

THERMAL COMFORT OF VERNACULAR BUILDINGS ACCORDING TO SOCIAL STATUS AT KALABURAGI

Abstract

The vernacular Architecture of any region reflects its culture, mode of living style, their taste, the manners and customs. That is the reason why a study of vernacular Architecture creates a great impact on shaping our future. It manifests the will of the people. Parameter which affects the thermal performance of building is weather condition, location of building, building envelope and orientation. The passive cooling techniques being used in vernacular buildings. The thermal comfort not only makes the occupants comfortable but also governs energy consumption in the building. This study also quite satisfactory in comfortable temperature of naturally ventilated buildings in a wider range of temperature. The existing old domestic architecture in kalaburagi dates from about end of Bahamani dynasty rise of Nizam's rule. Linton added to klineberg's view, status as the position held by an individual in a particular system occupied at a particular time. Role as the cultural patterns associated with a particular status the role of an individual includes attitudes, values and behavior (klineberg1961:363).Finally this quantitative information will help engineers and Architects to construct climate oriented buildings in the region.

Keywords: Vernacular, thermal comfort, social status, Nostalgic, sustainable, courtyard, envelope.

Author

Ar. Shobha Dastapur
Assistant Professor
Poojya, Dr. Shivakumar Swamiji
School of Architecture
Kalaburagi, India

I. INTRODUCTION

The ancient technologies adopted by our ancestors are extremely iconic. There is an increased recent interest in the research community on the sustainable features of vernacular architecture. This is a result of the need to respond to climate change, desire to decrease energy consumption. The vernacular has been widely understood as “The architectural language of the people with its ethnic, regional and local dialects, the product of non experts”.

Kalaburagi is located in Karnataka state. Kalaburagi area lies under hot and dry climatic zone have a low precipitation rate. The most important aspect is protection from harsh sunlight and to develop a built form Capable of reducing the radiation. The vernacular buildings can be reused for economical, social and for self satisfaction. Paul Oliver is one of the first researchers who investigated “vernacular architecture and its concepts which grows within communities in which it could adopt itself with social, climatic and technological condition during ages”.

The socioeconomic status of people always recognized by building materials of their houses. “Vernacular architecture holds a laudable position as a tool for skill transfer, apprenticeship, community participation and improved sustainability” (Steenkamp & whitfield2011).

The traditional architecture forms the backbone of the social & cultural set up of the community, which is depicted by buildings designed to achieve comfort

Kalaburagi is the headquarters of a district which form an important part of the Deccan plateau. It had a very glorious past. It was the capital of the once famous Bahamani Kingdom from the year 1347 A.D .Until the death of its 8th king 1397A.D. After the end of the Bahamani Dynasty, though it ceased to be the capital after this date.Kalaburagi (earlier Gulbarga) was in the hands of shaha of Bijapur being far away from the capital of Adil shahi it was often plundered and attacked by hands of robbers, freeloader rampant all over in those days. It again gained some importance when it was made the capital of one of the four provinces in the Nizam’s Dominions. On an average no house is older than about 150-300years.

II. CATEGORIZATION OF HOUSES AND ARCHITECTURAL CHARACTERS

Buildings categorized according to the hierarchy of status.The houses of the poor people, the houses of the middle class people and the houses of the wealthy people. The poor people requirements are more functional and consists only fundamental elements of a building floor, four walls and a roof.

The houses of a slightly better type belong to petty shopkeepers, poor craftsmen, rich merchants and others.

Vernacular architecture has a line of equality in the building philosophy as an embodiment of human body, feet (foundation), body (wall & room) and head (roof).In early

Latin description regarding vernacular architecture “things that are homemade, homespun, homegrown and not destined for the market place”.

According to Rapoport— The direct effect of the environment, directly affect the behavior, mood, satisfaction, performance and interaction. The indirect effects of environment are used to draw conclusions about the social standing or status of its occupants & behavior is modified accordingly.

In those days, it was often attacked & looted by robbers widespread all over. The life & wealth of the people was in danger. This state of affairs had a great effect on the domestic architecture of Kalaburgi. This is the one of the main reason why all the houses have been built very close together and have narrow small entrance and passages. The walls are very thick 3’0”-5’0” and strongly built. There are absolutely no windows on ground floor ,only narrow slits or small holes are built in wall at a height of about 9’ -10’ from the road level. So the general appearance of the houses from the street is very rustic, solid walls of blackish stones in regular course, only relived by small opening and a finely carved door on the ground floor.

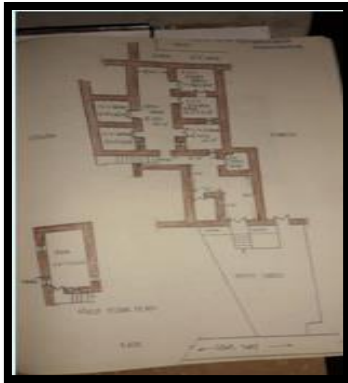
The rusticated masonry which gives a rich and bold surface for exterior masonry walls depicting simplicity of style. On both sides of main door small “kattas or otas” are provided where people generally sit chatting in the evening. The main entrance of the house so designed that an outsider cannot enter the house without being noticed. And is not suddenly admitted to the inner court which needs more privacy. Some of the entrance treatment account for the ‘parda system even among the Hindu families. The houses of the wealthy are planned on the same lines only two or more courtyards are added to this and they are surrounded by rooms. The kitchens are very big, stables, shed for cows; carriages etc. are added to the rear court.

The houses for the poor classes also are not very much different these too in planning principles. They consist of two rooms kitchen and a mazghar and a wide enough verandah in the front the court ‘Angan’. Courtyards are referred to as a microclimate changer.

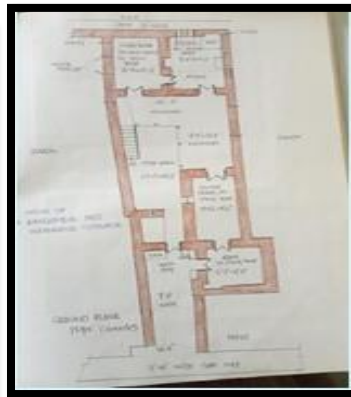
Natural light and passive strategy for indoor architecture which helps in reducing the consumption of electrical energy, thus enhancing the psychology and physiology effects on the health and well being of occupants.

The roof has generally a low pitch and slope only on one side. It consists of principle rafter with purlins on them. On these roughly placed battens and slabs of Shahabad stone in such a way that they do not leak on rainy days. A small ‘Tulsivindhavan’ in the chowk & a pooja room(Devarmane) in the kitchen are almost an essential features of the house,whether it belongs to a poor or a rich man.

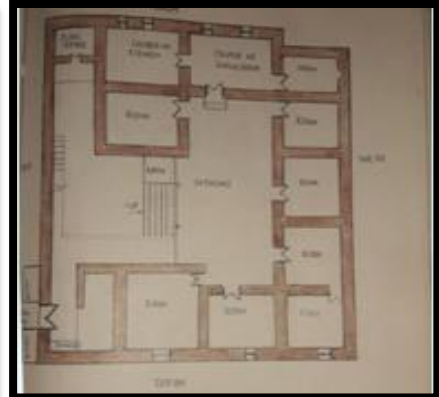
III. HOUSES



Teacher's house
Figure: 1(author)



Agriculturists' house
Figure: 2(author)



Merchant's house
Figure: 3(author)



Figure 4: (author) Deshmukh Wada

These plans have same basic comfort in their own place, but the scale, requirement, functions varies according to their profession.

A vernacular building represents Nostalgical values “we “feeling can be experienced. As in case of modern building “I” takes the place, which in turn giving birth to nuclear families. “Vasudhaiva Kutumbakam” –the guiding light for Indian family system. Develops responsibility propensity for adjustment, discipline, respecting and loving elders, caring for them

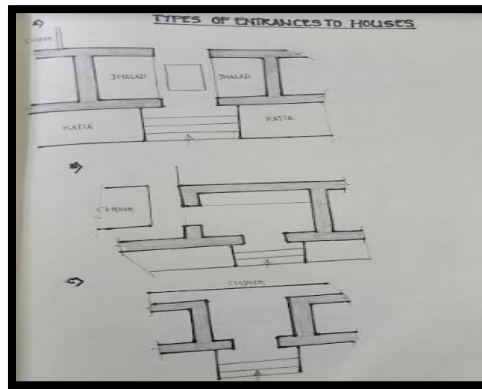


Figure 5: Different entrances to houses with Jhalaji

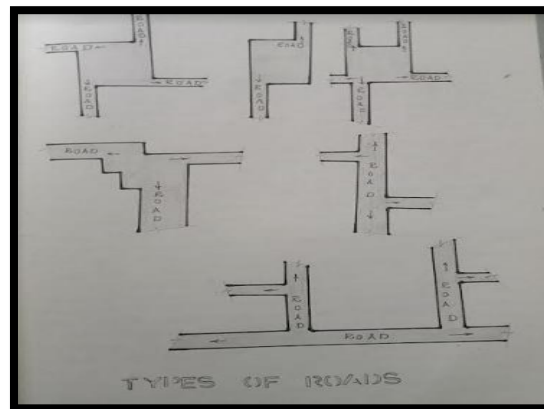


Figure 6: Road connection to Houses. These compact urban fabrics provide more shade between buildings.

School teacher house is situated almost in the heart of Brahmapur very close to sharanbasaveshwr temple .The main entrance of the house is from the west .The entrance had two katta on both the sides.The interior of the house consists of big long chowks 22' 6"x8'0" and 18'3 x10'8",13'0"x10'0". All rooms are having different door heights; especially pooja room door height is very small. Idea behind this is bending in front of God .Give respect and honour to the elders.

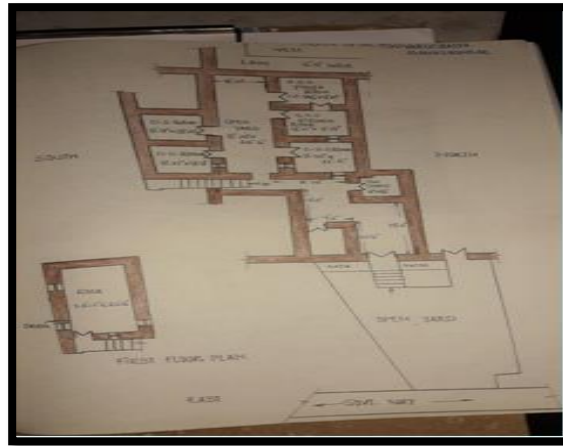


Figure: 7(author) as building envelope is not in contact to outer environment. Its thermal performance has great influence on indoor.



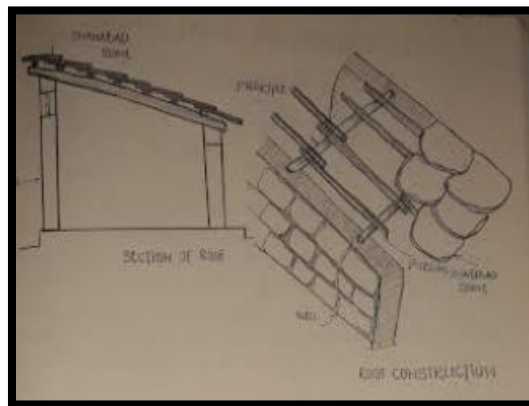
Figure: 8(author) Entrance katta on both the sides with common wall between two houses. Entrance door height and width is also small.



Figure: 9(author) Courtyards connecting all rooms through door openings as windows were not provided. Attached houses with common wall

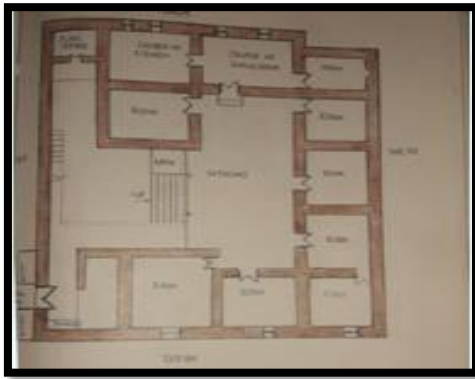


Figure: 10(author) Dhabi- wooden beams, rafters, planks above that mud moulds are placed with proper ramming with wooden mallet.



**Figure: 10a (author) section of a room with Shahabad stone roof.
One side Dhabi mud slab with room above and in opposite single floor with inclined roof – Arajaprra in local language.**

In merchant's house {business men} the treatment of the entrance porch is exposed black stone with arch. On both the side's katta and Jahalaji .The stranger is not suddenly admitted to the inner chowk.



PLAN Figure: 11(author)

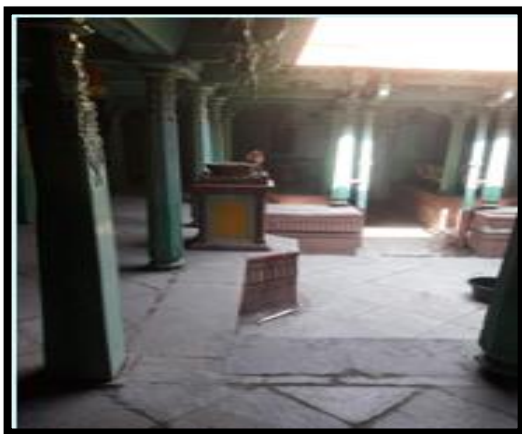


Entrance Door Figure: 12 (author)

Kitchen is provided with double height .so that smoke produced during cooking covers whole area because smoke always floats upwards, the safest space for everyone to breathe is closer to the floor area. Smoke disperses through ventilators and roof ventilators also.

Kishna Rao Deshmukh house, its main entrance is east facing and north facing. Baitakha khana some call Rajangana where head of the wade conducts his Darbar. This leads towards different doors leading to karakoon's room, store room guest room, record room, padasale or padasali. Padasale has doors connecting the bedroom, record room.

Padasale usually free standing wooden columns were usually of flower, leaf, round shapes and supported on stone base. The ceiling had intricate carving, ceilings were of wooden planks which were then covered with intricate floral and geometric pattern, chandeliers and hanging lamps were provided in the ceiling.



**Figure: 15 (author) private area-
Padasale with courtyard**



**Figure: 16 (author) beautifully carved
column & beams**

Different ceiling finishes can be seen in different areas of this wada .some are having beautiful column designs, beams, variations in carving details.



Figure: 16 (author) store room - wooden columns supporting the beams .mud roof covered with wooden planks.



Figure: 17 (author) Pooja area – Hanuman, Ganesh small temples



Figure: 18(author) Fine finished double height entrance Jhalji.



Figure: 19(author) servant's area, Rough finished roof structure.

Double height spacious kitchen huge arch opening, big ventilators and in roof called bhelkindi both provided. Which ensures sufficient light& they help in throwing out the hot air.



Figure: 20(author) Double height kitchen with wider span



Figure: 21(author) Placement of ventilators at varying heights so that enormous light admits inside the kitchen, ventilator sill made inclined to disperse light below.



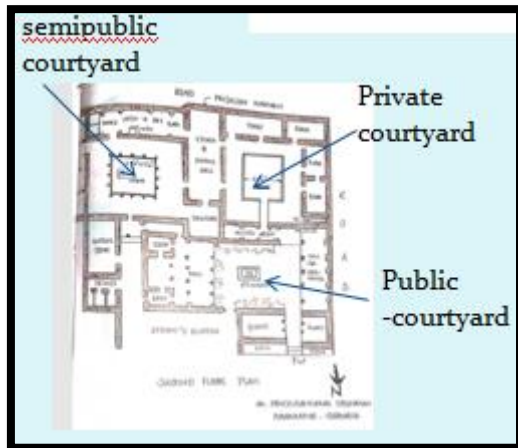
Figure: 22(author) Roof ventilator which can be opened or closed when required. Even seasonal wise, in rainy it can be closed



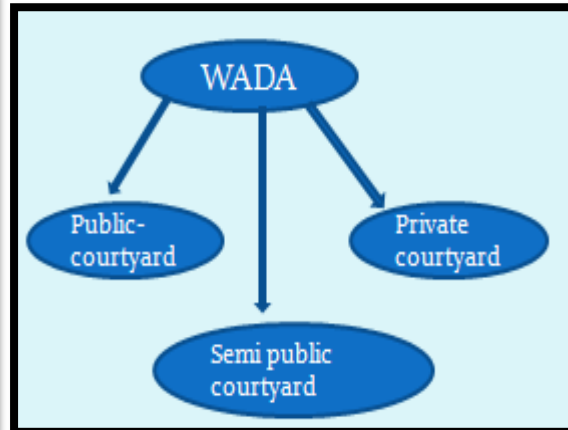
Figure: 23(author) Huge Entrance to wada

Shri pandurangrao Deshmukh Wada. RAYA, Deshmukh and Deshpande were the titles given to a person who was granted a territories of land in the Nizam's territory. They collect the sara(taxes) and maitanin basic services .More than 300 villages are under Deshmukh's control.

Linton added to Klineberg's view status as the position held by an individual in a particular system occupied at a particular time. Role as the cultural patterns associated with a particular status. The role of an individual includes attitudes, values and behaviour.(cited in klinberg1961:363). Vernacular architecture as a reflection of the will of the people.



plan of wada



Wada concept

The main entrance is facing the north. Building construction materials are stone, mud, wood, teakwood etc. The big main entrance supposed to give an inviting and rich look.



Figure: 24(author) Kacheri, Hypostyle column with separate ladies seating area covered with jail work. Parda system followed at that time.



Figure: 25(author) Kacheri, Public Courtyard. Daily public visit to this area for their issues to settle.

IV. ORIENTTION

“Historically built environment was a result of the responses to many factors in the society , at the physical level it included the knowledge regarding orientation ,climate, building material and construction technique, at the spiritual level, the built form was interwoven with life style in all daily as well as seasonal rituals”—B.V. DOSHI-1985.

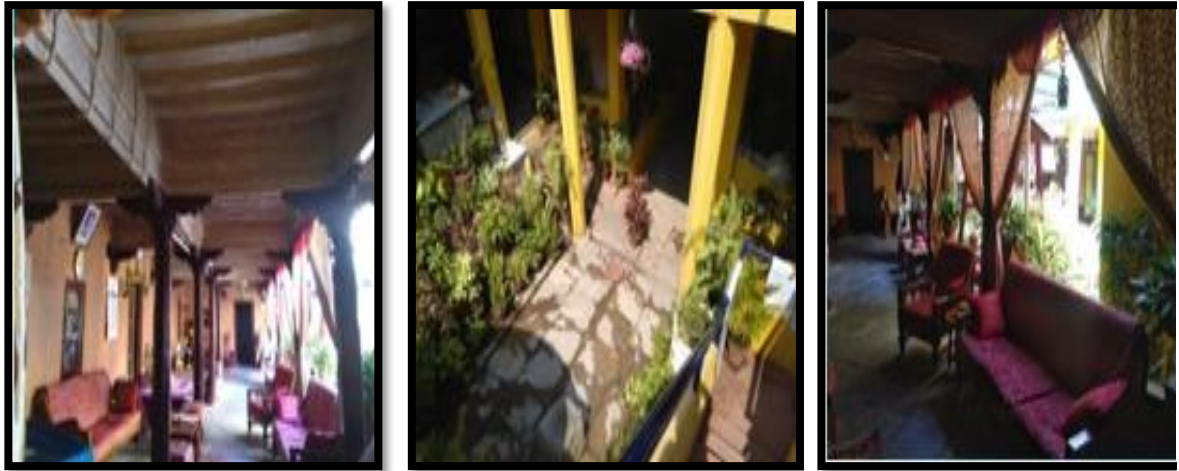


Figure: 26a, b, c (author)-private courtyard especially for family ladies. Till today also well maintained .Beautifully carved columns, with finished ceiling.



Figure: 27a, b, c (author)-semiprivate courtyard. Restricted people can visit this area.

Orientation and placement, to minimize sun exposure in summer. The size of windows on the west and east sides are minimum in order to reduce heat gains into the house in the early morning and late afternoon

A unique Special feature is seen in pooja room,pergolas are provided to admit Light inside. This creates a different perception in the divinity.



Figure: 28(author) Tranquil pooja room



Figure: 29a, b, c (author) Double height kitchen features are same as earlier wada but here surplus amount of light admits through roof ventilators. This wada is bigger.

V. CONCLUSION

Passive solutions affect the overall building performance. Vernacular architecture is not only valid for past but for the future also justifiable. The vernacular planning, elevation, other architectural details of the construction techniques and materials may be time consuming in present condition but the context and relevance of these aspects satisfying the users is appreciable and these need to be explored in modern context.

REFERENCES

- [1] Bindoo D D (1942) A Critical studies of the old domestic Architectural buildings of Gulbarga (A thesis report) school of Architecture Bombay.
- [2] www.sciencedirect.com
- [3] Oliver p (ED) 1997. Encyclopedia of vernacular architecture of the world. Cambridge, Cambridge university press.
- [4] India Architecture News.
- [5] John marshall” Mahenjo-Daro and the Indus civilisation “ Asian Educational services 1996
- [6] Brooker and stone s + Re-reading interior Architecture and the design
- [7] Encyclopedia of vernacular Architecture of the world paul oliver
- [8] www.Decanherald.com

- [9] Lawrence .R (1987) Housing dwelling home design, research and practice.
- [10] Perception of vernacular architecture- G.Bosman &Cwhit field
- [11] Earth unit, department of architecture, university of the free state, Bloemfontein, southafrica.
- [12] Learning from vernacular architecture of TODA community may2020 Sourabh kumar mishra ,suchi priyadarashani.
- [13] Journal of Architecture planning & construction management volume6 Issue2, 2016, Day lighting analysis in vernacular Houses of Rural Karnataka, India.
- [14] Journal of emerging technologies & Innovative Reserch (JETIR).
- [15] www.jetir.org(ISSN-2349-5162). Rapport A1977.Human Aspects of urban form towards
- [16] Man- environment Approach to urban form and design and Regional planning series, volume: 15, Toronto. pergaman press. 14. Klinberg.O.1961.Social Psychology- revised edition, New York, Halt, Rinehard and Winston.