

## **Vernacular Architecture**

### **Lecture 6**

#### **Bhonga Houses**

Gujarat is the farthest western state of India, comprising of a major part of the Kutch region. Initially Jainism being prevalent religion led to architecture being predominantly of Jain nature. In India architecture does go through different types of influences, it has Hinduism which was the beginning and then there was the Islamic architecture and finally there was Colonial architecture. Since then, it has been invaded and ruled over by many kingdoms. Hence sees a blend and variety of Hindu, Islamic, Jain and European influence in architecture. Rural architecture was vernacular and basic while the urban architecture of previous centuries had complex styles and influences. There is an influence from many styles of architecture but this was predominantly something that was restricted to the urban or more of town architecture. The rural architecture was kept basic and was vernacular, very utilitarian in nature.

We will directly go into the type of houses, the rural housing type. Its called the Bhonga housing type, these are very simple type of houses but have a lot of traditional value and vernacular use. The Bhonga is a traditional construction type in the Kutch district of Gujarat state in India, which has a very high earthquake risk. This has the most or the USP of this simple vernacular architecture house, it is earthquake resistant, we'll see how it is so. A Bhonga consists of a single cylindrically shaped room. The Bhonga has a conical roof supported by cylindrical walls. Bhonga construction has existed for several hundred years. It's been there for a long time and is very simple. It has a cylindrically shaped room with mud walls basically with conical roof. This type of house is quite durable and appropriate for prevalent desert conditions, apt for Gujarat. Due to its robustness against natural hazards as well as its pleasant aesthetics, this housing is also known as "Architecture without architects". When they say that it performs well against natural hazards, it doesn't mean that it is able to withstand any form of natural hazard. It simply means that damage inflicted by the house in itself is very less and the way it reacts to a hazard is much better than conventional heavy buildings. This is an example of the Bhonga house, simple wall system with a conical roof and there's also visual. They do a lot of aesthetics to it. Simple house with aesthetic qualities. As we all know, there is this really heavy impact earthquake, the Bhuj earthquake in 2001. During which, this building seemed to have performed very well when compared to the other conventional cement buildings. Very few Bhongas experienced significant damage in the epicentral region, it was in the epicentre but still very less damage and the damage that did occur can be mainly attributed to the poor quality of the construction materials. Even though, it was affected, it is not because of the structural quality, it is because of improper maintenance or because of alternate materials, it has also been observed, the failure of Bhongas in the last earthquake caused very few injuries to the occupants due to the type of collapse. The building is not matchable, it's not like it won't

collapse in an earthquake but the injury inflicted and the damage caused in an earthquake is very less when compared to other buildings. These buildings are found in flat terrain. They do not share common walls with adjacent buildings. When separated from adjacent buildings. We have been through a lot of architecture that share common walls, common courtyard but this is something totally different. When separated from adjacent buildings, the typical distance from a neighbouring building is 3.0 meters. This also adds to the fact that it's safer to have buildings nearby. Bhonga is circular in plan, with cylindrically shaped walls and topped with conical roof. The inner diameter of the Bhonga is typically between 3m to 6m. A good spacious one also. A bhonga usually has only three openings, one door and two small windows. That also being simple. As you can see, A bhonga really large one but very few openings, keeps in mind the climatic requirements of the surroundings. Some recent Bhongas have used wide variety of construction materials that include stone, burnt brick, mud mortar or cement mortar. They have even used cement mortar. Traditional roof consists of lightweight, conical roof while some recent constructions have used heavy mangalore tiles on roofs. They're experimenting with that also. Usually its light weight but they are also trying out tiles. Recent constructions have used circular strip footing below the wall, while traditional construction simply extended the walls below ground level. The wall generally extends below ground level. It in itself becomes the foundation, now a strip footing or a basic strip on top of which walls are developed, is being practiced. The conical roof of a Bhonga is supported at its crest by a vertical central wooden post, which rests on a wooden joist. The base and the wooden joist are generally directly supported on Bhonga walls. No columns, no pillars, no extra supports but just their directly supported on the wall. Since it is circular and of cylindrical nature, it supports itself, it doesn't need pillars or columns. The roof load on the walls are basically reduced because the roof load and wooden joist is transferred to diametrically placed timber posts. When you have a diameter of a wooden post placed, the weight of the roof rests on the wooden post rather than the wall itself. The Bhonga wall is usually extended below ground up to the required foundation depth. In newer constructions, proper strip footing is also used. As an example, simple mud mortar with conical roofing, you see wooden scaffolding around which the thatch is placed. The construction is carried out by local village people as house vernacular architecture is generally carried out. The locally available soft stone can easily be cut or chiseled into rectangular blocks which are used for wall masonry. They immediately pick locally available materials in the site and use it for building materials, the construction process takes 30 days and requires very unskillful labourers. It is all very very sustainable, very effective. Bhongas were never designed in the modern context, the big discussion about vernacular architecture designed or not designed, this is what vernacular architecture is. This is not designed in the modern context, the architecture is very unique with respect to the traditional desert architecture in which the size, location are planned for very good structural functional results. Climatically, structurally and functionally, it is also very effective. That was the Bhonga houses, it is earthquake resistant

which is the most important aspect simply because when there is an earthquake, the laterite pushed above is distributed around circular walls, there is not much movement and even if there is moment, the damage is very minimal.

### **Bohra Houses**

Now, we will move on to Bohra houses. The Bohra muslims of Gujarat are complex, unique community of people. What is most unique is their way of architecture and building units. Let's look at that. The Dawoodi Bohras are a Gujarati traditional community which spanned across India and to East Africa in the 19th and earlier 20th centuries. They are basically in the trading community, they travel a lot. Like several Indian trading communities who moved to other lands, invested significantly in residential architecture in their native towns, building 'neighbourhoods' that have come to be known as 'Bohrawads' - a legacy now largely threatened by neglect. Trading communities generally go round about the world, come back and spend a lot of time in developing their shelter or the buildings in which they live in. They bring in ideas from abroad, they bring in materials, concepts, they invest a lot of time and knowledge in residential architecture. Our neighbourhoods that have come to be known as 'Bohrawads' - a legacy largely threatened by neglect in today's scenario. Bohrawads or a number of Bohra houses together form a small thing called a Mohala. A Mohala group together forms a Bohrawad. A Bohrawad is nothing but a neighbourhood of Bohra houses. A powerful composite character is not surprising in terms of the inhabitant, after all the Bohrawads are a powerful complex cultural identity. Bohra muslims have a complex cultural identity. Hence, their residential architecture should also be able to reflect it. You have a picture of the Bohra houses. You can see that they are completely unique, you can't see one of these casually but are rather out of the blue. They have common scales whole stretch of the street, it is not like a single unit, it's a whole set of houses.

The Bohrawads confirm that a unique identity is not necessarily pure. There is always this discussion about a cultural identity, if it has to be pure or not. But the Bohras believe that it doesn't necessarily have to be pure, simply stating that their sense of identity is an amalgam of what their community is, what their climate dictates and what were they able to see in other countries and like. Indianized European clothes by wearing them over Dhotis revealed that the Bohrawads are always inviting their identity. A very good instance would be; the fact that Indian ancestors, they used coats over dhotis in place of pants and trousers but our grandfathers wore it over dhotis. Similarly, they believe in experimenting their architectural techniques. Bohrowad is a neighbourhood built around a street and its branches. For defensive reasons, the street developed a gated entrance, not unlike the pol of Ahmedabad. Even though it was a street with many houses, the street had gates which restricted people from entering even at night. In each Bohrawad, rows of narrow, deep houses - three to four storeys, are

packed along the main street, interrupted by cross-lanes at regular intervals. We have studied a main street from which radial or the axial streets developed, this is a very similar kind of development to the neighbourhood. Now we will talk about the history. There are two broad categories of Bohrawads. One has an organic layout while the other is strictly geometrically laid out. Two types of Bohrawads, the neighbourhoods. One develops organically, the other develops in a strict geometrically laid gridiron pattern. The structure of a typical organic Bohrawad is inwardly oriented, where the houses are arranged in an introverted neighbourhood form. A complex identified people with identity, they have very different kinds of religious beliefs, social beliefs, that is reflected directly in their houses being totally inward and introverted. Most Bohrawads have a formal entrance where gates used to be closed at night in the past. They have gates which are closed at night. The houses in a Bohrawad are typically grouped around a street and these form a mohalla. Each mohalla is an exogamous unit and may have fifty to hundred houses. This is like a whole Mohalla. It has a diverse range of colours, the detail, what is most visible are the windows and the openings since they are very similar to the European or the Portuguese type of architecture while the intricate details, the windows and the screen work depict Islamic - Hindu kind of detailing. The neighbourhoods have a structural unity. Unity not just as a community but as the whole architecture having a structural unity and and give a general impression of relative orderliness and homogeneity. It has a well-knit and dense urban character. Besides the house, a large Bohrawad generally contains a mosque, a Madressa, a Jamatkhana, and other buildings for collective functions. The neighbourhood mosque is the important institution as it is the central public space for religious rituals. The Bohrawads straight stand apart because of a sense of order. An important reasons why the Bohra houses are unique or distinct is because they have a sense of place or they have a sense of order. Sense of place is an important aspect of architecture to be timeless or to be carried on for a long time, that is very much prevalent in Bohra houses. They also have a well designed drainage system and an element of visual surprise. Visual surprise is very obvious, they have vibrant colours, colours after colours, they have contrasting elements of architecture.

The closely packed houses, site constraints and absence of standardized building controls result in an organic growth. There are no building controls as such, to lay rules as and when buildings are built. An organic growth and a relatively irregular street pattern is evident. The meandering passageway with a pedestrian sense of scale creates a series of vistas as one walks down the street. Organic as well as gridiron streets, give you a lot of vistas, the colour and the elements add render wonderful set of vistas. A traditional Bohra house in its cultural and spatial context creates a sense of place in a distinct domestic setting. Sense of place is a very beautiful thing amidst the Bohra muslim houses. The houses can almost be considered as a metaphor for the social system. It is being compared to the level of metaphor in the social system. Male dominance is strong and women are commonly segregated from men not belonging to their

immediate families. Architecture is a direct implication of this, men are strong and dominous, this happens in a lot of religious orthodox beliefs. Women are commonly segregated from men so that they don't interact with other men other than their immediate families.

Now, we will talk about the design features, first the External design. The Bohra homes were a joy to behold. The Facades with three-part divisions and pilasters that spoke of European influences on the construction style. As I said, the Portuguese and French style is very visible. Richly decorated windows provided picturesque views. We talked about windows from which women could see without being seen. The Facades themselves had exquisite detailing on wood. Wood perforated Jaali details added to the climate, cooling temperature. Visual relief was provided with the use of ornamental columns, molding and brackets. Now that we have European influence, they also made sure the mouldings, the brackets, each and every detail was intricately ornamented. The ornamental designs were restricted to abstract geometric patterns and patterns that did not involve figures. This was an important aspect of their religious beliefs, they did not involve idols or figures. They just used geometric patterns. These are a whole set of Bohra houses, huge ones with overhanging balconies, the most prevalent thing is the detailing of the column or the pillars, they have a very European style and also the Bay window kind of treatment of the windows. The facades also features Zarookhas or floor projections with breath-taking designs. The interiors of the house is organized around the cultural values of the community with a central room, the courtyard, the everyday family living space. Courtyard is an important aspect in terms of climate, in terms of socio cultural aspects and it is a direct response to the cultural values of the community. The segregation of people, the different usage of space, the different use of people and space, all these were a direct response to the cultural values of the community.

Now the Internal orientation, the sequence of spaces within a Bohra home usually began with the othla or an entrance room. You have an entrance platform that is usually raised from the floor level. Then there was the Deli, the arrival area and the inner courtyard or avas. There are always anti rooms which connect one room to the other and also act as privacy controller. The courtyard opened to a small skylight that let in light, let out warm air but didn't reveal too much. Courtyards are open spaces but the fact that these people have another set of socio and cultural introvertedness showed even in the opening level of courtyard. The opening to the courtyard was small, the opening around it was small, it let out warm air as well as light but also didn't reveal much to the outside world. Then, there were rooms or ordo. The higher floors consisted of bedrooms. There was also usually a terrace called agashi. Initially there's the main door and to both its sides are windows, this is a European style of treatment but the fact that these are Zarookhas, they are places where women can sit and see what happens outside without being noticed, that is a unique aspect to Bohra muslim houses. The main living floor is

4-5ft above street level built over a basement. Small but comfortable windows or window seats open into the street. The slight height allows the seated person to keep a distance from the street. Even though the windows were full in size, half of it was seated. The seating was built, on which women used to sit and watch outside. The Bohrawad courtyard is generally no more than a series of cutouts in every floor, lined up one above the other. The opening is small, about 4 sq ft and covered with a metal grille or mesh for safety. Instead of being large openings, they are just a set of cut outs that pass through each floor, the opening is small just about 4 ft and covered with a metal grill or mesh facility. Grill, metal grill, more safety measures show their security concern. In extreme summers and winters, these modest openings provide natural light and ventilation without letting too much of the weather in. The vertical shaft also lets families on different floors of the house stay in touch. Not only is it a courtyard outlet, it also acted as a visual continue where families maintained eye contact, where they could have visual contact. The upper floors were often occupied by married sons. Each family achieved a level of privacy, as in an apartment, while connection across families was maintained by the architecture. Even though there was privacy for the newly married couple, they were still connected with the architecture visually. The interiors were oriented in a way as to reflect social values passed by the community. Men and women had their own designated spaces within the homes, the kitchen was accessible by both. Kitchen unlikely is a commons space accessible to both and to the whole family likely. Bohra homes were typically occupied by joint families.

Facades which are the most interesting aspect of Bohra houses that have adopted the regional tradition of Gujarat of making facades with intricate details in wood. They accommodated a whole range of styles, building materials and decorative elements resulting in attractive facades that have become the hallmark of their vernacular architecture. Two things; the European style of architecture which they were inspired by, the way they brought about their vernacular style, it was through their materials and details. In contrast to the Islamic philosophy, there is an exterior display and frontal exposure as the facades are rich in variety and aesthetic expression. Even though the people or the courtyard, the spaces used by the people were more or less introverted, the design and the features were more or less out for everyone to enjoy. They create a sense of enclosure and play of light and shadows by using solids and voids, this is where Jaalis came into place.

Through the display of several textures and patterns, they express balance and harmony within a predominantly symmetrical composition. The surface of the facade is visually broken by ornamental columns, brackets and moldings, at times bringing multicoloured cohesion to the streets. Ornamental columns and pilasters and corbeling were all used to break the visual monotony of colours. The facades enhance the totality of the physical ambience of the built

environment. Built by craftsmen, they reveal their comprehensive understanding of the elements of design. The fact that they were a trading community, the impressed a lot on the cultural identity and showed in the way that they understood and had knowledge of elements of design and the nature of building materials.

This is a facade, you can see the detailing, the corbeling, the columns, the windows, the Jaali work, the colours, the common walls; how they existed as a whole community.

The unique elements, here's where we will talk about the Zarukas and everything, it is an interesting and simple aspect. It is the window portion where women are seated, one hardly sees any person standing in the external Zarookha or balcony because the Bohra tradition emphasizes on privacy. Here is a very clear and simple image of how the Zarookha was used. You can see how the portion is made into a seating and groups of women can sit and see what's going on the streets or what happened in gatherings.