

Persian translation of this paper entitled:
 بازیابی و مستندسازی تحولات کالبد و کارکرد بنای شیخ لطف‌الله بر اساس اسناد توصیفی و تصویری و
 مطالعات تاریخ‌شناسی
 published in this issue of journal

Original Research Article

Retrieving and Documenting the Changes in the Form and Function of Sheikh Lotfollah Monument Based Upon Descriptive and Visual Documents and Oral History Studies

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Received: 05/12/2021 ;

accepted: 15/10/2022 ;

available online: 21/03/2023

Abstract

Problem statement: Sheikh Lotfollah is a prominent building that dates back to the Safavid era. In different periods, various interventions have changed some parts of the building's original form. Despite the international value of the Sheikh Lotfollah monument, no complete documentation of its changes and interventions has been carried out so far. Revealing hidden and undiscovered aspects of the form and function of Sheikh Lotfollah can identify any inappropriate interventions done in the past. On the other hand, it can pave the way to preserve this building for posterity.

Research objective: This article aims to display the transformations of unique and little-known features of Sheikh Lotfollah for the first time.

Research method: This research attempted to present the transformation process of this building by analyzing related descriptive and visual documents in the order of the year. In addition, some of the unwritten features of Sheikh Lotfollah were documented by interviewing people who had been involved in its conservation from the past until now. Moreover, the main part of this research was done with a detailed field survey of each part of this building. Ultimately, all the analyses were implemented on the maps.

Conclusion: This research revealed that some sections of Sheikh Lotfollah were separated from it over time and dedicated to other functions. Consequently, the changes in the access point to the building brought about changes in the original plan of the building. It is noteworthy that there have been many other changes in the facade and form of the building.

Keywords: UNESCO World Heritage Site landmark, Naghsh-e Jahan Square, Sheikh Lotfollah monument, Documentation of built heritage, Descriptive and visual scripts, Oral history of architecture.

Introduction and Problem Statement

Following the officialization of the Shia religion in the Safavid era and the invitation of clerics to Isfahan by Shah Abbas, large schools were built for them

to teach in (Honarfar, 2011, 143; Jenab Isfahani, 2006, 565; Turkaman, 2003, 158). Sheikh Lotfollah monument is one of these schools which was built for the teaching and praying of Sheikh Lotfollah Misi Ameli (Ashtiani, 1944, 58).

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The Sheikh Lotfollah monument- like most historical landmarks -has gone through various structural and functional changes over time. These changes were brought about by various factors, such as differences in the perspective of visitors of the building from a quantitative point of view, functional and structural changes in the neighboring buildings, and the use of the monument as a prominent building in certain periods. These changes have occurred in the façade, form, and circulation of the building.

Some of these changes are major and some are minor and cannot simply be recognized by visitors. This paper aims to analyze these changes and document them based on descriptive and pictorial documents, oral history studies, and field studies.

Analyzing all the maps related to each section of the Sheikh Lotfollah monument has revealed that none of the existing maps is accurate and does not demonstrate the original state of the building. In addition, our analyses have shown that over time some sections of the Sheikh Lotfollah monument have been separated from it and dedicated to new uses. These analyses revealed a special circulation in the past, which has been completely changed today. This research aims to document the original circulation of the Sheikh Lotfollah building for the first time. This research will address the following question:

What physical, functional and, decorative changes has the Sheikh Lotfollah building gone through over time?

Theoretical Foundations and Literature Review

Foreign tourists pointed to the Sheikh Lotfollah monument in the early years of its construction when they visited Naghsh-e Jahan Square. Because of the proximity of the Sheikh Lotfollah monument to Jame Abbasi Mosque and Aali Qapu mansion, less attention has been paid to this building. On the other hand, since foreigners

are mostly not allowed inside religious places such as mosques and schools, few travelogues have mentioned the interior of Sheikh Lotfollah. Therefore, most of the travelogues have briefly discussed the outer form of this building (Della Valle, 1991, 30; Chardin, 1993, 1442; Sanson, 1967, 66; Kaempfer, 1981, 193 & 201; Gemelli Careri, 2004, 81; Morier, 2007, 210). In another group of documents, including historical books, the existence of a school neighboring the Sheikh Lotfollah monument and the complementary function of the school and mosque are mentioned (Turkaman, 2003, 159; Afandi, 2010, 195; Modares Tabrizi, 1994, 296-297). Some historical events in this building have also been discussed in these documents (Afoshtei Natanzi, 1994, 539).

It should be noted that in the current location of the Sheikh Lotfullah building, there was a ruined mosque that dates back to the pre-Safavid era, on which the current Sheikh Lotfullah monument was built (Rafiei Mehrabadi, 1973, 694; Jaberi Ansari, 1942, 128; Pope, 1936, 789-892).

Some researchers have represented the changes in Naghsh-e Jahan Square or the buildings around it using descriptive and visual documents (Valibeig & Kourangi, 2019). This approach can be used to represent the transformations of the Sheikh Lotfollah monument. Previous articles related to the Sheikh Lotfollah building have generally discussed the geometric features of its plan and dome (Karimian & Seyed, 2018; Dahar & Alipour, 2013). Another research has analyzed the function of the Sheikh Lotfollah monument based on historical documents (Abdellahi & Valibeig, 2022). However, so far, no research has been done that exclusively analyses and documents the changes in form and function of different parts of this building.

Research Method

This research is a comparative study. Therefore, first, various documents are collected and classified. The documents used in this research

were divided into three general categories; descriptive documents, visual documents, and oral history studies. Each category was analyzed separately and then by comparing all documents together, the formal and functional changes of the building were revealed. Field surveys were also used to complete the research. To conduct this research, the following steps were followed.

First, all visual documents were categorized by date. Then, by comparing each picture with the previous pictures the difference and changes were revealed. The written documents and the conducted interviews complement the visual documents and make the understanding of formal and functional changes more accurate. Also, the field surveys conducted on the site were documented on the building maps. In this research, the changes in the Sheikh Lotfollah monument from the oldest document related to the building's construction to the present are analyzed.

Discussion

Below we have discussed the structural and functional transformations of different sections of the Sheikh Lotfollah monument, including the facade, decorations, function of spaces, circulation, and other structural changes over time. The transformation of the Sheikh Lotfollah building is classified into two general categories: structural and functional changes. First, we discuss the physical evolution of the building over time.

Structural changes

The analysis of the structural changes in the Sheikh Lotfollah monument is divided into two general categories: the changes in the exterior form of the building and the changes in the interior form of the building.

• Changes in the exterior form

In this section, the structural changes in the exterior parts of the building are analyzed separately.

- Developments of the entrance facade

The entrance of the Sheikh Lotfollah monument has undergone many changes over time. In the following, these developments are analyzed separately based on historical documents.

- Changes in the façade visible elements

The main facade of the Sheikh Lotfollah monument had some parts that are now destroyed. Revealing the existence of these parts in the past is only possible by analyzing old sketches since many of these parts were already destroyed when the photography industry entered Iran.

From the year 1627 (when the first visual document of the Sheikh Lotfollah monument was drawn) until the year 1672, none of the sketches demonstrates the main facade of the building ([Table 1, Sketch A & B](#)). The first sketch of the main facade of the Sheikh Lotfollah monument was depicted by Jean Chardin in 1673 ([Table 1, Sketch C](#)). In this sketch, a muezzin (prayer call) is drawn on the right side of the dome. It is noteworthy that Chardin is the only person who has drawn the muezzin on the right side. Ambrosio Bembo, who was in Isfahan roughly at the same time as Chardin, drew the muezzin on the left side of the dome ([Table 1, Sketch D](#)). Likewise, in other drawings after Chardin until 1714, the muezzin is shown on the left side ([Table 1, Sketch E](#)). From 1714 forward the muezzin was not seen in sketches.

Another architectural element in the sketches is the Clock building (Saat building) on the right side of Sheikh Lotfollah. The Clock building is also present only in the drawing between 1672 and 1714 ([Table 1, Sketch F](#)). It should be pointed out that two sketches related to the years after 1714 were found in which the muezzin and the Clock building can be seen. The reason for the presence of these two elements in the images of this time is the copying from an older sketch that belonged to Cornelis de Bruijn.

Another part of the changes in the facade is related to the number of floors. In the past, a single third

Table 1. Sketches of Sheikh Lotfollah over time. Source: Authors.

Date	Sketch	Date	Sketch
1627		1664	
1673-77		1683	
1714		1840	
	A. Thomas Herbert. Source: carolinemawer.com.		B. André Daulier Deslandes. Source: Daulier Deslandes, 1673.
	C. Jean Chardin. Source: gallica.bnf.fr.		D. Ambrosio Bembo. Source: Bembo, 2007.
	E. Cornelis de Bruijn. Source: commons.wikimedia.org.		F. Pascal Coste. Source: en-academic.com.

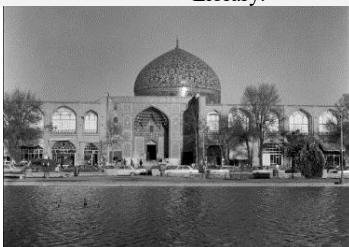
floor was on the Bazar stores. The first picture in which the third floor can be seen is Chardin's drawing in 1677 ([Table 2, Sketch C](#)). This floor is also depicted in later sketches. Moreover, in the Pascal Coste sketch in 1840, the third floor was completely illustrated. However, unlike Coste, Eugene Flandin -the painter who came to Isfahan with Coste the architect- did not paint the third floor. The first recorded photograph of the facade was taken in 1852 by the Italian photographer Luigi Pesce ([Table 2, Picture A](#)). In this photo, the third floor is visible with some damage. Years later, in the photos around 1860, the roof of the third floor was destroyed and only its walls remained for a long time ([Table 2, Picture B](#)). Today, nothing remains from this floor ([Table 2, Picture D](#)).

During the extensive destruction of the east side of the Naghsh-e Jahan square (1934-1935), the north and south stores in the main facade went through a lot of damage, and the roof and some parts of the walls of the second floor collapsed ([Table 2, Picture C](#)). In 1961, the second floor

was renovated with some changes in the plan and openings. The changes applied to this floor made a new circulation in the building, which is very different from the original one. The changes on the second floor were mainly documented based on field surveys ([Fig. 8](#)). It should be added that the decorations of Muqarnas on the porches of the second floor, which had a lot of damage, were completely restored and reconstructed in 1961. Other changes can be seen at the counter of the Sheikh Lotfollah monument. The removal of the pond in front of the building between 1937-1939 is one of the mentioned changes. Some documents wrongly mentioned the pond as octagonal shaped ([Nikzad Amir Hosseini, 1954, 112; Rafiei Mehrabadi, 1973, 698; Norouzi, 2001, 2](#)). While, in many of the remaining historical drawings and photographs, there is a rectangular pond in front of it ([Figs. 1 & 2](#)).

Another change in the counter section is related to moisture problems that caused damage to the entrance foundation. Therefore, in 1952, this part of the building was repaired and restored

Table 2. Changes in the floors of Sheikh Lotfollah based on historical photos. Source: Authors.

Date	Picture	Date	Picture
1852		1891	
	A. Luigi Pesce. Source: Golestan Palace Library.		B. Unknown. Source: Golestan Palace Library.
1934-35		1991	
	C. Unknown. Source: ISMEO.		D. Unknown. Source: Cultural Heritage Documentation Center..

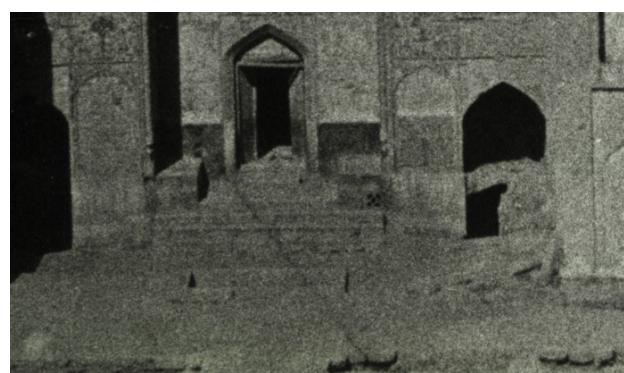


Fig.1.Unknown. The destroyed pond in front of Sheikh Lotfollah. Source: Author's Archive.

by Abdul Majid Manshaei and Hosein Maarefi ([Mehran, 1975, 7-9](#)). The stone pavement of the counter was also renewed in 1960 ([Sajadi Naeini, 2008, 110](#)).

• Changes in façade covering

The façade cover of the Sheikh Lotfollah monument is one of the parts that has undergone various changes. Meanwhile, many general public and tourists believe that the current tile covering that can be seen current facade is related to the time of its construction. By analyzing the oldest documents, this research reveals the facade covering has gone through five stages of change until now.

1- The first stage is at the time of its construction



Fig. 2. Friedrich Paul Theodor Sarre. The destroyed pond in front of Sheikh Lotfollah. Source: Sarre, 1901.

in which the entire facade was covered with blue tiles ([Kaempfer, 1981, 193 & 201; Della Valle, 1991, 30](#)). In some of the old sketches of the building, traces of the facade tile design can be seen.

2- In the second stage, from the beginning of the Qajar period until around 1900, many parts of the tiles were damaged or collapsed due to neglect. In the remaining pictures of this time, few tiles were seen on the facade, and only the tiles of the porch ceiling covering remained. Also, above the main opening, there were huge cracks that extended to the muqarnas ([Table 3, Picture A](#)).

3- In the third stage, around the year 1900, by the order of the Zel-al Sultan, the remaining tiles on the

Table 3. Covering of the façade of Sheikh Lotfollah over time based on historical photos. Source: Authors.

Date	Picture	Date	Picture
1860		1905	
	A. Photo: Unknown. source: Golestan Palace Library.		B: Photo: Ernst Emil Herzfeld. source: Sackler Gallery.
1925-30		1951	
	C. Photo: Robert Byron. source: archnet.org.		D. Photo: Baroness Marie Thérèse Ullens de Schooten. Source: archnet.org.
1960		1961	
	E. Photo: Unknown. source: Cultural Heritage Documentation Center.		F. Photo: Unknown. source: Cultural Heritage Documentation Center.

facade were removed and moved to the basement for preservation ([Sajadi Naeini, 2008, 109](#)). Then, the facade of the building was plastered with plaster decorations. At this time, the cracks on the top of the main entrance and its inscriptions were restored. Also, the window above the main entrance door was decorated with a perforated brick. According to visual documents, this plaster covering remained on the facade until around 1930 ([Table 3, Picture B](#)).

4- In the fourth stage, in 1930, due to damage to the plaster covering, it was renewed. The new plaster covering was executed without decorations. Also, at this time, three seven-colored tiles inscriptions were added to the building in the upper part of the counter ([Table 3, Picture C & D](#)).

5- In the last stage, in the year 1960, the tiling

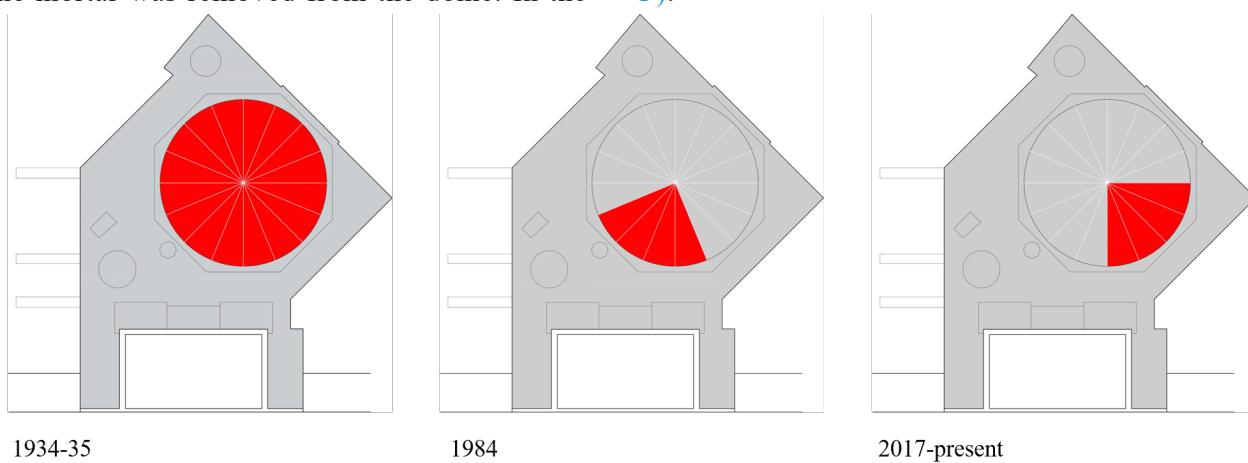
of the Sheikh Lotfollah façade was started by the National Organization for the protection of antiquities ([Table 3, Picture E](#)). The design of the new facade tiles was based on the original facade tiles in the basement and was done by Mirza Ali Mosamaparast and Nasr-Allah Rafail ([Varjavand, 1977, 4](#)). Next, the tiles were prepared and made in Mousavizadeh studio ([Fereshte Nejad, 2021](#)). However, by examining the few remaining tiles in the old photographs of the building, it is possible to see that the patterns of the new tiles are somewhat different from the original in many parts. Also, the strengthening operation of the tiles of the frames next to the entrance door was also carried out around 1961 ([Table 3, Picture F](#)).

- Changes in the dome

During the Constitutional Revolution of Iran, the

Sheikh Lotfollah monument was used as a bastion for soldiers and was exposed to many shootings. Therefore, the Finial at the top of the dome was unfastened ([Fereshte Nejad, 2021; Mehran, 1975, 7-9](#)). Before the restoration of the dome tiles, more than half of the drum tiles had fallen. Later, as the dome damage developed, rainwater penetrated the building. Therefore, in 1927-1928, it was decided to restore the dome. Thus, they installed scaffolding around the dome. However, despite the scaffolding, the dome was not restored until 1935 ([Mehran, 1975, 7-9](#)) ([Table 4, Picture A](#)). Ultimately, in the middle of 1935, Gholamhossein Senemar, Ghafar Kashitarash, and Maarefi started restoration of the dome by placing the lune mold of the dome on the ground ([Mehran, 1975, 7-9](#)). The lune mold was built under the dome at that time ([Table 4, Picture B](#)). The restoration of the eight lunes of the dome was done by Kashitarash and Maarefi. Further, by the end of 1936, eight remaining lunes of the dome were restored and implemented by Nusratullah Mushkouti and Maarefi ([Fig. 3](#)). At that time, Farhang the painter implemented the design of dome tiles ([Mehran, 1975, 7-9](#)). Ali Asghar Hekmat, the Minister of Education at the time, also financed the restoration of the dome. During this restoration, to reduce the weight of the dome, almost 40 cm of decayed lime mortar was removed from the dome. In the

reconstruction of the dome, they implemented it with cement mortar. In this implementation, the height of the dome was slightly reduced ([ibid.](#)). Many people used to gather in Naghsh-e Jahan Square after the revolution in 1358 to perform various ceremonies. At this time, helicopters were flying very close to the dome for filming. This caused a lot of vibrations in the dome. Consequently, a lot of damage was done to the dome, and the layer of tiles was separated from the dome ([Fereshte Nejad, 2021](#)). Therefore, the Deputy of Cultural Heritage of Isfahan (Fereshte Nejad) wrote a letter to the Cultural Heritage of Iran and requested to prevent the helicopter from flying around the Sheikh Lotfollah dome ([ibid.](#)). Mohammad Mosadegh started the second period of restoration of the dome in 1984 ([Mosadegh, 2021](#)). During the restoration of the dome, some cracks were repaired locally. In this restoration, the popping part of the dome was locally restored. At this stage, the tiles were prepared from Mousavizadeh studio ([Rasaam, 2021](#)). With the renovations carried out in the first period and the reduction of the rise of the dome, the two-layered part of the dome became less distant. Today, the double shell of the dome is located only 60 cm close to the top of the dome. The distance between the two shells in this section is 7 cm ([Rasaam, 2021](#)) ([Table 4, Pictures C, D, E, F](#)).



[Fig. 3. The restored lunes of the dome over time. Source: Authors.](#)

The third period of restoration of the Sheikh Lotfollah dome started in 2015 in two stages. The first phase was carried out over 2 years. The second stage has been going on since 2019. The restorations include four cracks in the dome and parts of its Drum. This period of restoration of the dome was carried out under the supervision of the late Rahmatullah Rezayat ([Rezayat, 2021](#)) ([Table 4, Pictures G & H](#)).

- Fundamental changes in other views

In the years 1934 to 1938, the pool and toilets behind the northern façade were removed due to serious damage to the building. The pool and toilets were

not in the original plan of the building. In this same section, buttresses were built by Senemar and Maarif to prevent thrust and increase in damage ([Cultural Heritage Organization of Esfahan state, 1931; Yearbook of Ministry Education, 1934-1935, 50](#)). Two pieces of perforated stone windows related to the tombs of the Shah Safi were installed in front of the entrance of the former toilet, on the wall of the building's corridor ([Sajadi Naeini, 2008, 110](#)). The application of the two windows is to create air circulation and dry possible humidity. changing the function of the basement from a

Table 4. Restoration of the dome of Sheikh Lotfollah over time. Source: Authors.

Date	Picture	Date	Picture
1934-35		1935	
1981		1981	
1984		1984	
2018		2018	
	<p>A. Photo: Unknown. source: ISMEO.</p>		<p>B. Photo: Unknown. source: Cultural Heritage Documentation Center.</p>
	<p>C. Photo: Unknown. source: Cultural Heritage Documentation Center.</p>		<p>D. Photo: Unknown. source: Cultural Heritage Documentation Center.</p>
	<p>E. Photo: Alireza Jafari Zand personal archive.</p>		<p>F. Photo: Unknown. source: Cultural Heritage Documentation Center</p>
	<p>G. Photo: Authors' Archive.</p>		<p>H. Photo: Authors' Archive.</p>

large drainage channel that did the air circulation to a prayer hall caused humidity problems in the building. Therefore, in 1985, a drainage channel was built in the northeastern part of the building ([Table 5](#)).

- Changes in the interior form

In this section, the structural changes in the interior

parts of the building are analyzed separately on each floor.

Changes in the basement

The construction technique of the basement has special engineering. Unfortunately, due to

Table 5. Changes in the other façade of Sheikh Lotfollah. Source of images of Cultural Heritage Documentation Center. Source: Authors.

Description	Past	Present
Northern façade		
North facing rooms		
South-facing rooms and collapsed roof of Naghshkhane		
Eastern Façade		
North-eastern façade		

a lack of recognition of the original function of the building and wrong restorations, its function has completely changed (*ibid.*). This change in function has now caused serious damage to the building. With the analysis, it was revealed that - contrary to popular opinion - the use of this part was not a winter prayer hall (Fereshteh Nejad, 2009, 366). Field analysis by the authors revealed the use of this section. This section has been used as a strong and large drainage system to remove moisture from the building. Evidence of this function is the existence of numerous air vents with an upward slope on three sides of the building. The existence of these valves caused airflow inside this section. The connection between the basement and the prayer hall under the dome is done by wooden windows (now they are metal) on this floor (Fig. 4). The presence of these windows caused airflow to the prayer hall under the dome and provided some lighting for the basement as well. In the 60s and 70s, the basement of the Sheikh Lotfollah building was used as an iron warehouse (Fereshteh Nejad, 2021).

In the past, the basement had no tiles on the plinth and floor. The facade tiles which were

stored in the basement were executed by Maarefi on the plinths of the basement between 1933-1937 (Cultural Heritage Organization of Esfahan state, 1931; Sajjadi Naeini, 2008, 110; Varjavand, 1977, 4). In 1979, an inappropriate plan for the basement was implemented, due to insufficient knowledge of the building. In this new plan, the function of the basement, which used to be a drainage channel (a large ventilation network), changed to a prayer hall (Fig. 5).

- Changes in the first floor

The main part of Sheikh Lotfollah - which many people have visited throughout history - was its first floor. During the Qajar and Safavid periods, most of the time non-Muslims were forbidden to enter religious places. Therefore, the interior of the building is not mentioned in many travelogues. In the documents related to the post-Qajar period, tourists and historians have described the splendor inside the building (Hawkes, 1989, 52; Godar, 1992, 287; Wilber, 2011, 92; Byron, 1950, 176). The presence of visitors caused consistent preservation on this floor so it has better originality and physical condition than other floors (Fig. 6). On the other hand, due to a lack of access to other floors, they

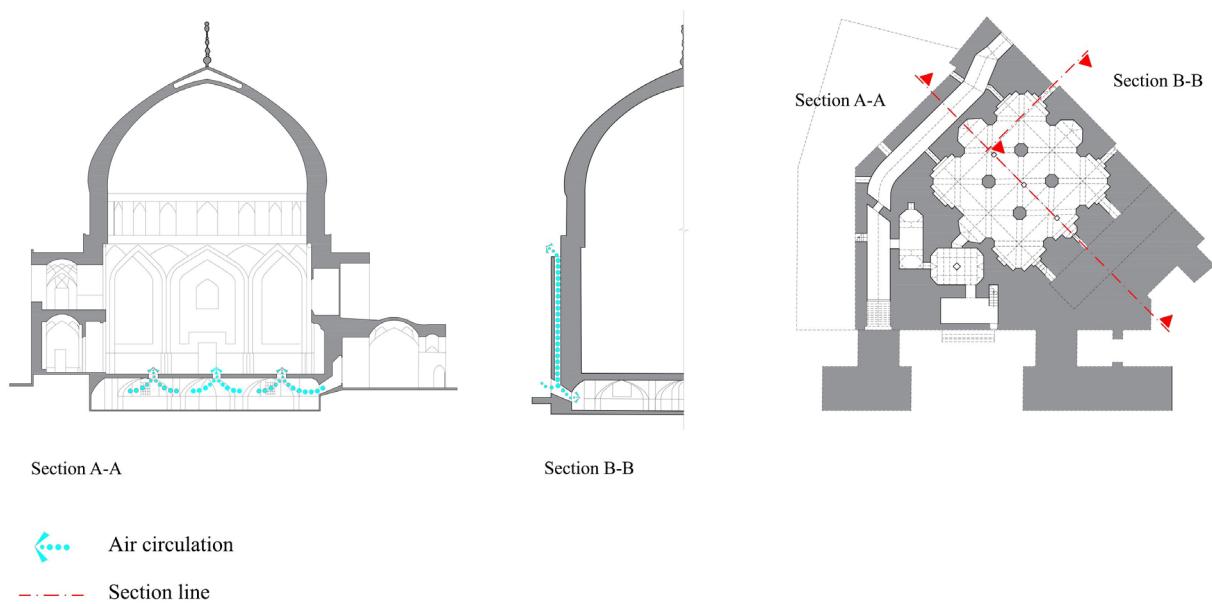


Fig. 4. Right, basement plan; In the middle, section A-A and left, section B-B of the function of the drainage channel in the basement. Source: Authors.

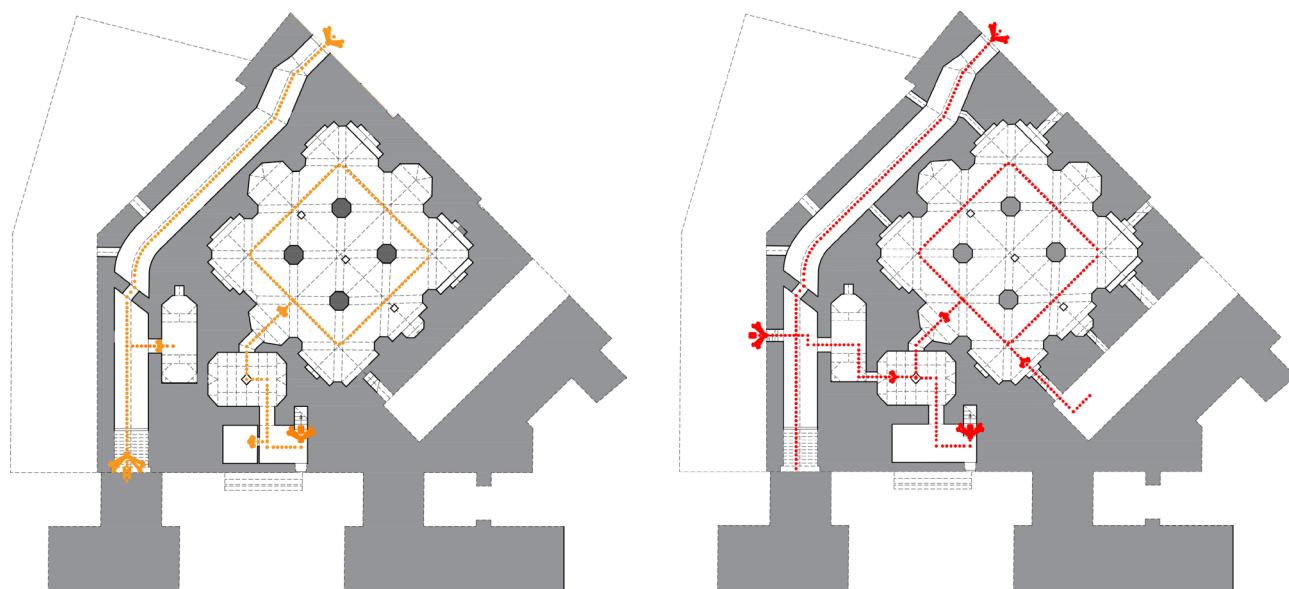


Fig. 5. Changes in the circulation of the basement. Left: Past circulation; Right: Present circulation. Source: Authors.

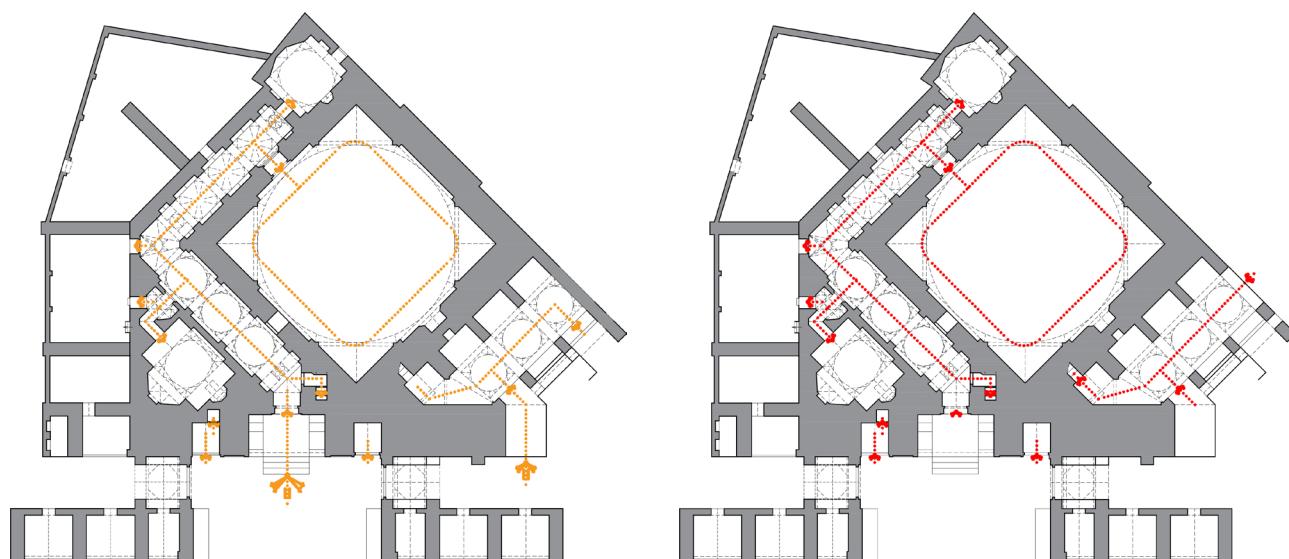


Fig. 6. Changes in the circulation of the first floor. Left: Past circulation. Right: Present circulation. Source: Authors.

are in unsuitable conditions in both physical and functional conditions.

The tiling of the first-floor corridor was restored in 1936 ([Sajadi Naeini, 2008, 110](#)). Also, the floor of the prayer hall and the corridor, which were damaged, were restored and paved by Maarefi in the same year ([Cultural Heritage Organization of Esfahan state, 1931](#)). Later, in 1960, the pavement of the corridor, which was all removed, was redone with Karvandi stone (a local stone).

At that time, Ali Najjar performed the operation of paving the floor ([Sajadi Naeini, 2008, 110](#)).

- Changes in the second floor

There have been various changes on the second floor of the Sheikh Lotfollah monument. So that a completely new circulation has emerged in the building. Many of the original openings of this floor have been blocked and new openings have been created instead. Also, the interior circulation of this floor with the north-facing rooms has been

completely closed. By conducting field studies on this floor, the blocked openings were identified and placed on the map. Therefore, the evolution in the circulation and building plan was drawn and documented (Fig. 7). Unlike the first floor, the second floor is not entirely tiled. However, recently, some parts of this floor have been tiled, inspired by the patterns of the original tiles of the first floor. Another change that can be seen in the historical photos in 1924 is the destruction of the vault in the northeast room of the building. During this destruction, the perforated brick in the window of the second floor collapsed. Today, there are pieces of evidence remaining from the old perforated brick.

- Roof changes

The flooring of the Sheikh Lotfollah monument roof was completely renewed in 1956. There are two rooms on the roof of Sheikh Lotfollah with direct access from the roof. Today, the entrance to one of these rooms is blocked. Also, in recent years, a staircase has been built to connect the roof to the northern rooms on the second floor. Although, there was no such staircase in the

original plan of the building and the access to these rooms was from inside the second floor which is blocked today (Fig. 8).

• Functional changes

The next part of the general developments of Sheikh Lutfullah is related to the changes in the function of this building. In this part of the research, these changes are discussed based on historical documents.

- Changes in the use of microspecies and vertical and horizontal circulation of the building

In the past, Sheikh Lotfollah's plan had some sections that have been separated from it which caused some changes in the function of these sections. Aligned with the northern corridor of the first and second floors of the building, there is also a corridor in the basement. There were air openings on both sides of the basement corridor. The vents on the south side of the corridor were connected to the basement. On the other hand, the vents on the north side lead to the outside of the building. Today, all these vents are blocked. Also, the opening that connected this corridor to the basement in the past has been closed and

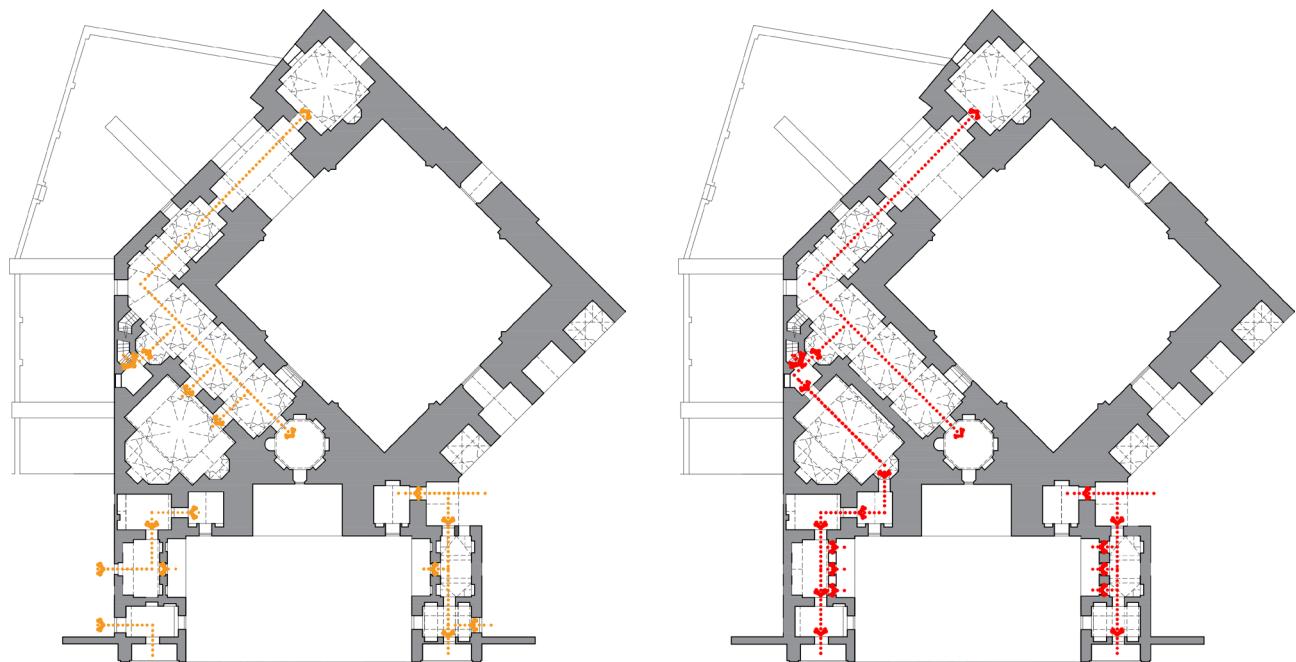


Fig. 7. Changes in the circulation of the second floor. Left: Past circulation. Right: Present circulation. Source: Authors.

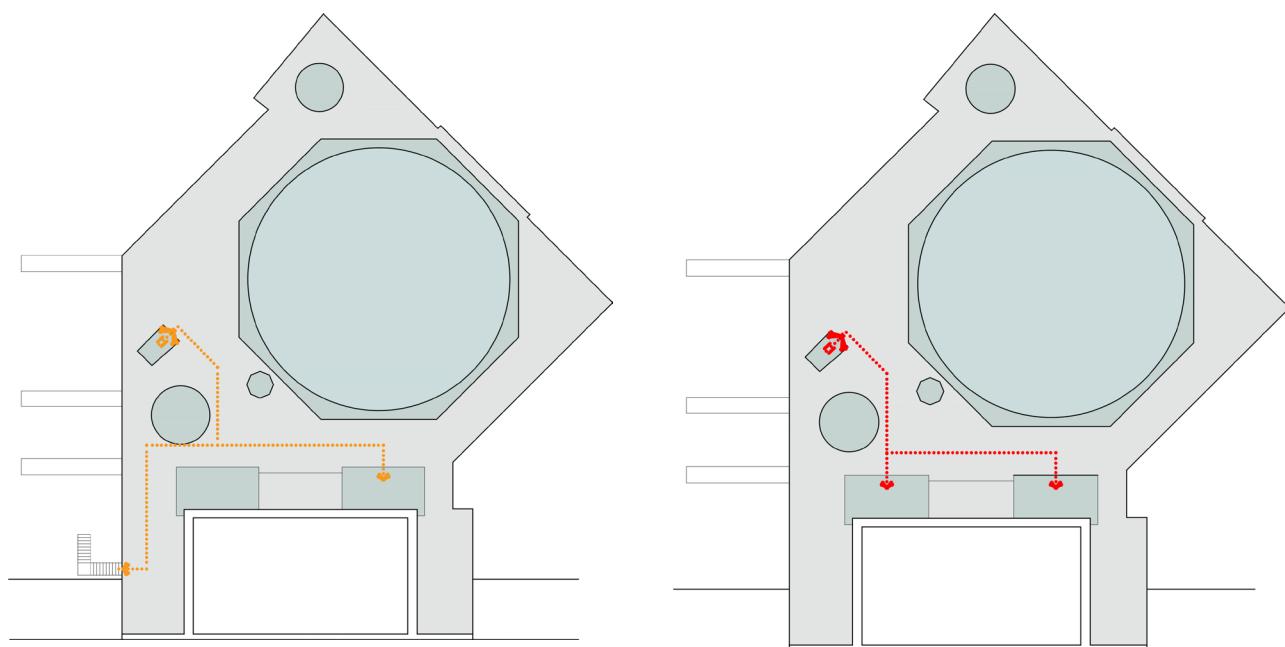


Fig. 8. Changes in the circulation of the rooftop. Left: Past circulation. Right: Present circulation. Source: Authors.

the connection between the corridor and the basement has been completely cut off. Moreover, there used to be a staircase between the first and second buttress to connect the basement corridor to the outside of the building which is also now closed (Fig. 9). As communication routes were blocked, the connection of this part with the main building was cut off. Now the function of this section is a coffee shop. And a new door opening from the Bazar is created for entering this coffee shop.

Another separated part from the original plan of the Sheikh Lotfollah monument is Naghshkhane (art gallery). Naghshkhane is located in the south of the building. The floor of the Naghshkhane is level with the ground surrounding the building. In the past, there was a staircase from the basement to Naghshkhane which is now closed. In addition to this staircase, there were two other air vents between the basement of the building and Naghshkhane, which are also blocked (Fig. 9). In this way, there is no communication path between Naghshkhane and the basement. The reconstruction of Naghshkhane was done in 1962 due to the destruction of its arches. In the visual

documents of cultural heritage, Naghshkhane is mentioned as the southern buttress. Today, the function of Naghshkhane is an art exhibition. In the recent decade, a metal staircase was built in the southern part and outside the Naghshkhane. From this new staircase, it is possible to access the south-facing rooms on the second floor of Sheikh Lotfollah.

Other researchers have mainly analyzed the Sheikh Lotfollah floors separately while this article retrieves the spatial circulation of its plan (Figs. 5-9). This includes the openings that have been added to the building over time, as well as the openings that have been blocked and changed to the original horizontal circulation. On the other hand, the previous vertical circulation of the building is documented for the first time in this article.

By analyzing the previous circulation of the building, the relationship between the Sheikh Lotfollah monument and its neighboring buildings (Naghshkhane and coffee shop), which used to be part of the current building, was revealed. It should be mentioned that the building has an important feature that has not been mentioned

so far, and that is the different levels of each floor (Fig. 9). Also, a comparative analysis of descriptive and pictorial documents was conducted along with interviews with restorers and craftsmen and field surveys therefore ultimately all analyzes were presented based on the comparison of all documents with each other.

Conclusion

In general, the most significant changes in the Sheikh Lotfollah monument can be seen in two structural and functional parts. The first part includes changes in the circulation of the building. This change has occurred in vertical and horizontal circulation. The change in horizontal circulation is created by blocking

many openings and creating new ones. This has caused some parts of the building to be separated from it. The change in vertical circulation has also been created by blocking the two staircases leading to the basement. There have also been changes in the function of some parts of the building. The basement is one of the main sections where the function has changed. The basement has changed from the drainage channel to the prayer hall. To make this change happens, the air vents around it were blocked. The basement corridor has also been changed to a coffee shop by blocking its access to the basement. Also, by blocking the staircase of Naghshkhane, its access to the basement of Sheikh Lotfollah has been cut off. Today's use of this section is an art exhibition.

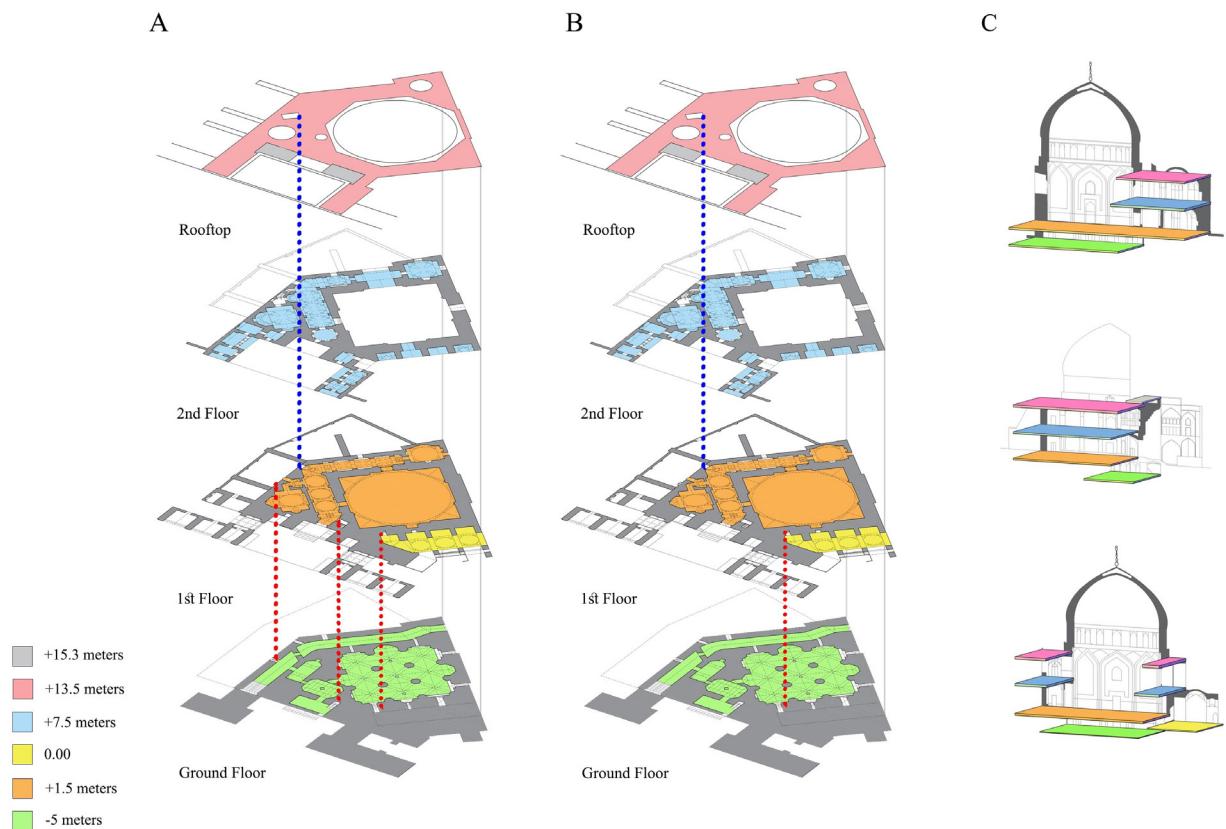


Fig. 9. Changes in the vertical circulations of the building. A: vertical circulation of the past; B: Vertical circulation of the building now; C: Various height levels in the sections of the building. The blocked stairs can be seen by comparison of A and B. Source: Authors.

Another part of the changes is the decoration of the building. The biggest change in this part is related to the decoration of the counter.

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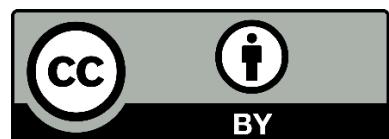
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HOW TO CITE THIS ARTICLE

Abdellahi, N. & Valibeig, N. (2023). Retrieving and Documenting the Changes in the Form and Function of Sheikh Lotfollah Monument Based Upon Descriptive and Visual Documents and Oral History Studies. *Bagh-e Nazar*, 20(118), 53-68.

DOI: 10.22034/BAGH.2022.318170.5057

URL: http://www.bagh-sj.com/article_160091.html?lang=en

