

Nawabi Kothies and Shekhawati Havelis: Comparative Study of Deserted Architectural Marvels

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Abstract—Residential dwellings in Awadh (old Lucknow and surrounding districts) province were known as “Kothies” and the dwellings in Shekhawati (Sikar, Jhunjhunu, Churu districts in Rajasthan state) province were as “Havelis”. These dwellings are one of a kind in the India and are the marvels in the architecture of India. Though neglected for the years these dwellings still have the essence of the glorious past it had experienced.

Although developed in same time period these dwellings have different architectural styles and different architectural techniques making it sustainable buildings. Buildings in the past contained cultural as well as social values but modern buildings have developed a sense of functionalist aesthetics which neglects the regional cultures. These dwellings were built by making various uses of the vernacular techniques as well as innovative techniques of that time without losing its traditional and cultural characteristics.

1. INTRODUCTION

India is diverse in terms of culture, religion, and climate. Architectural differences in these places were very significant in the past. The past dwellings contained the social, cultural values and techniques to respond to the local climate.

The provinces of Shekhawati and Awadh were the major political and cultural centers in the 19th century. Both provinces were ruled by the rulers who were trying to establish their strong presence in the area. The major part of that effort resulted in the building of magnificent architectural structures. Shekhawati has its Forts, Havelis, and religious buildings and Awadh has religious buildings, Kothies, and public buildings.

The region of Shekhawati is known as the open air art gallery [1] and Awadh (Lucknow) as the ‘Constantia of the East’, ‘City of Vice and Roses’ as a British writer described, or ‘the last memento of Mughal culture’ as Maulana Sharar called it in the 1920s [2]. We are going to talk about the residential dwellings of both provinces which are by no means less evolutionary from each other regardless of time and technology available for construction.

In modern day context the main objective of the buildings has been turned to saving the energy for sustainability. These

dwellings are the prime examples of architecture and building techniques of the magnificent history.

Char Chowk Ki Haveli located in Laxmangarh, Sikar district in Shekhawati and Chattar Manzil Kothi from Awadh province, present Lucknow in Uttar Pradesh state are studied in this paper. These dwellings have been built to make full use of the natural conditions and resources available in favor of the dwellers.

1.1 Objectives of the study

Architects in the twentieth century developed a functionalist aesthetic, which esteemed forms that expressed fitness for purpose. In vernacular buildings that have been constructed to meet a specific need, we may see evolved over decades, or even centuries, structures that have been modified and adjusted in form and detail until they satisfied the demands placed upon them [3]. Main aim of this paper is to compare the Haveli and Kothi by the identification of the key architectural features, spatial planning, and local identities.



Fig. 1: Map of India showing different states

1.2 Methodology for the study

It is a comparative study of two dwellings hence the first step of the study was the live case study of two dwellings Char Chow Ki Haveli in Laxmangarh and Chattar Manzil Kothi in Awadh (Lucknow). Secondary data is collected through various books and research papers.

To gain the knowledge of the history of these buildings literature available on the internet and the books available were studied. The major data collection has been done through following steps:

1. Live case study
2. Photographs
3. Verbal contact with local guides and historians
4. AutoCAD drawings(self-made)
5. Sketches

1.3 Historical Contexts:

Historical context in these provinces is important because it was the historical background that led to the development of the present architectural monument:

1.3.1 History of Awadh: The rulers of Awadh were known as “Nawabs” who were appointed by the Mughal sultans from Delhi. Before The Nawabs, the area of Awadh was famous for the Surayavansi dynasty, present Ayodhya which was ruled by Lord Rama. Initially it was under the rule of Mughal emperors. The Persian originated Nawabs were given the care of Awadh which included Faizabad, Ayodhya and Lucknow. Most influential rulers were:

- Burhan ul MulK Sa'adat Khan(1722 – 19 March 1739)
- Abul-Mansur Khan Safdar Jung(1737 – 5 October 1754)
- Shuja-ud-Daula(1754 – 26 January 1775)
- Nawab Asif-ud- Daula (26 January 1775 – 21 September 1797)
- Nasir-ud-din Haidar Shah Jahan(19 October 1827 – 7 July 1837)
- Wajid Ali Shah(13 February 1847 – 11 February 1856)
- Begum Hazrat Mahal(May 1857 – 1858) [2]

These Nawabs appointed British officials in their court for military support under the influence of British East India Company. One of the General Frenchman Major General Claude Martin played a huge role in evolution of the architecture that time, Kothi Farhat Baksh, La Martin's college are some of the leading examples of his designs.

1.3.2 History of Shekhawati: Rao Shekha Ji (1433-88) was the chieftain of Amarsar in Amber. He refused to pay tribute to the Kachhawaha rulers of Amber (Jaipur). Thus breaking

away, proclaiming sovereignty in 1471 AD. In the following years Shekhawati comprised of a disparate sequence of small fiefdoms locally known as thikanas, the notable of which were Sikar, Khetri Nawalgarh, Dundlod, Mandawa and Parasrampura [4].

As the Mughal Empire declined after the death of Aurangzeb in 1707, the descendants of Maha Rao Shekha Ji, who had already extended themselves to the east of the Aravallis, began to encroach the west and north through the Udaipurwati and Sikar gaps in the hills.

In 1730 Jhunjhunu was seized by Sardul Singh (ruled 1730-52).The following year he allied with Sheo Singh (ruled from 1721), the powerful ruler of Sikar and evicted the Nawab of Fatehpur, Sardar Khan. Rohella Khan and Sardar Khan were descendants of Kaim Khan and therefore called Kaimkhanis. With their defeat, important regions of territory thus got added to Shekhawati [5].

1.4 Climatic Context:

Climate of any region is the most influential aspect in the development of the historical dwellings and buildings. The climate of these two regions is as followed:

Climate of Awadh: Lucknow has an extreme tropical climate. It falls under composite climatic zone of India. Summers can be quite hot with temperatures rising up-to 40-45° C, while winters are cold, with temperatures dipping to 3-4° C. The average annual rainfall is 896.2 millimeters (35.28 in) from the south-west monsoon winds, received mostly during the monsoon season [6]. Major winds are the western prevailing winds from June to September and eastern prevailing winds from September to June.

1.4.1 Climate of Shekhawati: Shekhawati is located in the semi-desert area of Rajasthan and falls in the hot and arid climatic zone of India. The natural climatic conditions of the region are very harsh and extreme. The temperature ranges from below 0 °C (32 °F) in winter to more than 50 °C (122 °F) in summer. Temperatures range from one 1°C to a maximum of 15°C in December and January. The monsoon season lasts from the months of June to September. Annual rainfall is at around 450 to 600 mm [6]. The summer brings hot waves of air called loo. Dust storms and sandstorms are very common both during day and night. Throughout the year dominant wind comes from N-W quadrant and late in the monsoon S-W winds are experienced.

1.5 Cultural Context:

The cultural context of these provinces leads the spatial development of dwellings. The amalgamated culture of Awadh and the trade culture of Shekhawati affected the spatial planning and architecture of the dwellings:

1.5.1 Culture of Awadh: Since the time of Suryavanshi dynasty, Lucknow (Awadh) has been a cultural and political hub of north India. Being one of the finest cities of India,

Lucknow is known for its culture that combines emotional warmth, high degree of courtesy, sophistication and love for luxurious lifestyle. This magnificent cultural richness renowned as Lakhnawi Tehzeeb blends the cultures of two communities, Hindu and Muslim living side by side for centuries, sharing similar interests and speaking a common language. Lucknow is the second most populated city in the north India.

1.5.2 Culture of Shekhawati: The area was the home of the rich merchants known as Marwari. The area is known for its monumental richness which includes forts, palaces, Havelis and temples. The development of the Havelis was done by the Marwari merchants to demonstrate their wealth and social status. The more grand and decorated a Haveli was the wealthier the owner would be [12]. The Shekhawati province became the “open air art gallery” spanning through various towns. The society is mainly male dominated; females maintain the internal affairs of the house.

1.6 Architectural style:

1.6.1 Architecture of Awadh: The architecture of the buildings of Awadh can be categorised into two broad groups as:

1. Architecture of religious buildings.
2. Architecture of the residential dwellings (Kothis).

Architecture of the religious buildings like tombs, mosques and Baradaris was primarily Islamic, there were minimum experimentations in the design. Kothis were built in the mixed of the European and Indian architecture. Kothis were often used to house the British officials by Nawabs so the architecture of the Kothis was partially politically influenced. Frenchman Major General Claude Martin, who was a British official in royal court of the Nawabs in Awadh designed several residential buildings in Awadh in 18th century.

1.5.2 Architecture of Shekhawati: The architecture of the Shekhawati province is divided in three broad categories:

1. Architecture of religious buildings.
2. Architecture of residential dwellings (Havelis)
3. Architecture of the royal palaces.

Temples were built following the traditional Hindu architecture with the Gopurams and other elements with painted murals. Forts were built by the ruling Rajputs in Islamic architectural style. Havelis were built by the merchant families in the mix of Hindu and Islamic architecture. Even though British rule was in power in the Shekhawati in 18th century still the impact of European architecture on the buildings was negligible. The wall paintings were a common feature in the buildings commonly known as “Arayish”.

2. CASE STUDIES:

2.1 Chattar Manzil Kothi

The Chhatar Manzil [Umbrella Palace] or Kothi Farhat Baksh, was first constructed by General Claud Martin for his residence in the year 1781 at the bank of river Gomti in Lucknow. This Kothi was bought by Nawab Saadat Ali Khan and later on it was extended by further construction by Nawab Ghazi Uddin Haider. The excellent architecture was completed after his death by his successor, Nawab Nasir-Uddin-Haider. The imposing building has large underground Halls and a dome surmounted by a gilt umbrella [8].

This Kothi has served as an official building after mutiny of 1857 for different organizations. Now this building is being restored and converted into a museum by Uttar Pradesh government.



Fig. 2: Front view of the Chattar Manzil Kothi

In the beginning this Kothi was used as the residence for Claude Martin, later Nawabs made this building their official residence. They used to hold royal court in the main hall of this building.

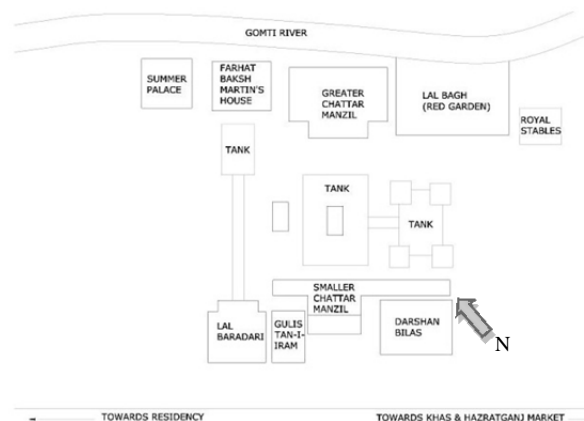


Fig. 3: Chattar Manzil Kothi complex planning [9]

2.1.1 Architectural style: This Kothi is highly influenced by Neo-classical architecture of the France. There is the use of classical pediment with Doric order columns in the facade of the building. The dome is built in the Islamic architectural style. Trefoil arches in the front façade and semi-circular arches in the basement are used, which runs throughout the building.

Gothic style pavilions can be seen on the terrace of this Kothi.

2.1.2 Spatial planning: Since the present state of the building has been achieved by merging other surrounding buildings, so the current spatial pattern is totally different and complex from the original state. This Kothi has private spaces, semi-private spaces and public spaces. The main entrance is served by two porches which lead to the other rooms through long corridors. The courtyards are very skillfully used to create the barrier between public spaces and private spaces.

Ground floor was served for the public uses, while second floor was the private space used by the Begums of the Nawabs. The building has total three floors and two basements. Continuous rooms have been provided alongside the river to get the view and fresh air.



Fig. 6: Main hall seen in an old illustration [10]



Fig. 7: Pediment with Doric columns



Fig. 8: Dome in Islamic architectural style

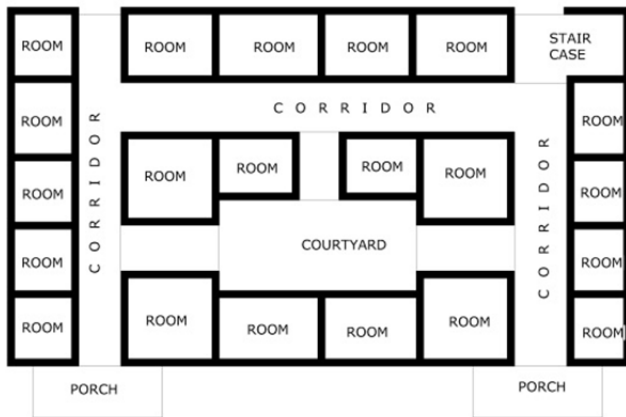


Fig. 4: Part plan of the Kothi

Passive concepts: The passive cooling and natural ventilation in the building helped achieve the thermal comfort for the user. Some unique concepts have been used in this Kothi which are explained as following

Orientation: The plan of Kothi is oriented in north-south direction at the angle tilted of 20° towards north. The orientation of the building prevents the solar heat gain from west and south west side. The openings are provided in the north and south side to prevent excess heat gain through window openings.



Fig. 5: Corridor



Fig. 9: Google map image of the Kothi

Passive cooling: The passive cooling techniques are used in this building in the form of the basement, which was filled with the water which is derived from the river Gomti [7]. The spiral stair case lead to the basement from there the Nawabs used boats to go to different places using water way.



Fig. 10: Basement with semicircular arch

Courtyards help circulate the fresh air in summers and monsoon season to reduce humidity level. The placing of courtyards is so that the rear of every room in the central part faces the courtyard. On the first floor the courtyards works as the private space and air circulation unit.



Fig. 11: Courtyards in Chattar Manzil Kothi

If talk about wall to window ratio then it exceeds more than forty percent in this building which indicates the importance of air circulation in this climatic zone.

Opening in the roof for lighting: One of the interesting feature of this Kothi is the opening provided in the roof over the corridors for the natural lighting and circulation of air through dark and long corridors.



Fig. 12: Chimney on the opening in the roof

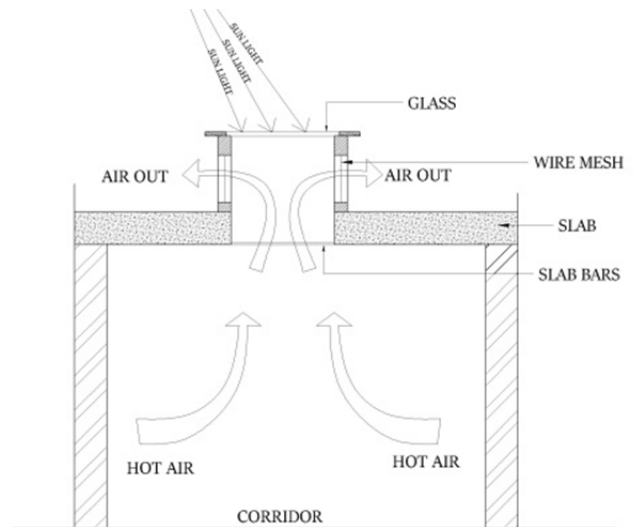


Fig. 13: Air circulation and light in corridors through roof openings

Materials: Major part of this building is made of three building materials Lakhauri bricks, modern burnt clay bricks, lime crushed brick aggregates, Surkhi mortar, wood, cast iron, cast iron bars,

Lakhauri bricks are fundamentally locally made thin burnt-clay bricks. Lakhauri bricks are flat, rectangular bricks with typical sizes of 100 mm × 150 mm × 20 mm and 100 mm × 150 mm × 50 mm . The size of the regular brick is 230 mm X 115 mm X 75 mm [11]. The crushed brick aggregate and lime for mortar preparation which has great impact on its final strength, as *surkhi* also acts as a hydraulic binder to some extent. All the used materials are locally available and locally manufactured. Even though the Mughal had used stone as prime building material, Nawabs preferred Lakhauri bricks for Kothis.

2.2 Char Chowk Ki Haveli, Laxmangarh:

Char Chowk ki Haveli located in Laxmangarh (Lachmangarh) in Sikar district, Rajasthan is biggest Haveli of Shekhavati region belongs to Ganeriwals. Chowk stands for

courtyard and this Haveli has four courtyards and one of its kinds. The Haveli belongs to Ganeriwal, a business clan from Rajasthan, India who are a branch of the Agarwals. Built around 1890, this Haveli is the prime example of the architecture of the Shaekhawati Havelis [12].



Fig. 14: Front view of Char Chowk ki Haveli

2.2.1 Architectural style: Mughals and Rajputs were the rulers who had influenced the architecture of the region. The Haveli is built using the Indo-Islamic architectural style. The front façade is decorated with the Jharokha which is supported with carved stone brackets.

The main attraction of the Haveli is the fresco work known as Arayish on the exterior walls. These art works are done on the stucco with natural colors, which are the figures of the Hindu gods and goddesses on the front, floral pattern on the exterior and other interior walls. The projection part also works as a shading device. Carved columns are used to support the trefoil arches of classical Islamic architecture.



Fig. 15: Front gate of the Haveli

2.2.2 Spatial pattern: The spatial pattern of the Haveli in plan form is rectangular following typical Islamic style. This Haveli has four courtyards with rooms around it. This two story Haveli has six stair cases also working as wind tunnels. The size of the rooms is small comparative to the Chhattar Manzil kothi.



Fig. 16: View of courtyard and stair case mummy

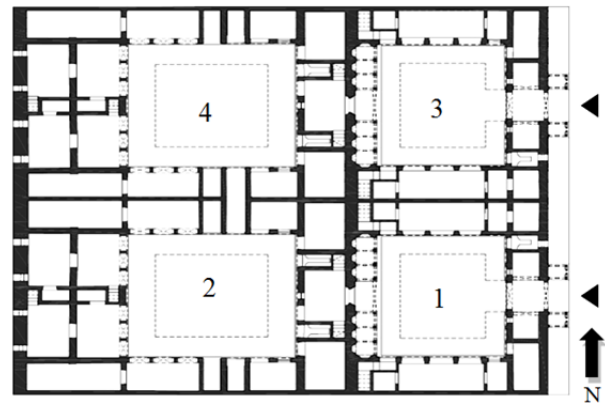


Fig. 17: Conceptual plan of the Haveli

Front courtyards (1, 3) shown in the Fig. 18 are the main courtyards and the courtyards in the rear (2, 4) are the feminine courts. The orientation of the Haveli is north-south facing where the front entrance faces towards east.

2.2.3 Passive concepts: One of the inspiring features of the Havelis is the use of passive techniques to gain thermal comfort in the harsh climate. this Haveli also follows the vernacular passive concept principles of the region, which are following:

2.2.3.1. Courtyard planning: The courtyard in hot summers helps ventilate the fresh air inside the rooms and Haveli. The courtyard serves as a micro-climate modifier.



Fig. 18: Inner courtyard

2.2.3.2. Shading devices: Jharokhas, projection running along the parameter of the building, and the Jalties are provided as the shading devices which obstruct the direct solar heat gain. Jalties and Jharokhas also work as barrier to the sandstorms.

2.2.3.3. Opening sizes: The sizes of the openings in this Haveli are small and the larger openings are covered with stone Jalties. These openings are opened during night to allow convective cooling. In daytime the thick wooden shutters of low thermal mass are closed.

2.2.3.3. Ceiling heights: The habitable have ceiling height larger than 3.5 m while the other spaces like the Jharokha which were to be used temporarily and occasionally were only 2.5 – 1.8 m high. This meant a larger air mass resulting in lower temperatures.

2.2.3.4. Roofs with insulation layer: The roofs are constructed with flat stone slabs joined with lime mortar. Above this a layer of inverted earthen pots is laid to create air insulation. On the top of it, a layer of lime mortar finish with reflective smooth material like broken pieces of ceramic pots to reflect most of the sunlight is used.

2.2.3.5: Building materials: Stone was used along with lime mortar in the slab and façade elements. Lime mortar keeps low temperatures inside the Haveli. Stone helps creating time lag due to high thermal capacities. Wood for shutters of windows and door frames is used. All the materials were locally available and the designers were familiar with those.

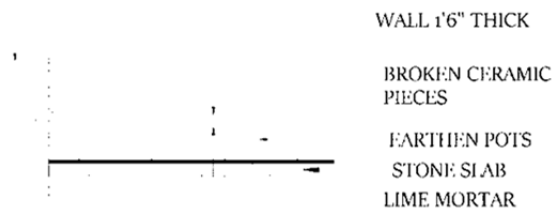


Fig. 19: Roof slab section

2.2.3.5: Light colour exterior: The exterior of the Haveli is light coloured to reduce the heat gain, due to lime plaster. Walls are painted with murals to provide the aesthetics for the Haveli.

3. CONCLUSION

1. By looking into the social, climatic, and historical context of these provinces we can find the relation between the dwellings and the contexts. Every region has some cultural and social significance, which can be seen the historical buildings of the area. These dwellings were designed for the users at their own taste and liking without compromising the comfort of the residents.
2. Contemporary buildings have the functional aesthetics but the uniqueness of the region is always missing because it follows same principles in any region. By carefully

studying the historical dwellings we can incorporate the elements of the past in the contemporary buildings.

3. Above mentioned dwellings have many similarities regardless of the climatic, historical, or climatic differences, which are the development of the spaces for all the users, the climate sensitive design, making full use of the resources available and the innovation in building technology.
4. Innovation in building technique is important because applying all the concepts in modern buildings is impossible. First the identification of suitable technique or elements is required than the innovation in the technique by following the principles learned from these dwellings to incorporate in contemporary buildings. Innovation in terms of material use, aesthetics to support the cultural and social values of the region.
5. In modern day time a dwelling or building has to be sustainable in terms of energy, climate, or culture. Current policies are drawn to make buildings sustainable in terms of energy and climate; in these policies the cultural part had been missing which gives an unique style to the building separate from other regions.

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