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Study of Changes in Vernacular Architecture of Baitadi; A Case Study of Baskot Village in Baitadi District of Nepal

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ABSTRACT

Baskot is a region located at an altitude of 2,200 meters in the hilly region of Baitadi, Nepal. The village is mostly inhabited by Chand, who once ruled the Baitadi district, the villages exhibit a very interesting typology of hill architecture which have been changing over time. This architectural identity is also a manifestation of a geographical and cultural response of the place. The study was carried out to study the changes in traditional architecture of the village with the aim of documenting the present state of the traditional vernacular heritage of the place. This study can be a resource for studying the traditional architecture of the region and impact on its physical appearance and spatial planning in terms of construction methods, materials, and aesthetics. Documentary research process and interview with the focal person was used as a means of analyzing local vernacular heritage and its current situation, and with a view to offsetting the rapid transformation of the past. And also, to explore the local architecture features of the hilly region of Nepal that can still be incorporated in contemporary practice.

Introduction

Vernacular architecture is intricately linked to its surroundings, taking into account the unique geographical characteristics and cultural elements of the area, and it is greatly shaped by them. Consequently, vernacular architectural styles vary across different regions, serving as a means to reinforce local identities. It is tailored to address particular requirements and to harmonize with the values, economic conditions, and ways of life within a specific community. Teixeira, Rubenilson Brazão (2017) highlights two key characteristics of vernacular architecture: tradition and contextualization. Teixeira suggests that each instance of vernacular architecture embodies tradition, stemming from specific ethnic groups and evolving gradually over time, drawing upon familiar forms established by preceding generations.

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Nepali Vernacular architecture is broadly categorized into three regions: High mountains, middle hills and terai.

Traditional mountain architecture in Nepal features sturdy stone and timber structures to withstand harsh climates. Stone and coniferous timber are common materials, with thick walls and flat stone or timber roofs. Houses are often multi-story, with upper floors for living and ground floors for storage or livestock.

In the middle hilly regions, the buildings are usually situated on the sunny slope of the hills. Stone is often used for the lower floors of buildings due to its durability and availability, while timber is utilized for upper floors and roofs. Sloping roofs made of materials such as corrugated metal sheets or thatch are common, designed to withstand heavy rainfall prevalent in the region. Traditional Newari homes are centred around a courtyard, with multi-storied buildings surrounding the open space.

In Nepal's Terai plains, traditional architecture is influenced by neighbouring Indian styles, using mud, clay bricks, and thatch. Houses feature low-pitched roofs of thatch or corrugated metal for shade. Bamboo is common for walls, offering flexibility and ventilation. The indigenous Tharu people have unique mud and thatch huts with intricate mud-plastered walls. While modern materials like concrete are prevalent in urban areas, traditional architecture persists in rural communities.

Figure 1Rolpo Dolpa, mountain region

Source: Vernacular Architecture of Nepal/facebook

Figure 1 uses in hilly region

Source: Author

Figure 1 Traditional Houses in a Tharu Village in Terai
Source:https://www.odynovotours.com/travel-blog/chitwan-national-park-travel-guide.html

Sudurpaschim Nepal, nestled in the far-western reaches of the country, is a captivating region boasting diverse landscapes, rich cultural heritage, and centuries-old traditions. It is bounded to the north by Tibet Autonomous Region of China, to the east by Karnali and to the west by India's state of Uttarakhand, and Uttar Pradesh to the south by the Tarai. Baitadi is one of the nine districts of Sudurpaschim Province. As per federal regulations, Sudurpaschim Nepal comprises 10 local administrative divisions: 4 Municipalities including Dashrath Chand, Patan, Melauli, and Purchudi, alongside 6 Rural Municipalities namely Surnaya, Sigas, Shivnath, Pancheshwar, Dogada Kedar, and Dilasaini. These units, delineated by governmental policy, serve as essential hubs for governance and community services, catering to both urban and rural populations while upholding the region's distinctive characteristics and cultural heritage.

Each residential compound typically includes a courtyard (Aagan) and a two to three-story structure, often featuring an attached or externally built cattle shed. Boundaries between dwellings are marked by low walls, approximately 1'6" to 2 feet wide, commonly used for seating. The Aagan serves as an open communal space where daily activities, especially those performed by women, take place. As per (Locals, 2023) Construction materials such as river stones, slate, local timber, cow dung, mud, or black lintels are utilized, with Deodar, pine, sal, tooni, and sallo (pine) identified as primary timber sources. Doors and windows are predominantly crafted from deodar, Sal, rosewood, adorned with intricate carvings. Bedrooms and kitchens are typically situated at the rear for privacy, while the front-facing living room (chakh) is designed with projecting windows (chajj) to maximize daylighting. Walls and floors are coated with a mixture of mud and cow dung for thermal insulation, while low-sloped

slate tile roofs conserve heat during winters. Data on building structures was collected through interviews with locals and site observations:

Site Selection

The site is selected in the area from where the agriculture fields can be overlooked by the owners. Usually, the building is constructed in a less fertile part of the land.

Walls

The walls are usually constructed in random rubble masonry with slate stones due to the unavailability of large river stones, in some cases it is constructed in ashlar masonry. The external walls of the dwellings are constructed 16 inches to 20 inches wide and are plastered with half inch cow dung +mud + reed paste. In some cases, the masonry is left exposed in outside walls. The internal walls are also constructed with low height wooden partitions.

Foundation

The foundation is constructed 2 to 4 feet deep and 2 ft wide. And the plinth is raised to 1 feet height, in some cases it is raised up to 2 feet. For foundations large dressed or undressed stones are used.

Floor

The dwellings consist of ground floor, first floor and attic floor. The height of the floor is kept between 6 to 8 feet. The ground floor contains a cattle room and granary (goth) and semi open space called daan. Daan is used in summers for daytime activities and also to perform rituals and ceremonies, this space is also used to keep animal fodder and pestle (okhli). The upper floor contains living room called *chakh*, bedroom called *bhiter* and kitchen called *chulo*. The entire dwelling is divided into two sections with a main door called "*daar*". The landing of *daar* is called *deaulo*.Usually the *daar* is 3ft to 4ft wide and door height is kept about 4'6" and width 12'4".

Roof

Roofs are constructed with pine wood battens called "*basa*". These *basa's* are extended outward and used as an aesthetic feature. The *basa's* are rested over "*dhuri*", a peacock shaped corbels, which are usually placed at a center-to-center distance of 1 foot to two feet. The top of the *basa* is covered with slate stones "*Patther*" roof. The joints of the two slates are covered with another small slate stone called "tope". The slope is designed at 17 deg tilt.

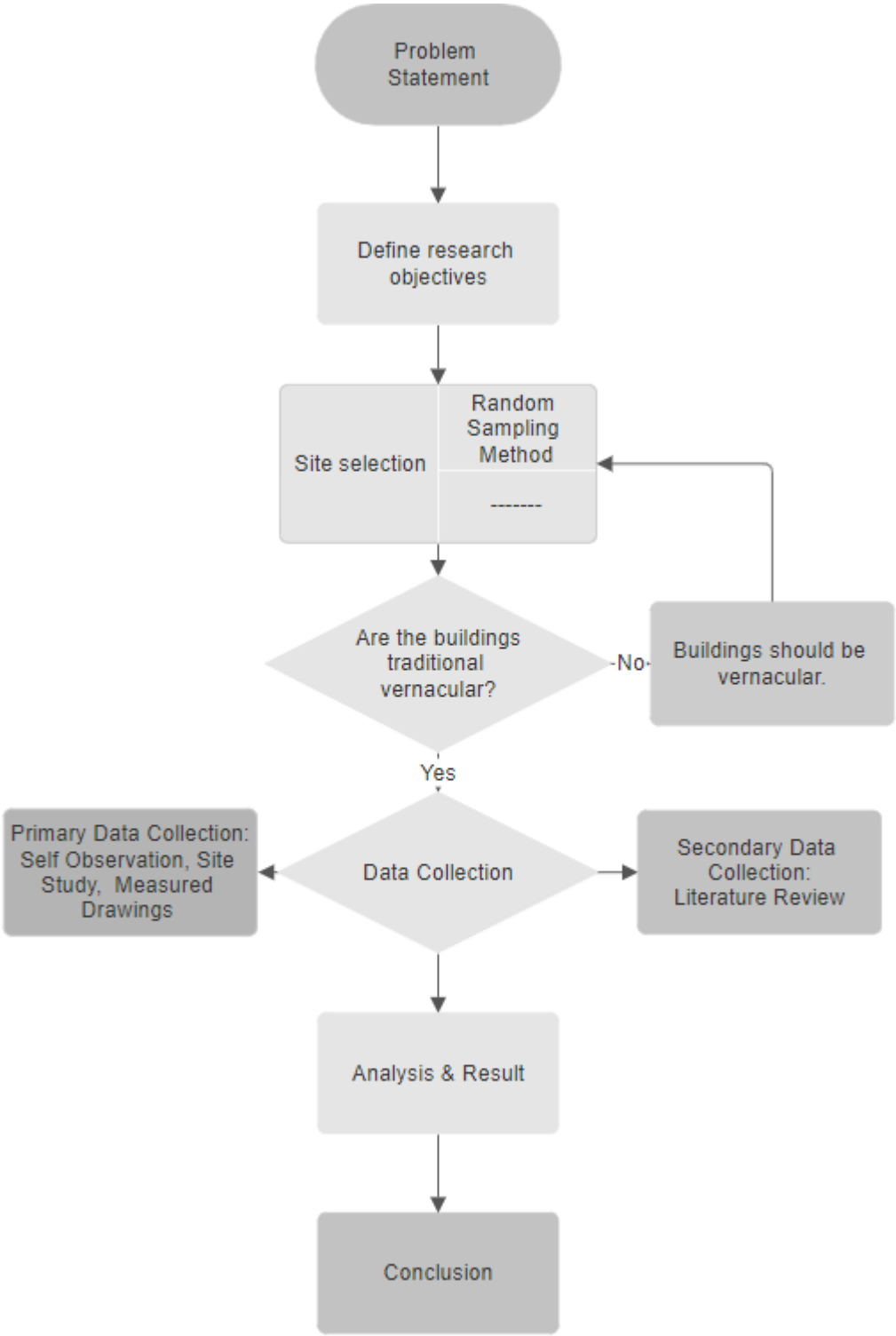
Openings

The doors are kept small in size so that when a person enters the room, he/she spontaneously bows the home, door size 2'-0"x5'-0" as per the case studies. The window frames are designed large but the opening is left small to avoid harsh winds. The window is called "chajja". It consists of 1'6" to 2' height parapet. This type of window also serves as a balcony during day time. Through chajja the solar radiations penetrate deep inside the room. The space adjacent to this window called "chaak" or living room, gets heated during day time and acts as a thermal storage during night.

Design Features

Symmetry in facade, harmony, contrasting colours for door windows and light colours for walls.

Methodology



My research project aimed to establish a comprehensive database concerning the evolution(changes) of traditional vernacular architecture within the study area. The investigation involved meticulously documenting various aspects of these buildings and analysis them and draw a conclusion based on the data analysis.

Firstly, the sample village is selected on the basis of settlement having years long architecture history, and Chands were the ruler of the Baitadi district before unification and Baskot village is known as capital during Chand rule. So being the capital of that time its architecture is unique that that of other place so I choose Baskot village as a sample area for study of this research. Dwelling typology to be studied were selected on the basis of Random Sampling method.

The dwelling selected from random sampling were studied, this included conducting oral surveys with local residents to gather insights into how the buildings were utilized, as well as creating architectural sketches depicting floor plans, sections, and elevations of the structures. Additionally, detailed documentation and drawings were made of representative examples of each architectural type identified. A photographic record was also compiled, capturing the buildings within their landscape context, along with interior and exterior views, and detailed images of construction features.

After the data collection on the selected sample dwelling typology is done the analysis of the dwelling are conducted on two phases.

First phase includes the figurative and analytic comparison of selected typologies while second phase discusses on the detailed changes and how it occurred based on the interviews with the locals

The study further examined the traditional construction methods and current trends in the region. By contextualizing the buildings within their geographical and anthropological settings, considering available resources and construction techniques, the project aimed to deepen understanding of traditional vernacular architecture. Furthermore, the assessment of the current condition of these buildings, the challenges they face, and potential pathways for their preservation were also addressed in the conclusion part.

Study Area

The village for research lies in Baitadi district which falls under the hilly region with an altitude ranging from 300m to 3000m. Settlements in the district are classified into three categories as ridge, midland and valley settlements. Each type of settlement has its own peculiar issues for development which are unique and not present in other types of settlements. Planning and design of buildings vary in these settlements. The sample village studied here is an example of midland settlement and linear planning. In a traditional vernacular settlement, the shelters are designed to achieve maximum comfort with limited resources.

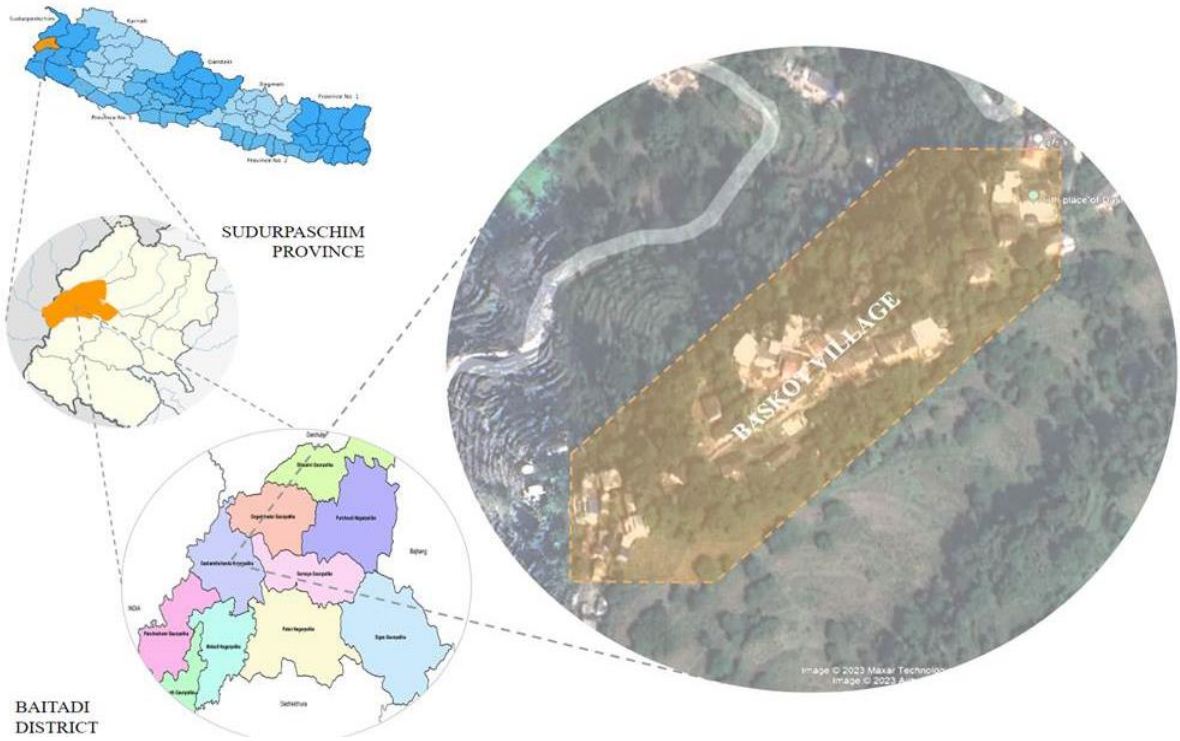


Figure 3 sample village
Source: Author

Currently, there is a notable increase in the abandonment of traditional buildings due to migration toward areas with better amenities. This trend results in neglect and disrepair of these structures, as they are left unattended. Furthermore, there is a prevailing misconception that traditional buildings lack sufficient strength, leading to their replacement with modern reinforced concrete (RCC) buildings. Consequently, the utilization of indigenous materials and expertise in constructing traditional buildings, which has been transmitted through generations, is now fading away.

Vernacular Architecture of Baskot

Baskot village lies in Baitadi District of Sudurpaschim province division, and lies in the lesser Himalayan belt. It is located at 29° 33' 31"N and 80° 24' 25" E with an altitude from 1280m to 1336m. It lies in seismic zone IV. The village is accessible through Gothalapani Jhulaghat road. The village settlement is in the midlands area of a hill. The village is divided into two parts upper and lower with differences in caste division spread up to 250m radius.

Upper Baskot (malli) resides in the upper caste division and *Lower Baskot (talli)* resides in lower caste division. With the division in caste groups there is a difference in income also which can be seen in the existing vernacular architecture of that place also. Upper caste people's residences are usually of bigger floor height and with more architecture detail which can be seen on the existing old vernacular buildings. With the difference in income group there is difference in scale and detailing of the buildings. Usually most of the buildings here are residences and some of the buildings are religious

complexes. During the site study, I have studied the 180m stretch of the *Upper Baskot* area where my main focus will be on the changes of vernacular buildings.

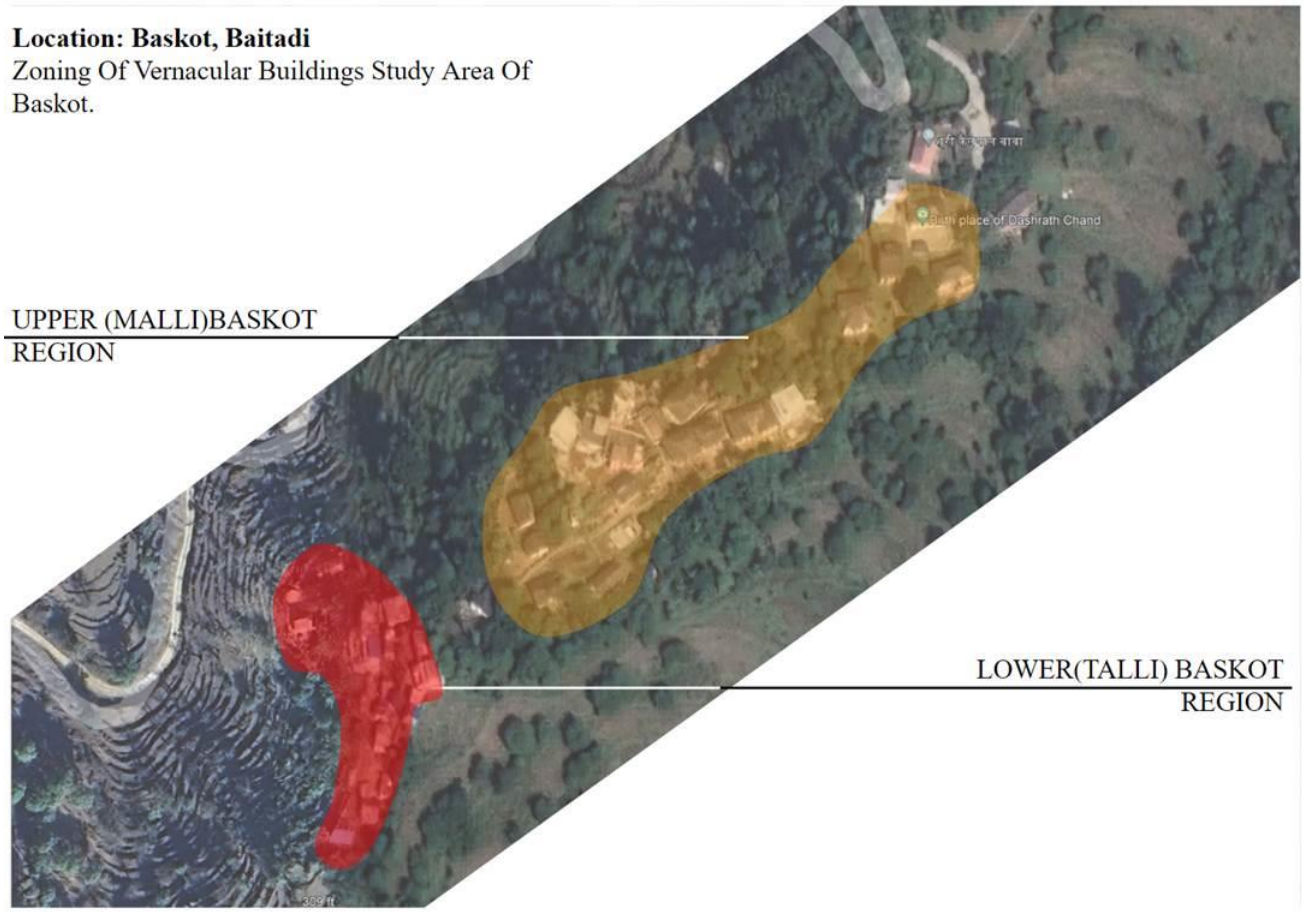


Figure 4 yellow color shows the sample study area and how the settlement have grown
Source: Author

Dwelling typologies studied

Throughout the study, I distinguished various categories of dwelling, each showcasing distinct characteristics and principles. As shown in the figure below house no 1 is preserved as museum as it was the residence of martyr Dashrath Chand who was from the Chand village and other dwellings are used for residence. These typologies were chosen on basis of *Random Sampling Method* include:

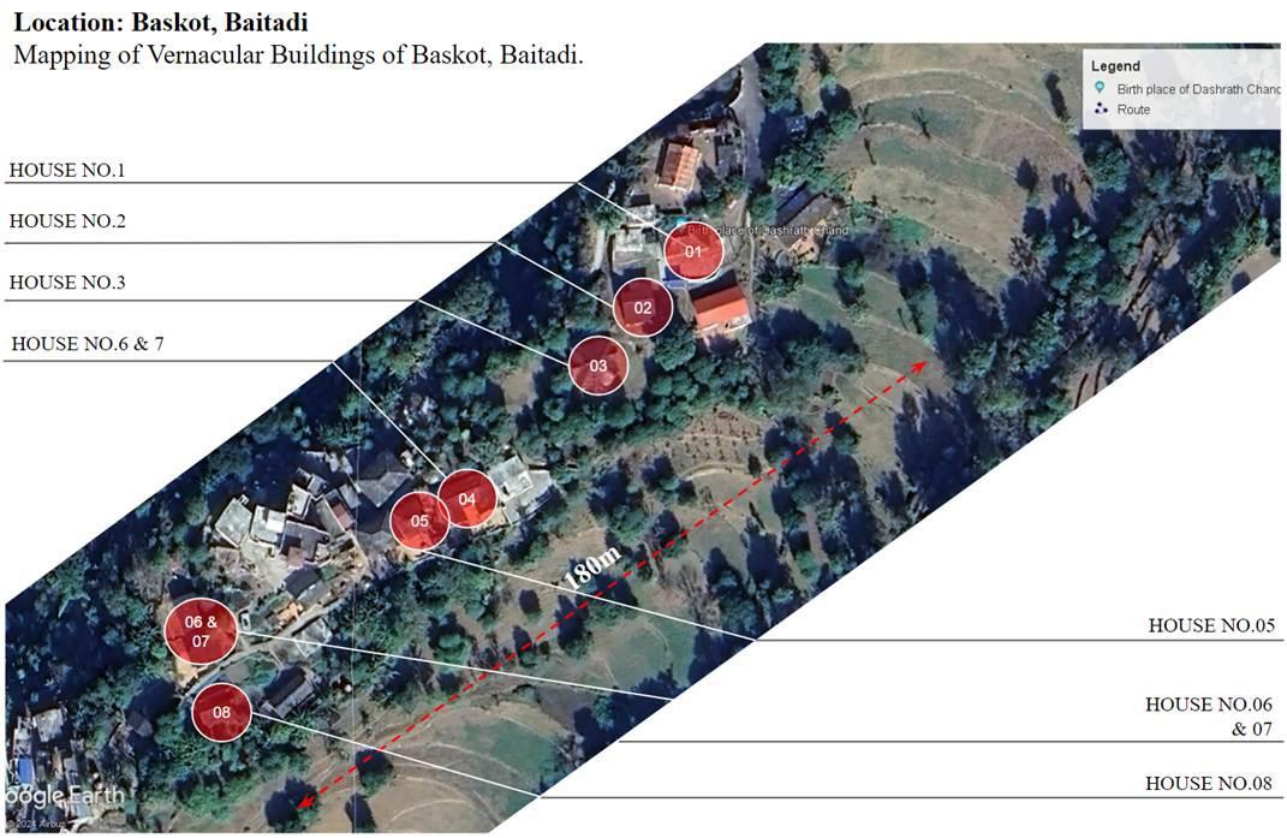


Figure 5 no. of houses studied
Source: Author

a. Dwelling typology 1 – House 3 floors: The house is located in the starting part of the village and oriented in northwest-southeast direction. The house is in good condition. The doors and windows are intact. The front facade of the house faces south east therefore all doors' windows are constructed in the south direction to capture winter sun. The opening in the north window is very small to prevent northerly cold winds.

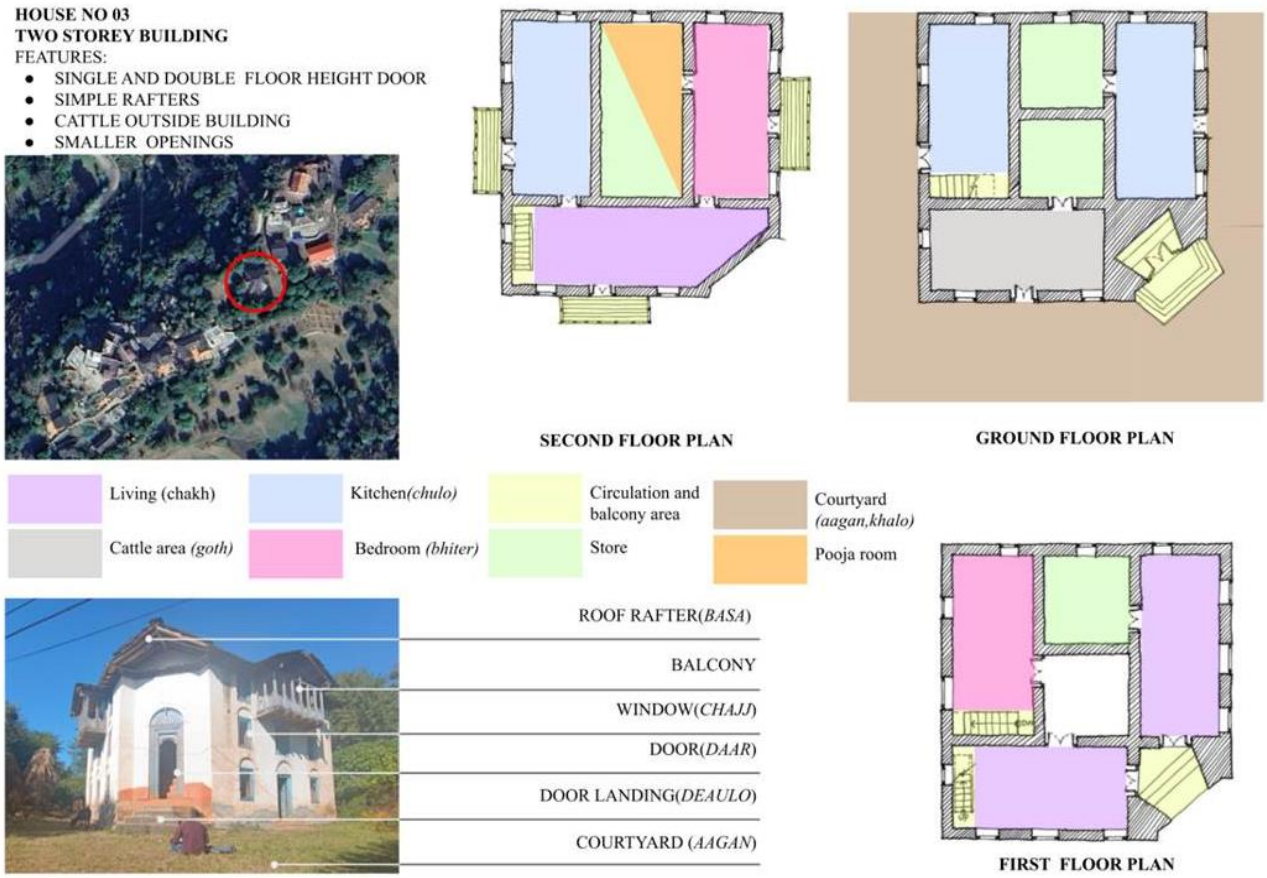


Figure 6 house 03 analysis

b. Dwelling typology 2 – House 2 floors: The house is located in the central part of the village and oriented in northwest-southeast direction. The house is in good condition. The doors and windows are intact. The front facade of the house faces south east therefore all doors and windows are constructed in the south direction to capture winter sun. The east and west windows are smaller. The opening in the north window is very small to prevent northerly cold winds.

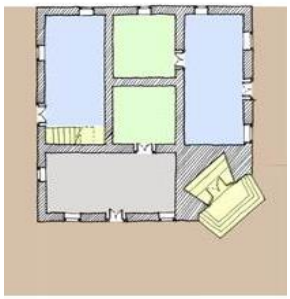
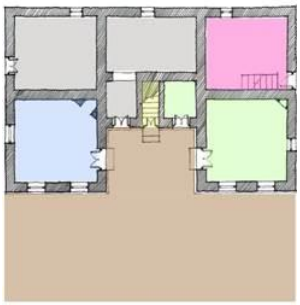
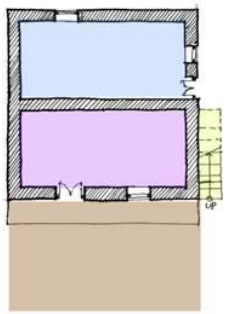
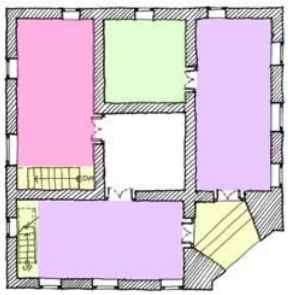
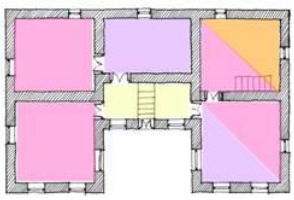
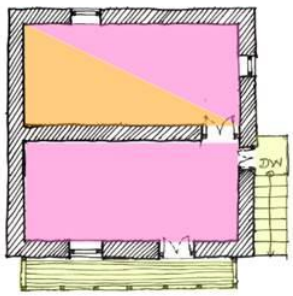
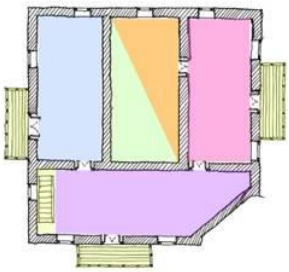
Figure 7 house 04 analysis

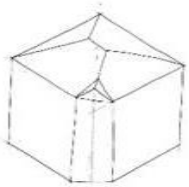
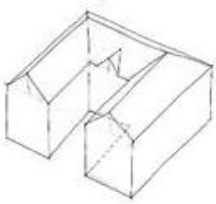
c. Dwelling typology 3 – House 2 floors: The house is located at the center of the village and oriented in southeast- northwest direction. The house has modified traditional characteristics. The door sizes and the *chajja* have been slightly modified. The intricate details have been simplified. This house is in good condition.

Figure 8 house number 6 analysis

Analysis & Discussion

Table 1 Analysis of three typologies

	Dwelling 1 (House 3)	**Dwelling 2 (House 4)**	**Dwelling 3 (House 6)**
Orientation	facing SE	facing SE	facing SW
Ground Floor Plan			
First floor Plan			
Second Floor Plan		-	-

Door			
Window			
Form			
Balcony		-	

Exterior Wall	Dry masonry construction with. Wall thickness- 18 inches wide.	Dry masonry construction with slate stone. Wall thickness- 18 inches wide	Random rubble masonry with mud plaster, 16 inches thick wall
Interior Wall	12 inches stone wall with mud plaster *(kamero)*	12 inches stone wall with mud plaster *(kamero)*	12 inches stone wall with mud plaster *(kamero)*
Roof	Timber - slate roof Slope - 17 deg	Timber - corrugated tin roof Slope - 19 deg	Timber - slate roof Slope - 15 deg

Changes

As time progresses, the vernacular architecture of any location undergoes inevitable changes. Many factors influence the vernacular architecture of the place and its changes. Likewise, the traditional architecture of Baskot is also evolving with time due to some of these factors:

I. Architectural elements (doors, windows, rafter details, staircase details)
II. Form & Proportion of the building
III. Adaptation to changing needs

Architectural elements (Doors, windows, rafter details, staircase details)

One of the major changes can be noticed through the change in architectural elements like the proportion of door and rafter, level of details in the door. The level of details in wood carving in door, window, rafters and in some of dwelling the wood carvings are even sheen on the roof eaves board and facia boards which shows the prosperity of the dwellers.

For example: The figure below shows the evolution of door in their proportion, form and details found during study in the area. Where big door with height of 10 to 13 feet have more floral, animals, God goddess carved into them and small door with height of 5 to 7 feet have simple wood finishing.

Figure 9 changes in the Door Typology with the scale of building

Form and proportion of the building

Another important changes can be noticed through the form and proportion of the overall dwellings. For example: The figure below shows the different types of Building form according to the need of the peoples living on them. During the study we found 3 typologies in the settlement.
Based on the interview with the residents of the area we found out that these forms are influenced economically, culturally and influence from the nearby area.

For example: economically the villagers with higher income have building with the big detailed carved doors and windows. Also, the form and proportion of the building are big and unique than that of others like having four-way slope roof and u-shaped building form whereas the other with low economy have dwelling with linear form having two-way slope.

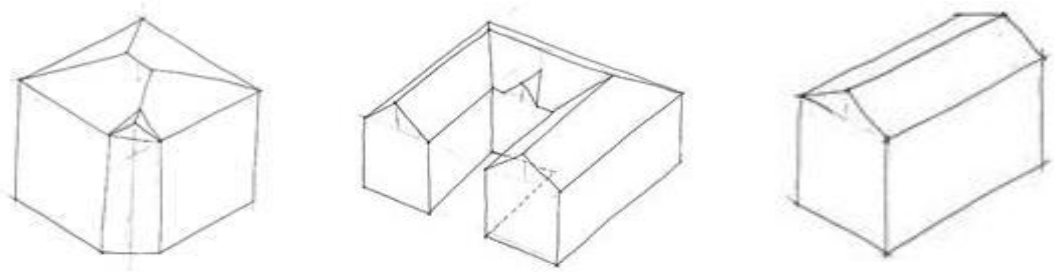


Figure 10 different form of building found in the study area

Adaptation to the changing needs

There are some factors which influenced the changes in the vernacular architecture of Baskot: comfort, luxury, influences from nearby regions, etc are few of them.
For example: People always seek for comfort and luxury as per the changing need in time. As per the interview with the people of village; ***Chand*** people were the rulers of the area and during the unified Nepal time they used to be the ***Pancha*** (leader) of the community and they get to travel around the country. And Nearby border area, during their travel they experience new form of architecture with different level of comfort.

After returning to the village, they changed the way of construction of building where the sizes of opening (doors, window) get bigger for more intake of natural light, floor to floor height and scale of building get bigger which improved natural ventilation and gives a sense of grandness. The detailing work on wood is inspired from the architecture of the carving of Newari architecture or from the Kumaon region of India.

As we can see on the plan of buildings the circulation space(***stairs***) is distributed into two places. while I asked the villagers, they replied that the main stair is for the people of house while the other staircase is for the guest so that they can't see the female of the house during their visit.

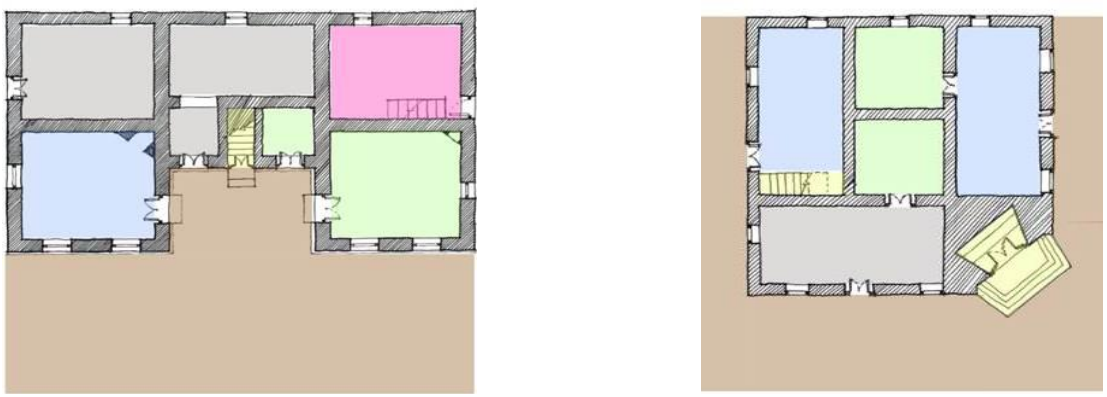


Figure 11 plan of different dwellings showing the location of circulation(stairs) in two different places

Current Situation

In recent years, the vernacular architecture of this region has experienced significant changes, especially over the last decade. Key factors driving this transformation include road development, changes in building materials, and mass migration from rural to urban areas. These shifts are altering not only the buildings themselves but also their surrounding environments and cultural contexts. This disruption threatens the traditional architectural styles that are deeply connected to local resources and building methods.

At present, there is a lack of discussion on how to balance traditional architectural practices with modern development. Nepal, in particular, lacks a legal framework or guidelines to protect its unique architectural heritage in its original context. Instead, the current trend is towards "museumization," where living cultural practices are reduced to static relics. This approach risks losing the vibrant, evolving nature of these architectural expressions, turning them into mere historical artifacts rather than preserving their dynamic essence.

Conclusion

This research suggests we need a plan to monitor changes in this region so that future building projects can benefit from the local knowledge and it can help to grow the place. We should focus on a few key areas: Studying how traditional houses in the area have managed to survive earthquakes without much damage. This can help us build safer structures in the future with the use of local materials available in the area.

We should explore modern materials that can provide similar insulation. Instead of tearing down old houses and building new ones, we should encourage renovating them. This saves resources and preserves the character of the area. Since the materials used in these houses are becoming rare, we should find ways to add modern comforts while still keeping the traditional style.

We can get inspired from the vernacular architecture of the place and use them in present times. For example: use of local materials with few changes in construction technology which can adapt to the present need of the people. Architects, engineers, designers can get inspired from the unique construction of the circulation space, double height entrances plan layout of the building with local materials which can promote the local use of material and skill in their practices.

Wood carving expert are nowhere to be found in the area so the wood carving skills are in the stage of extinction, so programs needed to conducted to preserve the local craft and an era old tradition of the place.

This area is culturally, traditionally and socially rich which is yet to be studied and researched, although we tried to incorporate few of the area like economic, social, cultural in the discussion part of paper but the vernacular dwelling itself have a lot more to be explored from the economic, traditional, and other perspectives in depth.

Acknowledgement

This research was not funded by any grant. However, there have been several individuals who have provided me with their valuable time and knowledge.

I extend my heartfelt gratitude to the residents of Baskot village in Baitadi district, whose invaluable insights and cooperation were instrumental in this study of vernacular architecture. Their willingness to share their knowledge enriched my understanding of the subject matter.

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I want to express my heartfelt thanks to my family, friends, and colleagues for their help, both direct and indirect, throughout the completion of this study. Special appreciation goes to my colleague, Ms. Rozina Pokharel, for her support and assistance through different stages of this research.

Sincerely,
Indra Prakash Shah

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