



Study of Transformation of Jharokha Window form in Lahore

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ABSTRACT

The traditional architecture of any area embodies its true character, deeply rooted in the history, geography, and culture of that region. It does not only satisfy the functional requirements but also stems from local construction techniques and materials available. Traditional architecture faces the problem of its coexistence with modern technological development everywhere. The built heritage which stands in Lahore over centuries is encroached by modern and efficient techniques. The present paper specifically focuses on the development of Jharokha windows (Bay windows) in Lahore. The Jharokha window that was used in the Indian sub-continent during and after the Mughal period was the solution to the climatic conditions of the region. This research will investigate the old Jharokha window form and how with technology and advancement it starts losing its original form. The change in Jharokha form will be studied by the existing examples from different time periods available in the city of Lahore.



Introduction

The traditional architecture of any area embodies its true character which is deeply rooted in the history, geography, and culture of that region. It stands out for its peculiar style, scale, and detailed ornamentation. The traditional architecture not only satisfied the functional requirements but also pleased the aesthetics and stems from local construction techniques and materials available. Traditional architecture is still relevant and stands out because it has always addressed sustainability.

Traditional architecture interacts with the environment and combines the effects of social, cultural, geographical, regional, and climatic characteristics into a specific architectural style. We have departed from our traditional architecture as a result of growing globalization and scientific and technological progress. Global standardization of the built environment has led to a lack of cultural and regional identity. (Mumtaz, 1990).

A Jharokha is an oriel or bay window projecting from an upper storey of a building used in medieval Indian architecture, typically Mughal architecture and Rajasthani architecture. The form of the Jharokha window varies in different regions. Windows are used primarily for light and ventilation but in old times it was constructed in a way that they serve many other purposes as well. The Jharokha window used in the Indian sub-continent during and after the Mughal period still holds charms and looks more elegant than contemporary windows. It is interesting to examine whether the charm of this traditional window is merely for its appearance and ornamentation or it also contains some utilitarian value. The traditional features and elements used at that time were the solution to the climatic conditions of the region. The technological development, availability of

new construction materials, and speedy construction techniques brought dynamic changes in architectural design, which also affected Jharokha window design.

Lahore is a historical city with rich architecture. To study elements of traditional architecture, the city still holds a lot of interesting intricate details in its traditional old structures. The present-day architecture of Lahore is the amalgamation of both modern and traditional architecture. Jharokhas are found in traditional houses of the walled city of Lahore though most of them are in a dilapidated state. The use of the Jharokha window continued after the Mughal era during the Sikh and Colonial periods. The Jharokha window with all its decorative elements and features seems to have existed in Lahore in its true authentic form from the 17th to early 20th century. The Jharokhas, balconies, wooden carvings, and other traditional decorative features are still found though mostly in a ruined state in all types of houses in walled city irrespective of their scale. Jain and Jain (2000) observe that the whole external facade of the Jharokhas is articulated and decorated using finely carved jālis. The size is beautifully related to the human scale. This can be well appreciated by the fact that the size of a Jharokha does not change much as the size of a house changes from a small one to a large haveli. Lahore is a good example to study the transformation of traditional features like Jharokha, one can find Jharokhas of different eras mostly in narrow winding streets of the old walled city. This study investigates the Jharokha window and changes in its form with time in the city of Lahore.

Methodology

The walled city of Lahore is the byproduct of many centuries and various old structures still exist. For this study historical buildings and houses with detailed ornamented Jharokhas have been selected to examine the transformation in the form of Jharokha windows. The data collection process in this study was carried out through direct observation, a pictorial survey, and literature studies related to the Jharokha window. The skilled craftsmen were also interviewed to understand the techniques involved in designing jharokhas. The comparative analysis of key design features of available and accessible jharokhas of different time periods (from Mughal to date) was done in detail to understand the transformation in its form over the years.

Literature Review

Jharokha Window

Jharokha, a decorative window style was commonly used in Indian subcontinent. Jharokhas are defined differently in various architectural dictionaries and encyclopedias. Jharokha is used as an architectural window frame for the appearance of the emperor in their palaces, but in houses, its use is as a cantilevered balcony. Jharokha typically takes the form of an oriel window that hangs above and is supported by brackets or corbelling. The Jharokha window starts flanking outside of residential structures mostly in the Sikh period in the Indian subcontinent. According to Nath (1986), a jharokha is a jalied stone window that protrudes from a building's wall face and is located at an upper floor, overlooking a street, market, court, or any other open area. The cupola or pyramidal roof is supported by two or more brackets or corbelling, has two pillars, two pilasters, or balustrades, and is officially closed by jalis but is typically partially open so that inmates can peek out to observe passing processions.

Jharokha is a much-used architectural form of the window that varies in detail in different districts. Sometimes they are isolated, somewhere stacked one above the other, and sometimes into a continuous overhanging storey. Often they form a focus for elaborate decoration (Tillotson, 1998).

Among the different types, there are many similarities and differences, depending on the modification in the Jharokha features, decoration and materials. However, a typical section of the Jharokha used in the subcontinent is shown in figure 1.

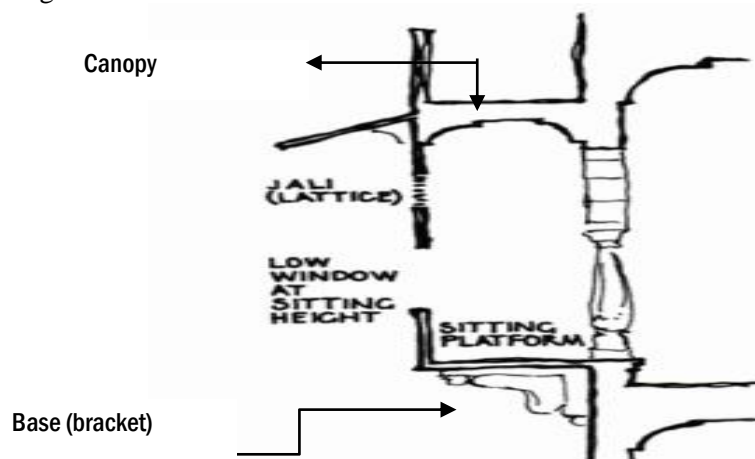


Figure 1. A typical section through the Jharokha window (Tillotson 1998)

Some parts are standard in all Jharokha while others elements are additional and optional which makes one Jharokha different from another. The Jharokha basically can be divided into three basic parts i.e.

- The base or support under the platform in the form of bracket or corbelling
- The platform and the elements it held
- The canopy or pyramidal roof at the top (Zulfiqar,2018)

The Jharokhas with all their features started appearing in the royal residential architecture of Lahore. Later it was used in large havelis and after that, it came to small-scale houses. The basic parts of Jharokha have also been shown in the figure 1.

Techniques and Craftsmanship Involved

There are several craftsman ships required in making a decorative Jharokha in old times. The Jharokha of those times seems to be an expression of art. It involves a number of certain art techniques and craftsmanship which is almost obsolete nowadays.

Brick Corbelling

The simplest method of using masonry to span an opening is corbelling. This is the systematic application of the cantilever principle by projecting subsequent courses until they bridge an opening. The brick is the local material and brick corbelling was employed very aesthetically to achieve maximum cantilever.

Lattice Woodwork and Woodcarving

Carved wood is used to decorate the house indoors and Jharokhas in traditional architecture. The latticework is used for the sake of ventilation along with privacy. Wood carving craftsmanship was at the pinnacle in the 18th and 19th centuries when old Jharokha were built. The original shisham and deeyar wood were used in windows that still hold their grace and are recognizable in old dilapidated Jharokhas.

Stucco Tracery

The ornamentation is done with a fine plaster or stucco which seems to be embossed on the surface known as stucco tracery. The Stucco Tracery started in the Mughal era as they use this to decorate their buildings. Later the corbelled lotus base of Jharokhas was also embellished with stucco tracery.

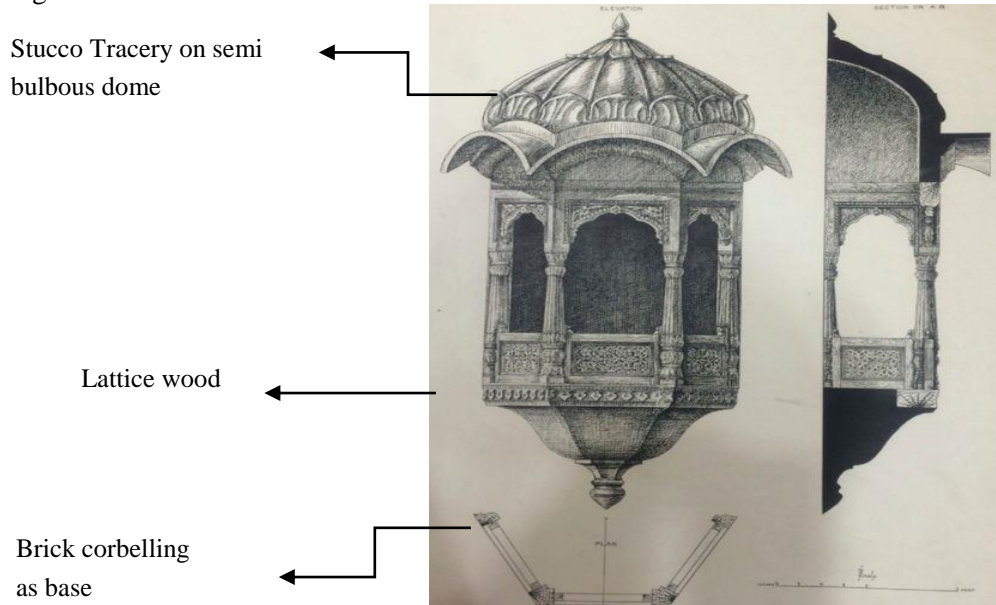


Figure 2. Illustration of Jharokha window (Source: Percy Brown 1990-1910)

Utilitarian Value of Jharokha Windows

Jharokha is one of those traditional features in Indo-Islamic architecture which has remarkable utilitarian value along with its aesthetic value in traditional old structures. The earlier constructions of the houses were kept as in they used to provide natural heating & cooling with ample cross-ventilation. The jaalis and Jharokhas are not only for privacy and decorative purpose but also for ventilation. The Jharokhas act as a climatic moderator, allowing ventilation while blocking direct sunlight from entering the interior.

The main reason to use Jharokha in old times seems to be climatic as it protects the structure from direct sunlight and allows air to cool off before entering the main space. This fenestration was used in hot and dry climate zone. The surface exposed to the sun is minimized by repetitively using this element. The building's outer façade is layered with protruding overhangs, jaalis, and tiny ventilation

apertures. Daytime heating of the outer layer radiates heat into the surrounding area. The direct sunlight entering space causes the building to heat up if there are no layers to protect it. Nonetheless, positioning supplementary areas close to the outer layer serves as a transitional area, maintaining the relative coolness inside the primary areas. (Loughman 2008).

The Jharokha not only protects the building envelope from direct sunlight but also provides shade to the area underneath. It is because of its form that no direct sunlight can enter the building.

Batool (2014), mentioned Jharokha as a passive technique used to maintain thermal comfort in traditional buildings in Lahore. She elaborated in detail that thermal comfort was maintained in traditional buildings through architectural elements such as jalis (screens), verandas, Jharokhas (balconies), fountains, plants, chajjas (overhangs), courtyards, and basements. The windows were unglazed, but were covered with jalis (screens) and opened into Jharokhas (balconies), allowing ventilation while preventing direct glare. Only light that has been filtered can enter the building envelope.

The other reason for using this special type of window is the social factor. Social norms and culture also play a significant role in the development of certain architectural features. The Jharokha window can provide privacy to its resident. The people sitting inside are protected from the gaze of passers-by in the street and can look over to street life without being seen. In old times it is unthinkable for women to go outside unveiled and participated in street life. But they may observe the street life from the upper floor through Jharokha without being seen. The fact that it is darker inside than outside also helps to achieve this aim. Moreover, women socialize through these windows with the women in the neighboring area as well.

Moreover, the Jharokha window was used to break the monotony of the plain façade of the houses. Jharokhas also played a significant role in adding visual charm to old traditional buildings. The number of Jharokhas and their detailed ornamentation also represent the status of the people.

Stylistic Analysis

The Jharokhas from different periods were selected to study the gradual change in their form. The use of Jharokha has been started in the residences of a common man in the Sikh period. There is no residential structure with Jharokha from the Mughal period in Lahore. Only monumental-scale buildings of the Mughal Era have been restored to date. The examples of Jharokhas from the Mughal era in Lahore are only found at Diwan-i-am and Mosque Wazir Khan.

This traditional Jharokha window gained popularity because of its aesthetics as well as utilitarian value. Even after the Sikh period, it was continually used in the colonial period. To study the transformation of Jharokhas in Lahore, they have been divided into various periods. Moreover, the colonial period is further divided into Colonial and late Colonial to examine gradual change in the form.

- Mughal period (1524-1752)
- Sikh Period (1800-1850)
- Colonial Period (1850-1900)
- Late Colonial Period (1900-1947)
- Post-Independence to Date

Mughal period (1524-1752)

The Jharokha windows were very common in Mughal and Islamic architecture as places to address people below and also as a means for women in purdah to view the outside world without being seen (Peterson 2009).

In monumental structures, Jharokhas are not used for climatic reasons, but as an extension to the emperor's residence or office space for the ease of the emperor to address his subject. There is a Jharokha at Diwan-i-Aam a place of prominence within the Lahore fort (Shahi Qila). The Jharokha at Diwan-i-Aam is constructed during Akbar reign (1556-1605A.D).

In the Mughal- era Jharokha was used for different purposes at the emperor's residence and is used for the Darshan of the emperor. The Diwan-i-Aam is connected to the emperor's residence space through an opening. The projected platform is supported by four stone brackets and also has four pillars with a rectangular canopy dome as shown in figure-3. The Jharokha is placed inside a pointed arch structure which seems to frame the Jharokha.

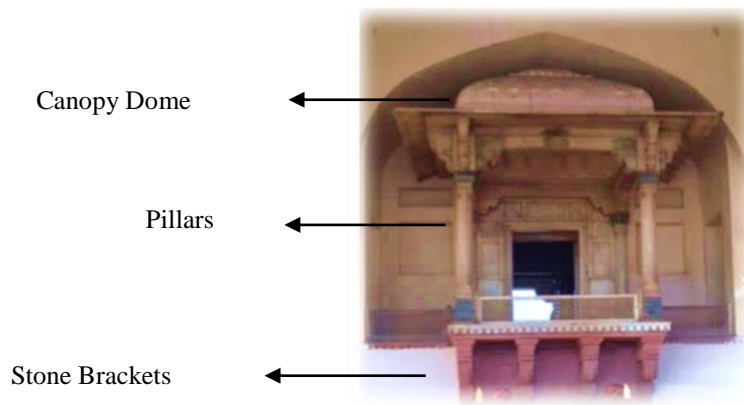


Figure 3. Jharokha Darshan at Diwan-i-Aam (Source: Authors)

The Wazir Khan Mosque in the walled city of Lahore's Dehli gate is renowned for its elaborate tile work. It was constructed during a seven-year period beginning in 1634 or 1635 AD under the rule of Mughal Emperor Shah Jehan. (Madame,2017).



Figure 4. Jharokhas at Mosque Wazir Khan (Source: Authors)

The rectangular Jharokhas at the entrance is supported by the four concrete brackets and have a rectangular projected canopy roof as shown in figure 4. The Jharokhas are also decorated with glazed tile similar to the entire mosque decoration. The canopy domes at Jharokhas have two finials each. Some scholars also relate the finials with the regional Indian architecture which is opted by the Mughals in their buildings at the domes. The Jharokhas in Wazir Khan Mosque are in the form of an open projected balcony with latticework in stone having geometric patterns.

Sikh Period (1800-1850)

Only a few structures are now still standing in the walled city which belongs to the Sikh period. Peck (2014) describes Jharokha as the most distinct feature of the Sikh period building decorative with woodwork and ornately shaped roof.

A set of Jharokhas is studied at the famous Sikh Haveli Naunihal Singh at Mori gate. Haveli Naunihal Singh was erected under the patronage of Maharaja Ranjit Singh as a private residence for his grandson, Naunihal Singh. The exact date of construction still remained a question among historians. However, most of them considered it to be constructed between 1830 to 1840. Haveli Naunihal Singh is the only preserved Haveli of the Sikh period in Lahore.

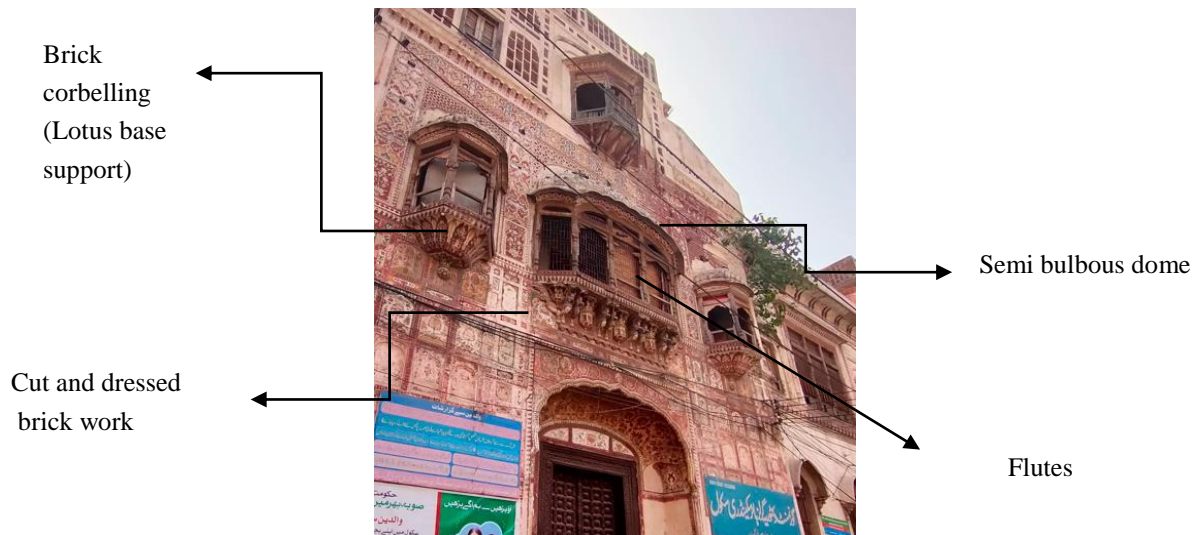


Figure 5. Naunahal singh Haveli Jharokhas, Mori Gate (Source: Authors)

This grand four storey haveli is heavily decorated, rectangular in shape, and has its main entrance from the west. The outer facade is richly ornamented with colorful vivid fenestrations which include traditional Jharokhas that protrude elegantly above the main gate of haveli and are supported by an elegant mixture of corbels (Bansal,2015).

The haveli has four Jharokhas at the front side. The first floor has three jharokhas with the configuration of the largest one at the center and smaller ones on sides and there is one Jharokha at second floor. The ritual of appearing at Jharokha was also opted by Sikh rulers during their reign. The largest Jharokha window is used as Jharokha-i-darshan.

The configuration of three Jharokhas used in haveli got popular and used in many structures. The key features of the Jharokha at the front are the cut and dressed brickwork support to central deformed semi-hexagonal Jharokha and the semi-bulbous depressed dome at the top with finial as shown in figure 5. The flutes at the end of the domes are also characteristic features. The woodwork detail is diminishing but traces of intricate lattice woodwork were there. The cusped arch of the Mughal has been used in wooden carved panes of the Jharokha window. The Jharokhas base at the front side is elaborated with frescoes with which the whole structure is decorated. The Jharokhas are supported with various techniques either by brick corbelling or cut and dressed brickwork.

Early Colonial Period (1850-1900)

In the earlier colonial period, people built their buildings in the same tradition that was prevalent in past times and use the same traditional features. In the Colonial era, people started to build on the outskirts of the walled city as well. The Jharokha of Lal Haveli at the lohari gate area is the complete replication of all the elements and features of the Jharokha of the Sikh period in colonial times.

The traditional elements and wood carving details of Jharokhas are the same as those of the Sikh period (1830-1850). Lal haveli has three ornamented Jharokhas with a larger one at the center and the smaller ones at each side. The carving and plaster molding are very intricate and crafty. The Stucco Tracery at the base showing the transfer of craftsmanship from one period to another as shown in figure 6. There are fewer buildings in the colonial period, which use the same traditional language of the past in new material.



Figure 6. Jharokhas at Lal haveli, Lohari gate (Source: Authors)

Another example of the colonial period is the Bansi Mandir Haveli in the Anarkali area built in the late 19th century. The Jharokha at Bansi Mandir is a Jharokha with intricate woodwork as shown in figure 7. The semi-circular dome has flutes at the end but it starts missing the prominent bulging feature of the Sikh era here.

In the colonial period, the plaster moldings are there as well, however, the ornamentation details of the Mughal and Sikh eras started missing. The sophisticated wood carving and intricate latticework also started missing at the Jharokha though the cut and dressed brickwork was still prevalent at the base of the Jharokhas. Jharokhas were improvised with less ornamentation and simple woodwork which took lesser time to build.



Figure 7. Jharokha at Bansi Mandir haveli, Anarkali (Source: Authors)

Late Colonial Period (1900-1940)

In the late colonial period with the availability of new materials and techniques, the form of Jharokhas underwent significant changes. The European features were also incorporated into buildings along with traditional elements. The Jharokha window continued to be used in the building because of its usefulness.

One of the purposes to use Jharokhas is to increase the floor area of the upper storeys and thus expand the room's size. From the inside, this extra space is liberating because it allows for many domestic activities such as eating, sitting, and even sleeping. (Al-Murahhem and Jani, 2012).

The Jharokha at the entrance archway to Katras, Taxali gate is an example of drastic experimentation in Jharokha form with the use of glass and simple woodwork shown in figure 8 (a).



Figure 8 (a) Jharokha at Katra's entrance, Taxali gate
Source (Authors)

(b) Jharokha at a small house, Mochi gate

In later periods Jharokha seems to lose the original purpose for which they were built and started being used merely to highlight the entrances. The Jharokhas base and dome are neither decorated heavily anymore and nor the wood is carved like in the Sikh period. The painted wood shutter replaced the intricate and sophisticated woodwork of the past. Figure 8 (b) shows the green-colored Jharokha at a house in Mochi Gate having painted wood as panes rather than any detailed wood carvings. The trend of painting Jharokhas in vibrant colors seemed to be prevalent at that time. The craftsmanship and skill involved in woodcarving and other details started vanishing.

The Amrit Dhara Pharmacy building is one of those buildings of the early 20th century, which is a blend of both traditional and European elements. There is a large Jharokha in the center of the building above the entrance along with European-style windows on both sides as shown in figure 9. The entrance and the Jharokha are framed in a cusped arch. The Jharokha is a semi-decagonal shape with a half-ribbed dome as the

hood and lotus base. The Jharokha has five wooden panes with wooden arches within it. The use of glass can be seen at the top pane of the Jharokha which is the new material of that time. The Jharokha at Amrit Dhara pharmacy building can be considered one of the beautiful colonial period Jharokha as it marked its own identity along with some traditional features.



Figure 9. Jharokhaat Amrit Dhara pharmacy, Railway Road Gawalmandi (Source: Authors)

Post-Independence to Date

The Jharokha window was used as a passive technique to control the indoor environment in the 19th and 20th centuries in residential structures of Lahore. The advancement of technology resulted in controlling the indoor environment by mechanical means due to which this window form is overlooked. Now, this element is a rare sight even in the walled city of Lahore's architecture. Many traditional old buildings with Jharokhas are worn down and turn into ruins over time. The present-day use of Jharokha is more of a frame than a window because of the change in its use. While studying the old Jharokhas in the walled city of Lahore, some new Jharokhas were also identified that represent just a gimmick of their older version.

Another reason for poor quality houses is that at the time of partition, huge migration took place resulting in extreme demand for shelter. The displacement and social chaos also started appearing in architecture. The art and quality of construction started missing in newly constructed structures built in the old walled city area. When the tenants could not relate themselves to the old features they started discarding or improvising them. The technological advancement and new building techniques opted in building design for speedy construction also contributed to omitting the ornamental window form. People start depending on mechanical means for thermal comfort rather than natural means. People discarded this window form without understanding the function served by this in the past. The Jharokhas built recently in the same vicinity are built without understanding the utility and aesthetics. In Jharokha at Bhati gate shown in figure 10, the brick corbelling deployed in pyramidal form rather than the semi-circular form which embeds well with a linear structure. Whereas the Jharokhas shown in figure 11 are merely used as a frame to decorate the building and serve no other purpose. The Jharokha not only lost its original form, and aesthetic appeal but its utility as well. As According to Hassan Fathy (1995), any traditional architectural solution must be understood implicitly in terms of its scientific, social, and constructional aspects before it can be applied to a contemporary situation.



Figure 10. Jharokhaat Naqsh art gallery ,Bhati gate (Source: Authors)



Figure 11 (left) Jharokhas at new food street, Fort road (right) Jharoka at the building, Urdu Bazar
(Source: Authors)

Conclusion

The Jharokha remains a mandatory feature of traditional houses of Lahore for a very long time even after the Sikh era. People continued to incorporate this decorative element in their structures because of their utility and aesthetic appeal. The Jharokha is the traditional technique to protect structures from harsh weather and it was also used to decorate the plain facade of the buildings. The change though comes gradually but a Jharokha window seems to start missing its intricate detail and craftsmanship along with the utility over the time. Initially, the tradition seems to continue in the colonial period but later with the availability of new materials and technology. This wave of change resulted in complete disappearance of the Jharokha window in contemporary architecture.

The focus was paid to the aesthetics as well as utility in old times. The master masons and clients developed a bond in achieving and desiring a structure that is useful as well as visually pleasing. Jharokha is undoubtedly the most significant feature in the traditional residential architecture of Lahore. Though with advancement, economic issues and the urge to build quickly people forgo Jharokha window and started considering it an additional element. In old times art is something that has both utility value as well as aesthetic value. The Jharokha of the past time still appears so captivating and beautiful because it was designed not for mere aesthetics but also to cater to social, cultural, and climatic needs.

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