

Vernacular Architecture of Kashmir and its relevance in the present day construction scenario of the valley

Tajamul Islam¹, Insha Shahzad², Seerab Bashir³

¹Tajamul Islam, Assistant Professor, SSM College of Engineering Baramulla, J&K, India

²Insha Shahzad, Assistant Professor, SSM College of Engineering Baramulla, J&K, India

³Seerab Bashir, BE Civil Student, SSM College of Engineering Baramulla, J&K, India.

Abstract - Jammu and Kashmir is the northern extreme of India bordered by China and Pakistan. Kashmir valley is known for its cultural diversity and unparalleled beauty. The culture of Kashmir is a concoction of various ethnicities with a great influence from South and Central Asia. Kashmiris are considered amongst the brightest minds of the world and are very innovative, be it their dressing, cuisine or architecture. Kashmiri architecture has been an epitome of aesthetics and beauty. The cultural diversity of the valley is reflected in the various architectural structures. A walk through the lanes of Old Srinagar tingles the senses of all architecture lovers. This paper sheds light on the vernacular architecture of Kashmir and its relevance in the present day architectural scenario of the valley.

1. Introduction

Vernacular architecture is construction done outside any academic guidance, and without professional supervision. This category encompasses a wide range and variety of building types, with differing methods of construction, from around the world, both historical and existent, representing the majority of buildings and settlements created in pre-industrial societies. Vernacular architecture constitutes 95% of the world's built environment, as estimated in 1995 by Amos Rapoport, as measured against the small percentage of new buildings every year designed by architects and built by engineers. In theory, a vernacular house is built without an architect. Local builders used what was available to them and pulled from a variety of design styles to create simple homes that became distinct to a specific area. It's a type of local or regional construction, using traditional materials and resources from the area where the building is located. Consequently, this architecture is closely related to its context and is aware of the specific geographic features and cultural aspects of its surroundings, being strongly influenced by them.

Apropos the vernacular architecture found in the valley is very unique and distinctive in its own sense. Looking at the financial status and resources available to the people at that time, the houses were very economic. The maintenance of the buildings was easy with repetitive mud plasters known as 'bor' that were done at household level. The thermal properties of the buildings were unmatched and are still under consideration as to how we can incorporate the techniques into modern day construction. As it's known that Kashmir falls in seismic zones IV and V and is very prone to earthquakes the buildings were constructed in such a way that they survived the deadliest of earthquakes. All and all it won't be wrong to say that the construction was not only aesthetically appealing but also structurally stable.



Figure 1 timber construction

2. Elements of the buildings and materials used

2.1 Doors and windows: Traditionally Kashmiris built houses with due consideration to the placement of doors and windows in order to trap maximum solar energy. The windows were always placed to the south to allow maximum sunlight and block the north from where the cold winds usually blow (direction of winds in Kashmir being North- West). The houses usually had a single entrance and double shuttered windows. The double windows would trap the air column in between and create a barrier from the outside cold/heat. The size of doors and windows was kept restricted and the wooden window frames were provided with small glass panes in order to minimize the heat loss from the rooms.



Figure 2 and 3 : panelled windows

2.2 Walls: The walls at times were made from special bricks known as maharaja bricks. These were handmade, small sized and very dense and were usually used in *taq* constructions. At times Kashmiri bricks both baked and unbaked were used. For economy they were used together for a 14" load bearing on wall the outer visible portion of wall was built with baked bricks and the inner face was built using unbaked bricks. After brickwork was completed the walls were mud plastered and finished. This gave a fine aesthetic look and also made the buildings more insulated.



Figure 4: maharaja brick wall



Figure 5 : mud plaster or bor

2.3 Foundation: The footings were usually shallow with stonework in the excavation. However at plinth level, in place of DPC a wooden plinth beam locally known as *daas* was placed. The brickwork was supported by this beam. However if the soil was loose or marshy, wooden logs locally known as *chil* somewhat similar to the modern day piles were provided for extra stability.

2.4 Ceiling : Traditionally a ceiling made of wood called the *Khatamband* was provided by fitting together precisely crafted small pieces of wood either Deodar or walnut in various geometrical patterns. It not only was very aesthetically pleasing but also imparted additional insulation to the building as it provided a double layer at ceiling level.



Figure 5 : traditional khatamband

2.5 Flooring: The flooring was usually made of mud which was later given a finished look similar to *bor* locally known as *saethur*. For the flooring of the upper stories in order to prevent the rot of the timber in the ceiling of the lower floor a layer of wood shavings was laid over which the mud was laid as usual which was then finished to give a smooth surface.

Roofing: Traditionally the roofing material used was Birch bark locally known as *burza* provided with a layer of mud above it and studded thickly with bulbs of tulips and lilies. The plants made the building more aesthetically pleasing and also drove away the rodents. In addition to that they would provide extra insulation thus reducing the amount of heating and cooling inside the building.

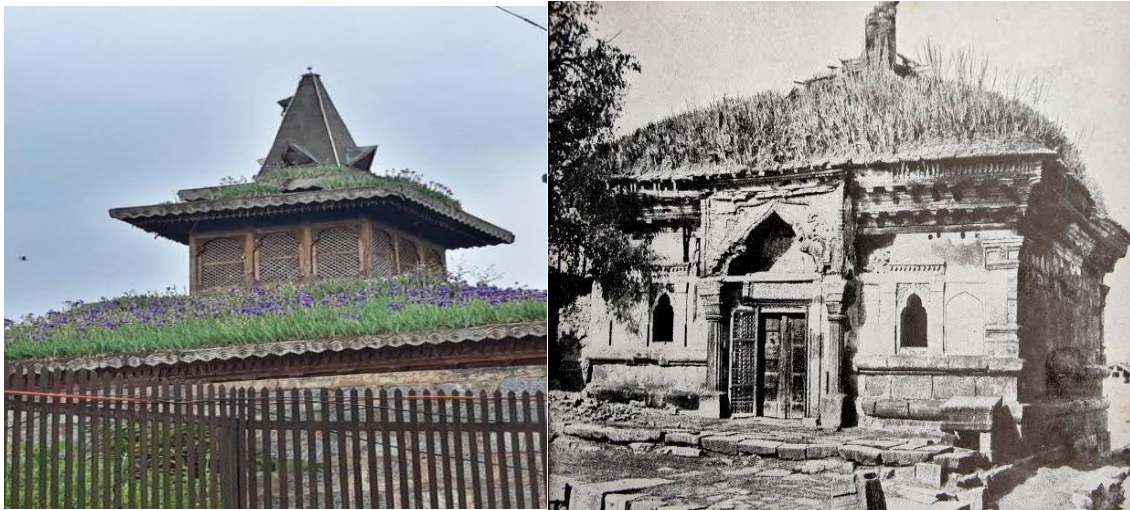


Figure 6 and 7: roof laid with birch branch

3. Construction Techniques:

3.1 Dhajji Dewari:

It was the most commonly used technique of vernacular construction. Dhajji is basically a Persian word that refers to the patchwork done on the quilts. It's basically a framed structure wherein the spaces between the wooden frames were filled stone and brick masonry held together by mud mortar. Being a framed structure it was quite earthquake resistant owing to the even distribution of energy sent in by the shock waves. Moreover, as the frame tends to move the stones rub against each other and naturally the friction withstands or dissipates the energy.



Figure 8: dhajji deewari

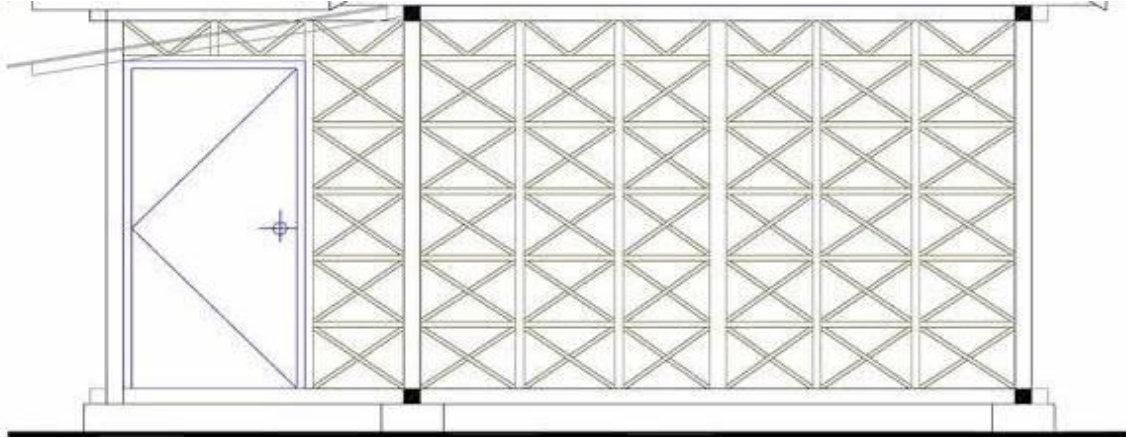


Figure 9: diagrammatic representation of dhajji deewari

3.2 Taaq System:

It's another technique that we come across a lot that was used in the construction of traditional Kashmiri houses. It usually consists of a load bearing wall masonry constructed with horizontal timber lacing embedded into masonry in a grid like layout at each floor and lintel level. The horizontal timber members hold together the masonry piers. These carry the vertical loads. To sum it up Taaq construction is a blend of mud mortar, bricks and timber wherein the whole weight of masonry is borne by timber which in turn holds the timber in place and vice versa. All in all the structure acts as a single unit but at the same time is flexible enough to minimize the damages by earthquakes as well as weaker foundations and keeps the damage localized.

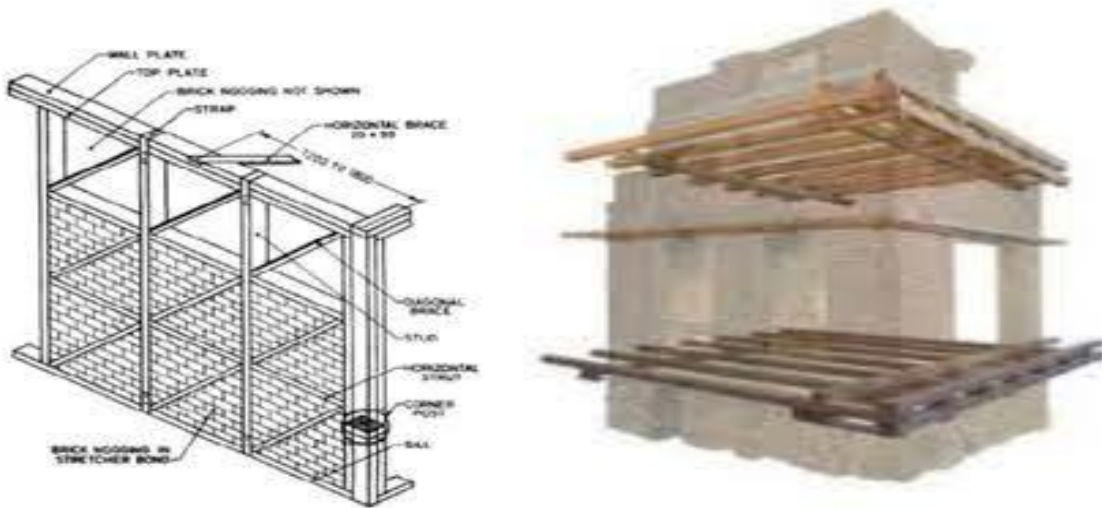


Figure 10 and 11: diagrammatic representation of the taaq system



Figure 12 : the taaq system

4. Relevance:

The vernacular architecture of Kashmir is something that's always been relevant due to its aesthetics. However with the advent of modern architecture and the influence of the Indian sub continental pattern of construction, Traditional Kashmiri architecture and construction techniques became obsolete. It became the order of the day to ignore insulation and take aesthetics more into account. Growing prosperity, showoff and exposure to the metropolitan world lead to Kashmiris demanding marble floors, open lobbies and large glazed windows. However with Kashmir facing the deadliest of earthquakes in 2005 that reduced the most beautiful of the houses to rubble and the vernacular houses withstanding even that, it did ring a bell for all the civil engineers and architects of the valley. Having stated that, it should also be noted that we cannot revive the traditional techniques completely for example the era of timber constructions is long gone. Fast forward to 2022 timber is no longer a major building material owing to the environmental and economic point of view. Hence it's not completely wrong to say that we cannot and should not go back to the stone age but at the same time we need to preserve what's our heritage and incorporate it with the new techniques. The Dhajji dewari and taaq system can still be used with some modifications wherein we can make partial or complete replacement of wood with a relevant material owing to the shortage of wood. Present day constructions in valley need to look upto the past to construct buildings that reflect the glory of the past and grandeur of the present, buildings that are made with such efficiency that shall go down the future as civil engineering wonders.

5. Conclusion:

To sum it all, there is a dire need for conservation of traditional building construction techniques in Kashmir. Strategic construction practices wherein incorporation of tradition and modernity is upheld needs to be called upon by the Engineers and architects. Thus we conclude by sharing a vision for houses constructed in a way that uplifts and includes the traditional construction techniques and practices as well so that they shall maybe thrive and see the light of the day again or in the very least be preserved as our culture and heritage.

REFERENCES

- https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.irjet.net/archives/V8/i11/IRJET-V8I11121.pdf&ved=2ahUKEwjUgOa2e76AhWGzTgGHbLmCOY4ChAWegQIGBAB&usg=AOvVaw0ofRYyAuT9VN6GXLk_szkCl
- <https://www.archdaily.com/951667/what-is-vernacular-architecture#:~:text=Vernacular%20architecture%20can%20be%20defined,where%20the%20building%20is%20located.>
- https://en.m.wikipedia.org/wiki/Vernacular_architecture#
- https://issuu.com/anushkasaxena/docs/vernacular_architecture_ppt.pptx
- Image courtesy: google.com

BIOGRAPHIES



Tajamul Islam is an Assistant professor in the department of civil engineering, SSM college of Engineering, Baramulla, J&K India, The author has done BE Civil Engineering from the same Institute And MTech. Transportation Engineering from Kurukshetra University Haryana India. The author has teaching experience of more than 8 years and has more than 15 publications in various national & international Journals. The author has the best student feedback in the department over the past 5 years.



Insha Shahzad is an Assistant professor in the department of civil engineering, SSM college of Engineering, Baramulla, J&K India, The author has done BE Civil Engineering from the same Institute And MTech. Transportation Engineering from Kurukshetra University Haryana India. The author has various publications in national and international journals.



Shemyla Khan is an Assistant professor in the department of civil engineering, SSM college of Engineering, Baramulla, J&K India, The author has done BE Civil Engineering from the same Institute And MTech. Transportation Engineering from Maharishi Dayanand University Haryana India. The author has various publications in national and international journals and has teaching experience of more than 12 years.