh kesh khaneh (shaving room), Chal howz (pool), toilets, small bath (if present), etc. were recorded. From the view of the location of the building in the texture of the city, these baths were classified into 6 categories: big parish and city center, big parish and parish center, big parish and bazaar, bazaar and city center, small parish, and finally rural type. Also, the neighborhoods embracing these constructs, considering the population, were divided into three groups: over-populated, averagely populated, and under-populated. Since urban constructions and surrounding environment, could affect the architectures baths plans were also classified into 5 types: fully irregular, irregular, almost regular, regular, and fully regular. Moreover, considering the frame, their being binary or single was taken into account. At last, based on the existing documents, it was shown if the structures were endowments or not.

6. Data Analysis

The analysis of the data was carried out using SPSS so as to evaluate correlation and possible meaningful relationships among variable. In some cases, the relationship among variables were quite significant, showing a particular pre-assigned style or thought or existence of constant effect on their architecture. The highest correlations among variables are shown in the following tables.

In Table 6-1, there is a very significant correlation between the antiquity and plan types of the building. It means that the closer we get to the contemporary ages, the more regular the buildings become. This point may be explained in that designing more accurate plans and constructing the baths with a pre-assigned precise plan, also more limited dimensions, helped presenting plans more regularly.

In Table 6-2, the relationship between the bath area and population of the locality is shown. In this table, except for Rehnan bath which is classified in the rural baths and is located in an averagely populated district with a very large area, as the population increases, the areas of the baths are also enhanced. In fact, the architect had made an attempt to meet the needs of the inhabitants in the neighborhood.

Table 6-1 The relationship between oldness of the buildings and the plan type

*	Period	Plan Type
Shah-ali	Kharazmshahi to now	Irregular
Shah	Safavid t now	Fully irregular
Ali-gholi-agha	Safavid t now	Almost regular
Vazir	Safavid t now	Almost regular
Jarchi	Safavid t now	Almost regular
Sheikh bahaei	Safavid t now	Almost regular
Dardasht	Safavid t now	Fully regular
Haj banan	Safavid t now	Regular
Dehno	Safavid t now	Regular
Rehnan	Zandiyeh to now	Fully regular
Haj kazem	Qajar to now	Regular
Sheikh-al-islam	Qajar to now	Regular
Jannat	Qajar to now	Regular

Table 6-2 The relationship between population and the bath area

*	Total Area	population
Sheikh-al-islam	294 m2	Under-populated
Haj banan	298 m2	Over-populated
Dehno	300 m2	Under-populated
Jannat	450 m2	Under-populated
Haj kazem	875 m2	Under-populated
Ali-gholi-agha	981 m2	Over-populated
Shah	1049 m2	Over-populated
Dardasht	1060 m2	Over-populated
Shah-ali	1070 m2	Over-populated
Sheikh bahaei	1224 m2	Over-populated
Jarchi	1372 m2	Over-populated
Vazir	1420 m2	Over-populated
Rehnan	1440 m2	Averagely populated

In Table 6-3, there is a significant correlation between the location of the bath in the city plan and its begin endowment. In other words, most of the endowed baths were constructed near big localities, city center, locality center, and bazaar. Other baths, located in the small neighborhoods and suburbs or village, were mainly built for revenue.

Table 6-3 The relationship between the location of the bath in the city plan and the endowment state

*	Location of Bath in City	Endowment State
Haj banan	Big parish and city center	Devoted
Ali-gholi-agha	Big parish and parish center	Devoted
Vazir	Big parish and parish center	Devoted
Shah	Bazaar and city center	Devoted
Shah-ali	Big parish	Undevoted
Sheykh bahaei	Big parish	Undevoted
Jarchi	Big parish and bazaar	Devoted
Dardasht	Big parish and bazaar	Devoted
Jannat	Small parish	Undevoted
Haj kazem	Small parish	Devoted
Sheikh-al-islam	Small parish	Undevoted
Rehnan	Rural	Undevoted
Dehno	Rural	Undevoted

According to Table 6-4, the correlation or the relationship between the area of sarbinā and hot-house is positive, meaning that an increase in sarbinā area led to the increase in hot-house area and vice versa. Of course, two exceptions among Qajar baths are Jannat and Sheykh-al-Islam baths which may be justified considering the construction period: first, during Qajar era, famine and numerous problems decreased population, and second, in this period a change was applied in the function of the cauldrons in a way that cauldron was no more a source for taking water, but people directly entered the cauldron and they rarely stopped in the hot-house. That is why there was no need for a larger space for the hot-house. On the other hand, it seems that ease of heating the hot-house space had also effects on decreasing dimensions of the hot-house.

Table 6-4 The relationship between the area of the Sarbinā and the area of the Hot-house

*	The Area of the Sarbinā	Area of the Hot-house
Dehno	0	114
Shah-ali	35	35
Sheikh bahaei	48	36/5
Haj kazem	54	48
Dardasht	56	90
Haj banan	60	72
Jannat	70	51
Sheikh-al-islam	76	25
Shah	81	70
Vazir	106	75
Ali-gholi-agha	120	98
Jarchi	164	46
Rehnan	400	128

In Table 6-5, the relationship between total area of the bath and lateral and minor spaces and their numbers are shown. According to this table, the area of minor spaces including toilets, shaving rooms, small baths, and the number of shaving rooms is a function of the area of the bath. In other words, the relationship between them is direct and positive.

Table 6-5. The relationship between the total area of the bath and the area and number of some of the minor and lateral spaces

*	Total Area	Toilets Area	Shaving Room Area	Small Baths Area	Number of Shaving Rooms
Sheikh-al-islam	294	6/5	7/5	0	1
Haj banan	298	7/5	8	0	1
Dehno	300	9	7	86	1
Jannat	450	4	8	42	1
Haj kazem	875	6	5	120	1
Ali-gholi-agha	981	8	30	152	1
Shah	1049	12	28	0	1
Dardasht	1060	16/5	11	0	1
Shah ali	1070	11	12	140	2
Sheikh bahaei	1224	10	3	170	1
Jarchi	1372	24	43/5	161	2
Vazir	1420	24	16	87	1
Rehnan	1440	26	34	232	2

In Table 6-6, the relationship between the alcove area of hot-houses and neighborhood population is shown. According to this table, those baths located in more populated neighborhoods held larger alcove(s). Presence and residence of the rich and famed people in the larger and more populated localities could directly decide the dimensions of the alcoves.

Table 6-6. The relationship between the area of the hot house alcoves and neighborhood population

*	Hot House Alcoves Area	Neighborhood Population
Dehno	0	Under-populated
Haj kazem	8	Under-populated
Sheikh-al-islam	8	Under-populated
Shah ali	17	Over-populated
Jannat	18	Under-populated
Rehnan	24	Averagely populated
Haj banan	26	Over-populated
Dardasht	35/5	Over-populated
Vazir	38	Over-populated
Ali-gholi-agha	40	Over-populated
Shah	45	Over-populated
Sheikh bahaei	74	Over-populated
Jarchi	98	Over-populated

In Table 6-7, the relationship between the area of Sarbinā and the number of its alcoves is presented. According to this table, with an exception of Sheykh Bahaei Bath, which in spite of having a large Sarbinā, it has only 2 alcoves (the southern alcove itself has a large space), in all other baths the number of Sarbinā alcoves is decreased as the area of Sarbinā is increased. To put it differently, stillness space is decreased to the extent that movement space in Sarbinā is increased. The reason for this point may be related to and traced back to the way baths are used along with social factors related to each bath such as ceremonies and gatherings of the inhabitants of the locality. It seems that in baths where there are small and fewer spaces for movement, gatherings were uncommon, and the baths were mostly used for bathing purpose only. However, in the baths with more and larger spaces for movement, more social gatherings took place, and people spent more time in Sarbinā for relaxation.

Table 6.7. The relationship between the area of Sarbinā and the number of its alcoves

*	Area of Sarbinā	Number of Sarbinā Alcoves
Dehno	0	0
Shah ali	35	6
Sheikh bahaei	48	2
Haj kazem	54	0
Dardasht	56	4
Haj banan	60	4
Sheikh-al-islam	76	4
Jannat	78	0
Shah	81	4
Vazir	106	2
Ali-gholi-agha	120	1
Jarchi	164	1
Rehnan	400	0

7. Conclusion

After the development and extension of baths in Safavid cities, the architecture of the baths undergone some changes compared to the previous eras. Yet, the architecture and the function of the spaces together with the pattern for constructing the baths (entrance hierarchy, Sarbinā, Mian dar, hot-house, and water reservoir) remained unaffected. Construction of binary or twin baths, perfection of the spaces of the baths, and addition of some new spaces with specific functions such as shaving room, haircut

room, alcoves, etc. are among these changes. Nevertheless, the elements affecting the architecture of baths from Safavid to Qajar periods can be summarized as follows:

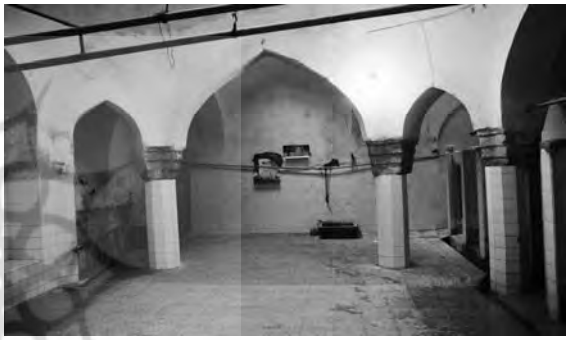
- New experiences and developments in construction technology (late Safavid and Qajar) led to regulate and accurate the planning of the bath,
- The locality population directly determined the area of the bath. In effect, meeting the needs of the inhabitants (like the need to bathe) in their own neighborhood, made architects consider the population of the district before anything else. This led to a sort of coordination among the inhabitants in a way that usually users were all from the same neighborhood.
- In addition to determining the area of the bath, population of the locality decided the area and the number of smaller spaces. For instance, the area and the number of bath alcoves were assigned by considering the locality population and also presence rich and famous people there.
- The system of endowment caused construction of baths around the city centers, bazaar, and big parishs. It seems that the purpose of those who endowed such constructions in these areas, close to the important buildings of the city like great mosques and schools, was earning more to be able to keep the baths longer and in better conditions.
- Symmetry and coordination in dimensions and the number of main and minor spaces of the bath, also, determined the structure of the architecture of each of these spaces. For example, an increase of the area of Sarbinā necessarily meant an increase in the area of the hot-house. Also, the areas of the toilets, shaving rooms, or small bathrooms were directly affected by the areas of Sarbinā and hot-house.
- The way the construction was used, also, determined the shape, dimensions, and number of some spaces. For instance, in the baths wherein only a few social gatherings were held, and their main function was bathing only, movement space was larger and stillness area was smaller. As a case in point, the areas of the platforms and Sarbinā alcoves in such baths were decreased and the central area of Sarbinā was increased. However, in those baths where along with bathing purpose, people attended for gatherings, making visits, conversing, relaxing, and enjoying entertainments (swimming, smoking hubble-bubble, drinking tea, etc.), one can observe more stillness space compared with movement space. In other words, these baths held greater area, and more number of platforms and Sarbinā alcoves.

Picture 1 The central Sarbinā, Rehnan bath – In this Sarbinā, stillness is in the center and movement is constructed in the lateral areas. (photograph by author)

Picture 2 Sarbinā, Shah Ali bath – In this Sarbinā, stillness is in the lateral rooms and movement is in the center. (Photograph by author)

Picture 3 Pool (chal howz), Al-Gholi-Agha bath – subsidiary space which was used for swimming during the summer. (Photograph by author)

Picture 4 The large hot-house, Sheykh Bahaei bath. (Photograph by author)



Picture 5 Small hot-house, Haj kazem bath – In Qajar period, the change of the function of water reservoir made the dimensions of the hot-houses smaller.(Photograph by author)

Notes

1. Because artificial temperature was generally resulted from burning the organic matters and the produced smoke and carbonic gas made it impossible for human being to breath in the closed atmosphere of the bath (Ghobadian, 1385: 280).

2. The person in charge of lighting the kiln and also keeping the kiln hot (Tabasi, 1386: 156)

3. Dehno and Haj Banan baths were probably built during Safavid period.

4. There are various theories about the water heating system in this bath the strongest of which is the theory of using Biogas for lighting and heating the water. According to this method, surplus matters and closed garbage, mentioned by Mehrbadi, are collected and fire was lit via the gas produced by these litters. Nevertheless, the idea of using materials and litters from a nearby oil manufacture or its oil is not rejected either (Tabasi, 1386: 155).

Particular words

Garmabā: bath, bathroom, public bath

Sarbinā: a cool room that people disrobe their clothig, smoking hubble-bubble, drinking tea and rest there.

Mian dar: the space between Sarbinā and hot-house.

Chal howz or Char howz: the space that include a pool for swimming in summer.

Gav row: the gradient for cow's movement in besides of bath. The rise of water from well accomplish by means of cow's movement upon this gradient.

Small bath: the subsidiary bath for womenfolk.

References

[1] Ahmadi, Mehdi & Mo'taghed, Sepehr, (2005), "Using the heat energy of smoke (a preface to the possibility of modern use of heating pattern of Iranian traditional baths)". Collection of Articles on the Conference of Bath in Iranian Culture. Pp.255-261.

[2] Arbab e Isfahani, Mohammad mahdi ibn mohammad reza, (1989), "Nesf-e-jahan fi ta'rif-e-isfahan", Corrected by Manouchehr Sotoudeh, 2th printing, Amir Kabir, Tehran.

[3] Pirnia, Mohammad karim, (1999), "An Introduction to Islamic Architecture of Iran". Complied by Gholam-Hosssein Me'marian, Elm-o-San'at, Tehran.

[4] Jenab, Mir seyyed ali, (1997), "Al-Isfahan", Mohammad reza riazi, Cultural Heritage Organization of Iran, Tehran.

[5] Haji ghasemi, Kambiz, (2004), "Ganj naameh; Baths", V.18, Shahid Beheshthi University, Tehran.

[6] Zaker ameli, Leila & Esfanjari, Isa, (2005), "Rehnan Bath", Collection of Articles on the Conference of Bath in Iranian Culture, pp. 137-144.

[7] Rafi'ee Mehr abadi, Abo-al-ghasem, (1972), "National Monuments of Isfahan." Publications of National Monument Society of Iran (101), Tehran.

[8] Tabasi, Mohsen, (2007), "An Introduction and Analysis of the factors affecting the framework and Functional Changes in the Architecture of Iranian Baths during Safavid Period". Unpublished PhD Dissertation, Tarbiat Modares University, Faculty of Art.

[9] Abd-al-Sattar Osman, Mohammad, (1997), “Islamic city”, Ali Cheraghi, Amirkabir, Tehran.

[10] Fakhar-e-Tehrani, Farhad, (2000), “Baths from the View of Time", Soffeh Journal, Shahid Beheshthi University, V. 10, N. 30, spring and summer. Pp. 94-105.

[11] Ghobadian, Vahid, (2006), "A Climatic Analysis of the Traditional Monuments of Iran", 4th printing, The University of Tehran, Tehran.

[12] Honarfar, Lotf Allah, (1968), "The Treasure of Historical Monuments of Isfahan", Imami Publications, Isfahan.

تحلیل عوامل اثرگذار بر معماری حمام‌های شهر اصفهان از دوره صفوی تا قاجار (با استفاده از نرم افزار آماری SPSS)

جواد نیستانی[۱]، سعید امیرحاجلو،[۲]

تاریخ دریافت: ۱۳۸۸/۳/٤ تاریخ پذیرش: ۱۳۸۸/۱۱/۳

حمام‌های عمومی در بافت شهرهای اسلامی از اهمیت زیادی برخوردارند و تقریباً از مهمترین بناهای شهری پس از مسجد و مدرسه محسوب می‌شوند. عوامل متعددی در شکل‌گیری فضاها و بخشهای حمام نقش دارند که مهمترین آنها تنظیم دما، رطوبت، مسیر دسترسی و قرارگیری در بافت شهری، آبهای روان و ایجاد راههای خروجی فاضلاب است.

در این مقاله کوشیده‌ایم با بررسی و مطالعه و مقایسهٔ تطبیقی معماری حمامهای صفوی تا قاجار در شهر اصفهان، کلیهٔ عوامل اثرگذار بر شکل‌گیری و نوع ساختار معماری آنها، شناسایی شود. از همین رو، پس از بررسی میدانی تعداد ۱۳ باب حمام عمومی در شهر اصفهان و تهیه و تنظیم گزارشها، داده‌های به‌دست آمده با استفاده از نرم افزار آماری SPSS و آزمون همبستگی اسپیرمن (ناپارامتریک) تجزیه و تحلیل شده و همبستگی و ارتباط میان عوامل و شاخصه‌های مؤثر بر معماری آنها در جداولی آمده است.

واژگان کلیدی: حمام، گرمابه، معماری اسلامی، اصفهان، صفوی، قاجار.

۱. استادیار و عضو هیأت علمی گروه باستان‌شناسی دانشگاه تربیت مدرّس، E-mail: jneyestani@modares.ac.ir

۲. دانشجوی دورهٔ دکتری باستان‌شناسی دانشگاه تربیت مدرّس، گرایش دوران اسلامی E-mail: S_hajloo@yahoo.com