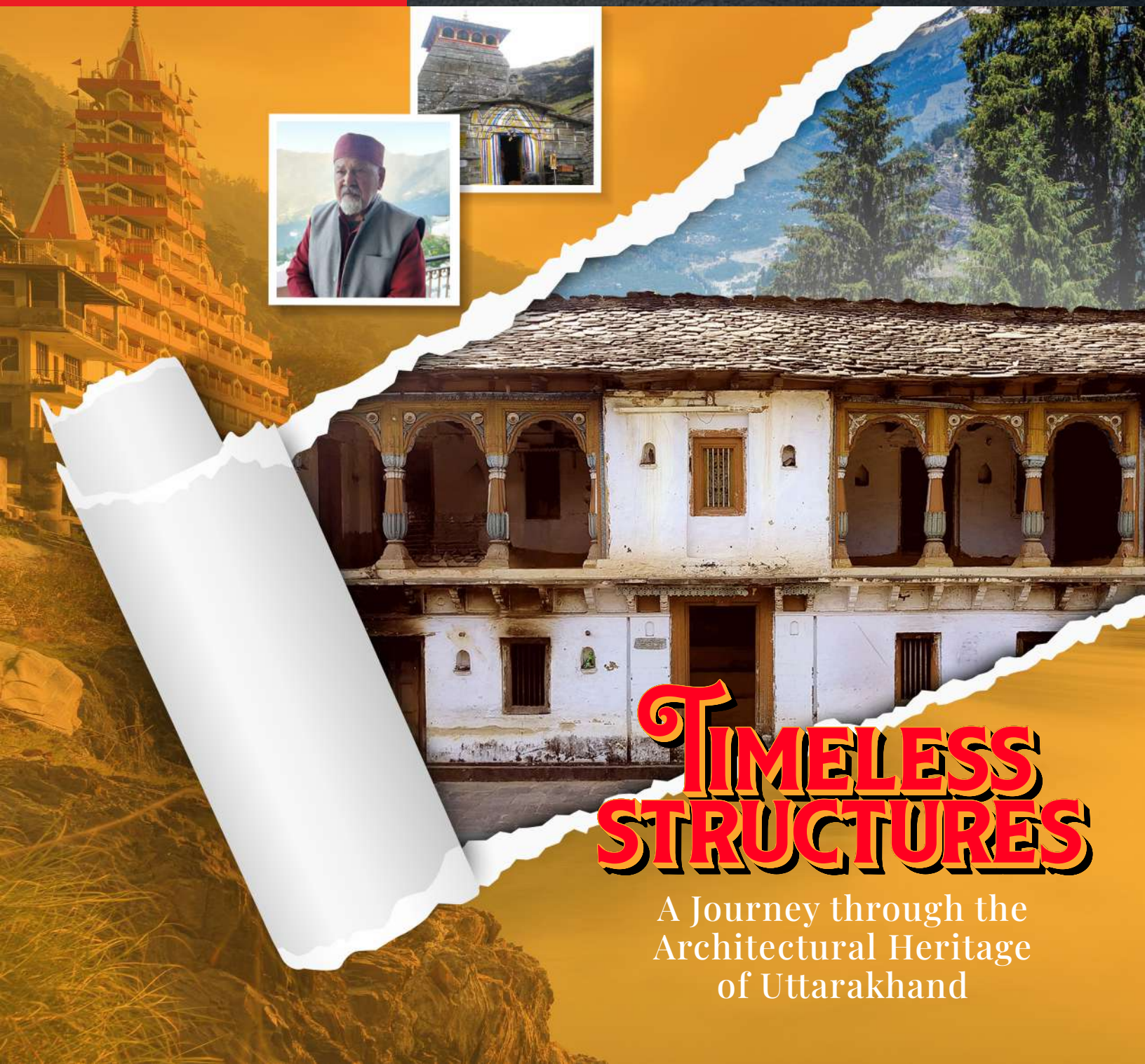
साधर्म्य भाष्यम्

SĀDHARMYA BHĀṢYAM

People - Culture - Places

Volume III • Issue 1 • July-December 2024 • Half Yearly



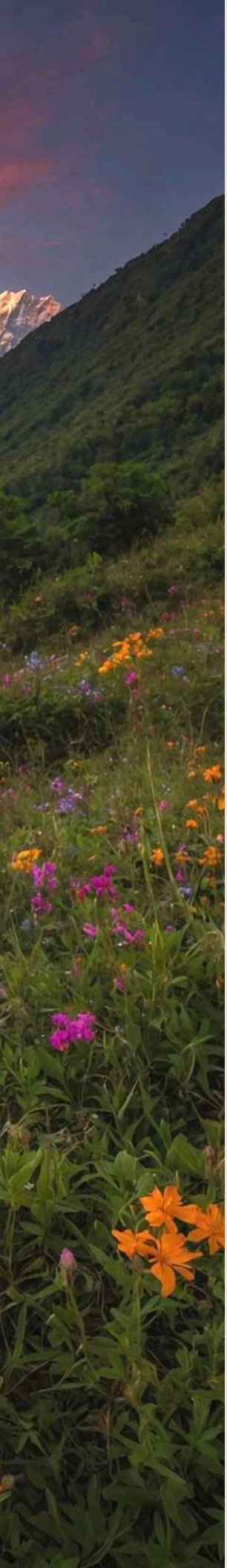
TIMELESS STRUCTURES

A Journey through the Architectural Heritage of Uttarakhand

साधर्म्य भाष्यम्
SĀDHARMYA BHĀṢYAM
People - Culture - Places

EDITORIAL OFFICE
Sadharmyam
Research and Dialogue Center
Upper Bhaktiyana, Srinagar
Pauri District, UK-246174
Tel: 01346-252884
Mob: 9870837140 | 9412079619
Email: sadharmyam@gmail.om,
rmanuvely@gmail.com

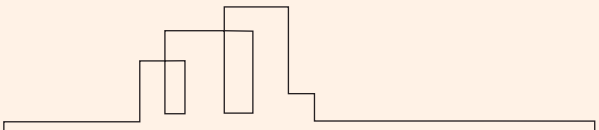
"Unless the Lord builds the house,
the builders labor in vain.
Unless the Lord watches over the city,
the guards stand watch in vain."
[Psalm 127:1]



CONTENTS

Renish Manuvely

THE POETICS OF DWELLING



The real plight lies in the fact that modern humans have forgotten the true way of living in the dwellings they built themselves, which is the existential core of our being-in-the-world. "Buildings have been reduced to mere engineering and construction, becoming acts of calculation, technical production, and assembly."

We live surrounded by enormous buildings and structures, ranging from skyscrapers to traditional dwellings in villages. The variety of designs and patterns in these structures speak to the human capability to build and adapt to different geographical conditions. These variations also reflect the identity of humanity expressed in the specific cultures and times. Frank Lloyd Wright, a renowned architect, once stated that every great architect is, without a doubt, a great poet. They have the unique ability to interpret and capture the essence of their era.

Observing these structures, it becomes clear that they are more than mere inanimate objects, satisfying fundamental needs for shelter and protection. These architectural expressions reveal many dimensions of human creativity and our deep relationship with the world. Over the years, there has been significant speculation about these living expressions of human ingenuity. Among various perspectives, Martin Heidegger's thoughts, infused with his philosophical base, reveal a unique interpretation to this art of building. In his lecture titled *Building Dwelling Thinking,* Heidegger takes us from the ordinary interpretation of dwelling as merely inhabiting a building to a deeper understanding of dwelling that entails nurturing and fostering an environment, where humanity can thrive and reach their full potential.

Heidegger's thoughts reveal a clear concern about modern attitudes toward building and dwelling. He says, that "the plight of our age is not a lack of houses, but a deeper homelessness." By homelessness, Heidegger does not mean a housing shortage. He says, "we have plenty of aesthetically and technologically advanced dwelling structures. Today houses are well-planned, easy to maintain, attractively priced, and open to air, light, and sun. However, whether these dwellings truly ensure that dwelling occurs in them." He argues that the real plight lies in the fact that modern humans have forgotten the true way of living in the dwellings they built themselves, which is the existential core of our being-in-the-world. "Buildings have been reduced to mere engineering and construction, becoming acts of calculation, technical production, and assembly."

These concerns make Heidegger to look for the true meaning and purpose of this dwelling and building. He explores the etymology of the word 'dwell' to uncover its true meaning. He identifies the deeper meaning of the term *bauen,*which in Old English and High German means 'to dwell.' Heidegger points out that "the

original sense of *bauen* implies more than just residing in a place; it encompasses remaining, staying, cherishing, protecting, preserving, and caring for."Based on this etymological insight, he asserts three key aspects of dwelling. "Building is essentially dwelling. This dwelling defines how humans exist on the earth as mortals and building as dwelling includes not only constructing buildings but also sparing and caring for the world."

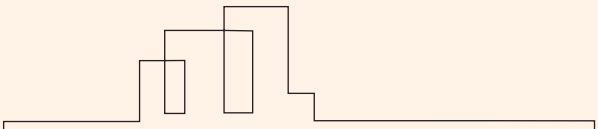
Heidegger goes deeper, when he speaks about the sparing and caring aspect. He introduces the concept of the fourfold—earth, sky, divinities, and mortals by stating that dwelling means safeguarding the unity of this fourfold. "This care involves engaging with things in the world, nurturing both organic and artificial things. True dwelling is achieved by building in a way that preserves the fourfold, creating spaces, where this unity can manifest." According to him, "dwelling is not just one activity among many but is fundamental to human existence."

His reflection on building and dwelling had great impact in the field of architecture and engineering in the west. Many architects were very much influenced by this integral approach to building. However, in the Indian context, these thoughts were not novel. Many dimensions of his reflections were already prevailed in Vaastu Shastra, an ancient Indian knowledge system on building envisioned by the Rishis in India. Vaastu Shastra is essentially an art of correct setting, whereby one can optimize the benefits of the *Panchbhutas* (five elements) of nature, earth's magnetic field, and the rotational influence of the sun, moon, and other planets. This knowledge system is founded on five basic principles.

- The doctrine of orientation;
- Site planning;
- The proportionate measurement of the building;
- The six canons of Vedic architecture;
- The aesthetics of the building.

The most important principle of Vaastu Shastra is the *Vaastu–Purusha–Mandala,* which is the cosmography of universal order and a source of self-identification within the universe, relating physical form to outer form and inner vision.

Renna Patra, an eminent scholar in this field, has unfolded the corelating factors between the thoughts of Heidegger and Vaastu Shastra. She says that the thought process of Heidegger that go beyond a



The aspirations, needs, and values of the people are contained in these structural creations, which are often missing in the modern structures. By revisiting and celebrating these structures, we not only rejuvenate this heritage but also foster a deeper sense of belonging, rediscovering the true meaning of dwelling.

mere interpretative framework, offering a profound understanding of how we live and build in the world, is very much reflected in the vision of Indian traditional science. Vaastu Shastra aims to bring balance and harmony between humans, nature, and buildings to achieve peace, prosperity, and happiness. Aligning with Heidegger's view the dwelling environment should be suitable for humans to live comfortably and beautifully. (Patra, A Comparative Study on Vaastu Shastra and Heidegger's *'Building, Dwelling and Thinking)*

The reflections of Heidegger and the vision of the age-old knowledge system of India, reveal the true essence of building and dwelling. This profound understanding of building, that dwellings are no more merely a place of inhabitance but is a space, where one encounters one's own existence. This also illuminates the deep connection between humanity and the universe. Humans are not separate from the macrocosm, and all creativities of humanity are intrinsically linked to it.

In light of these reflections, the discussion on the architecture of Uttarakhand becomes more illuminated. The traditional structures of Uttarakhand, whether temples, forts, or village houses, all reflect the deeper connectivity of humanity with nature. The traditional artisans of this terrain were convinced of this vision of harmony with the nature. They skilfully integrated their creativity in tune with the environment. For example, they designated ground floors for cattle, and even incorporated bird nests in panels beneath the roofs, showcasing the harmonious blending of creativity and environment.

People have lived in this part of the Himalayas for centuries, developing a deep understanding of both the strengths and vulnerabilities of their environment. The structures they built reflect their remarkable ability to adapt to these conditions. People have inhabited this part of the Himalayas for a long period. The small villages atop mountains, ancient temples with their unique patterns and styles, built using locally available materials such as stone, slates, and wood, are unique architectural marvels of Uttarakhand. These various structures are well adapted to the geographical terrains of this state, especially to withstand heavy snowfall and earthquakes.

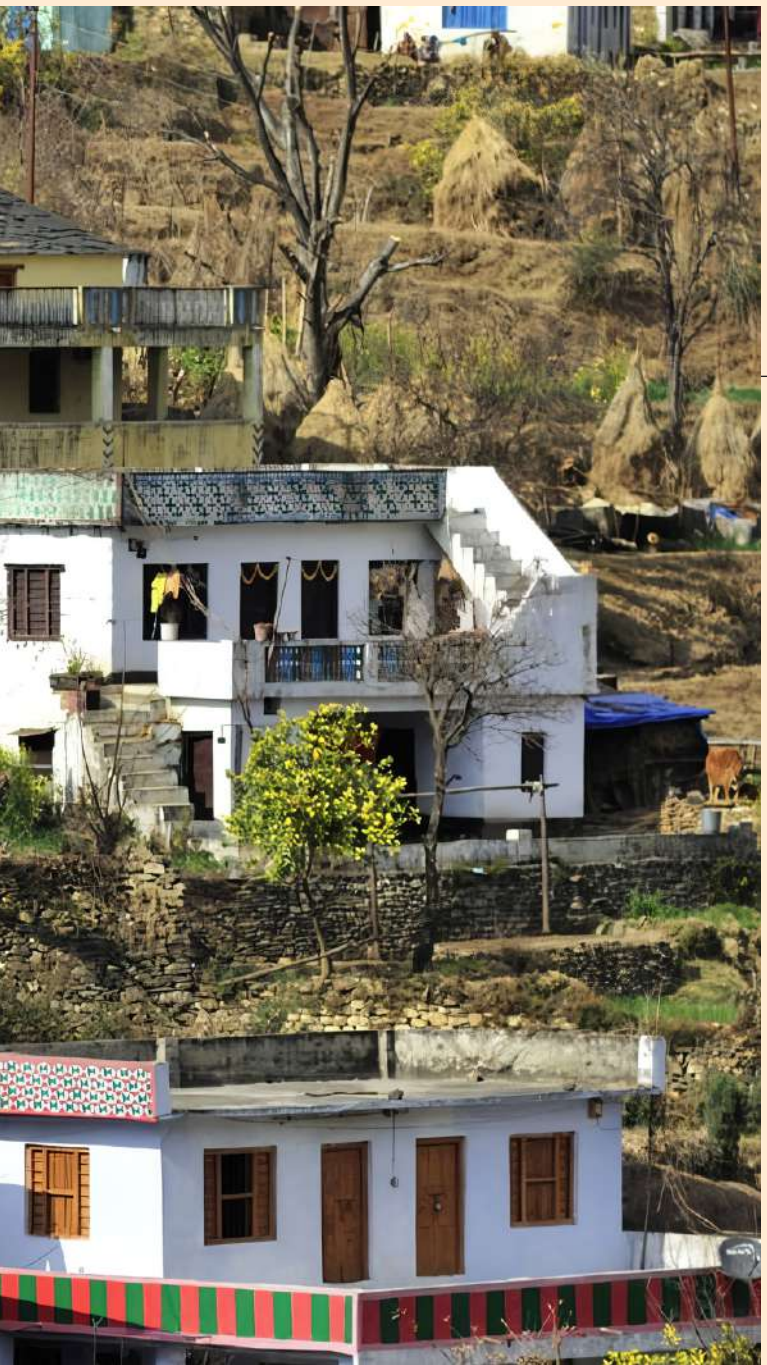
These architectural marvels also express the cultural identity of this land and its people. The aspirations, needs, and values of the people are contained in these structural creations, which are often missing in the modern structures. By revisiting and celebrating these structures, we not only rejuvenate this heritage but also foster a deeper sense of belonging, rediscovering the true meaning of dwelling. The present issue of Sadharmya Bhasyam attempts to unfold these traditional marvellous edifices of Uttarakhand. They are the real heritage and treasures of our nation. I consider that acknowledging and unveiling the values and vision behind this architectural heritage is relevant and important today. ■

UTTARAKHAND'S BUILT HERITAGE

A Confluence of Geography, History, and Culture

Prof. Nagendra Rawat

Assistant Professor
Department of History and Archaeology
HNB Garhwal University
(Central University)
Srinagar Garhwal, Uttarakhand



Uttarakhand, often referred to as the Land of the Gods, is a region, where geography has profoundly influenced the architectural landscape. The diverse of the terrain, state ranging from lofty mountains to lush valleys, has shaped the construction and design of buildings across the region, reflecting both the environmental challenges and the cultural heritage of its people. From the fortified forts of Garhwal to the intricate temple structures and the buildings from the colonial-era that dot the hill stations, Uttarakhand architecture is a testament to the region's ability to harmonize with its surroundings. This article explores the unique architectural styles of Uttarakhand,

highlighting the influence of geography, the adaptation of traditional techniques, and the ongoing efforts to preserve the region's built heritage in the face of modernization and environmental challenges.

INFLUENCE OF GEOGRAPHY ON UTTARAKHAND

The unique geographical features, including its mountainous terrain and varied climate, have played significant role in the conceptualising of the various architectural styles in the region. The thick stone and mud walls, enhanced with mud plaster mixed with hay and cow dung, provide excellent insulation against cold winters and help maintain temperatures in the all seasons. Small windows and doors are commonly used to regulate the interior temperature of these homes. In Garhwal, architectural features like *chajja, dandalyi, and great tibar*i extend the living space, offering expansive mountain views and additional outdoor areas. The grand open windows and decorated pillars of tibari ensure good ventilation, essential during humid monsoons, while the sloping roofs, constructed from large logs, twigs, mud plaster, and flat stones, are designed to withstand heavy snowfall and rain. Seismic considerations across Uttarakhand have led to earthquake-resistant designs that combine flexible wooden frames with stone and mud walls. Many traditional houses are oriented south to maximize solar gain in winter, and central courtyards, such as *aangan* in Kumaon and *chauk* in Garhwal, enhance natural light and ventilation. These shared spaces promote community interactions and cultural practices, while intricate carvings and decorative elements like *Likhai* and various verandas reflect the region's rich cultural heritage. Overall, Uttarakhand architecture is a blend of practical environmental adaptations and a celebration of cultural traditions.

DISTINCTIVE ARCHITECTURAL PATTERNS IN UTTARAKHAND REGIONS

The architecture of the Kumaon and Garhwal regions features buildings made from stone, mud, and wooden slabs. These structures have thick walls constructed from mud and stone, providing excellent insulation, while the floors are typically finished with wooden boards or mud to maintain a comfortable interior. A central entrance, known as *kholi,* is present in both Garhwal and Kumaon homes, dividing the building into two sections accessible from both sides of the stairs. The doors and windows are highly decorated, often with images of Ganesha and other natural motifs carved into the lintel, a practice called *likhai* in Kumaon, which gives these houses a unique character. The ground floor, referred to as *goth* or *kothyar* depending on the region, is used for housing cattle

and storing materials, while the main living area is located on the first floor. The houses in Kumaon are adorned with unique colors and patterns called *eipan,* which decorate the walls and stairs. *Eipan* designs are created using red ochre and rice, adding a significant decorative element to these homes.

The grand open windows and decorated pillars of tibari ensure good ventilation, essential during humid monsoons, while the sloping roofs, constructed from large logs, twigs, mud plaster, and flat stones, are designed to withstand heavy snowfall and rain.

In Garhwal, the first floor of the houses often features an extended space known as *chajja, dandalyi, and great tibar*i each with different appearances and utilities. The dandalyi is a rectangular veranda with a length that exceeds its width, creating a distinctive elongated outdoor space. The pillars in the *dandalyi* are simple and unadorned, contributing to a straightforward aesthetic. Another type of veranda features decorated pillars, creating a grand open window known as *tibari,* which consists of three individual windows. The *tibari* design includes variations such as *dwibari* (two elongated windows with three pillars), *chaubari* (four elongated windows with five pillars), and up to *naubari*

(nine elongated windows with ten pillars), reflecting the resourcefulness and prosperity of the owner. However, the *tibari* is the most commonly adopted pattern in the Garhwal region. An important feature of these houses is the open courtyard in front of them. In Kumaon, this courtyard is called *aangan,* used for drying grains and hosting family celebrations such as marriages and festivities. In Garhwal, the stone courtyard is known as *chauk,* made of flat stones called *pataal.* Surrounding the *aangan* or *chauk* there is a *baad* or *bhidi,* a thick stone wall about a foot high that creates a boundary and provides seating space for gatherings. The roofs of these houses, known as *chhat,* are built with a large key log supported by numerous smaller logs, topped with a bed of branches. This bed is then covered with plaster made from mud, cow dung, and hay, and finished with a layer of flat stones or pathaal, sealed with mud. This traditional architecture not only showcases the resourcefulness of the Garhwal and Kumaoni people but also reflects their deep cultural heritage.

ENGINEERING FEATS IN UTTARAKHAND'S ICONIC TEMPLES

The Identity of Uttarakhand as the Land of the Gods, is derived from the existence of thousands of temples, which are iconic symbols of construction techniques. The Kedarnath Temple, at 3,583 meters, is built from intricately carved stone slabs, assembled without mortar. The interlocking technique ensures stability against severe weather, including heavy snowfall and earthquakes. The temple foundation on a glacial moraine highlights the builder's geological understanding. Similarly, the Badrinath Temple, in the traditional North Indian Nagara style, features a tall, curved *shikhara* adorned with intricate carvings. The use of lime mortar ensures durability and resistance to extreme climatic conditions.

The Jageshwar Temple complex, with over 100 small stone temples from the 9th century, uses the Kath-Kuni style, stacking flat stones without binding material, offering flexibility against seismic activities. The Sun Temple in Katarmal, a lesser-known yet significant architectural gem, demonstrates the advanced understanding of solar orientation. Constructed in the 9th century, the temple is designed in such a manner that the first rays of the sun illuminate the deity inside the sanctum sanctorum. The temple construction involved large stone blocks, intricately carved with depictions of various deities and mythological scenes. The alignment and positioning of the temple highlight the builder's astronomical

Kedarnath Temple, at 3,583 meters, is built from intricately carved stone slabs, assembled without mortar. The interlocking technique ensures stability against severe weather, including heavy snowfall and earthquakes.

knowledge and their ability to integrate it into the architecture. These iconic temples of Uttarakhand not only reflect the region's rich cultural and religious heritage but also stand as monuments to the advanced engineering and architectural skills of ancient builders. Their construction methods, tailored to the challenging Himalayan environment, reveal a deep understanding of materials, climate, and seismic activity, resulting in structures that have stood for hundreds of years.

ARCHITECTURAL SIGNIFICANCE OF GARHWAL FORTS

Prior to me several scholars have tried to explore the various aspects of the architectural heritage of the region, which provided a baseline to do more in this direction. Earlier, the architectural studies were mainly focused on the temples. therefore, I began my study on civil architecture and royal architecture. I have done my core research on the forts of Garhwal region, which were never investigated in terms of their location, architecture and their politico-social significance. This research also provided some absolute date to prove the historicity of there forts in timeline. Apart from this, currently I am exploring the *kotha* of Garhwal region, which are again associated with royal class of the region. 'kotha' is a kind of square fortified residential structure, which is found in different parts of Garhwal. It has also come to light that these kothas not only belonged to royal persons but some of the kothas are associated with top religious persons as well.

The forts of Garhwal in Uttarakhand are remarkable structures that encapsulate the region's rich history, strategic importance, and architectural ability. Key findings highlight their strategic locations, defensive features, integration with natural landscapes, and cultural elements. The Garhwal forts, like Chandpur Garhi and Devalgarh, were typically constructed on elevated terrains, providing a commanding view for early detection of enemy advances and natural fortification. Their architecture emphasized robust defense, with thick stone walls, narrow entrances, and strategically placed gates, making them easier to defend. Bastions and watchtowers provided vantage points for soldiers, while large stone blocks and lime mortar ensured durability against both attacks and natural elements. The forts were seamlessly integrated with the rugged

terrain, incorporating cliffs, steep slopes, and dense forests into their defensive layout, making large-scale attacks difficult.

Effective water management through systems like step wells and rainwater harvesting, was crucial for sustainability during sieges. Beyond military significance, these forts served as administrative and cultural hubs, with structures like palaces, temples, and residential quarters reflecting the religious and cultural practices of the era. The architectural style blends local traditions with practical military needs, using materials that provided stability and harmony with the natural surroundings. The design and construction techniques reveal a deep understanding of the region's geography and an ability to adapt architectural practices to local conditions.

IMPACT OF COLONIALISM ON LOCAL ARCHITECTURE

Colonial-era buildings in Uttarakhand blend British architectural styles with indigenous elements, creating a unique hybrid aesthetic. Hill stations like Nainital, Mussoorie, and Almora are prime examples of this fusion. The Raj Bhavan in Nainital, built in the Gothic style, uses locally sourced stone and slate, aligning with traditional Kumaoni construction methods. The Savoy Hotel in Mussoorie showcases Victorian-era design with sloping roofs and thick walls adapted to the region's heavy snowfall and seismic activity.

Colonial buildings often incorporated indigenous craftsmanship and materials, ensuring suitability to the local environment. Schools and churches built during the colonial era also reflect this blend, with St. Joseph College in Nainital combining Gothic Revival architecture with local building techniques. These examples highlight how the colonial-era buildings in Uttarakhand were not mere impositions of foreign styles but thoughtful integrations that respected and incorporated local building traditions and materials.

CHALLENGES FACING UTTARAKHAND'S BUILT HERITAGE

Uttarakhand's built heritage faces numerous threats beyond natural disasters, including urbanization, development, and a lack of awareness among local communities and policymakers. The preference for modern building materials over traditional techniques undermines local craftsmanship, while the pressures of tourism lead to overcrowding, pollution, and unregulated construction. Traditional houses are often abandoned in favor of modern buildings that offer improved living conditions, including the convenience of attached bathrooms. Addressing these challenges requires raising awareness, implementing stronger legal frameworks, promoting sustainable tourism practices, providing financial and technical support for restoration, and engaging local communities in preserving Uttarakhand's architectural legacy.

SUSTAINABLE CONSERVATION STRATEGIES

Several grassroots initiatives in Uttarakhand are effectively preserving the region's rich architectural heritage by blending traditional wisdom with modern sustainability principles. The Rural

Development and Heritage Foundation (RDHF) has been instrumental in restoring and revitalizing traditional Kumaoni and Garhwali homes, using authentic materials and techniques. Their projects emphasize the use of local stone, wood, and slate, maintaining the architectural integrity and cultural significance of these structures. Another successful initiative is the Revitalizing Uttarakhand Villages project, which focuses on the holistic development of rural areas by preserving traditional architecture and promoting eco-tourism. This project has restored several heritage homes and public buildings, converting them into guesthouses and community centers. In the realm of education, HNB Garhwal University plays a crucial role in raising awareness about Uttarakhand's architectural heritage, conducting research, documentation, and educational programs aimed at preserving traditional building practices. Grassroots movements like the "Save Our Heritage" campaign and the "Vibrant Village" scheme actively engage local communities in preservation efforts, organizing heritage walks, cultural festivals, and awareness drives to highlight the importance of preserving Uttarakhand's architectural legacy. These initiatives ensure that the cultural and historical significance of traditional architecture is recognized and valued, contributing to the sustainable conservation of the region's built heritage.■

The Rural Development and Heritage Foundation (RDHF) has been instrumental in restoring and revitalizing traditional Kumaoni and Garhwali homes, using authentic materials and techniques. Their projects emphasize the use of local stone, wood, and slate, maintaining the architectural integrity and cultural significance of these structures.

THE ENDURING CHARM OF TIBARIS AND BAKHLI

Uttarakhand's ArchitecturalTreasures

Manoj Estwal
Journalist
Editor of Himalayan Discovery
Dehradun

Ashik S
School of Architecture
Christ University
Bangalure

The rise of stone, and wood style in building construction in Uttarakhand reveals a rich architectural history, characterized by traditional *tibari* and *bakhli* structures that stand in contrast to modern construction. These intricate works of wood and stone reflect a deep connection to nature, craftsmanship, and heritage, captivating those who encounter them.

Eminent writer Bhishma Kukreti has played a significant role in preserving this architectural heritage. His writings about the *tibaris* and *nimdaris* in the villages of Yamkeshwar, Pauri district, are invaluable. Kukreti was intrigued by the intricate woodwork of these buildings but struggled to find experts who could fully explain the mystery behind their designs. I, too, was curious, and with the guidance from the enlightened writer Dr. Shiv Prasad Dabral, I visited Kukreti's village of Saroda. During those formative years (1988-89), my young mind was not fully capable of grasping the significance of this wood art. Now, as I reflect on my experience and Kukreti's words, I have immersed myself in the study of Indian architecture and craftsmanship to unravel the mystery of these traditional styles.

Houses designed in the Bhakli style




This article delves into the architectural evolution in Uttarakhand, examining the rise of the Dupura style of *tibari,* the influence of dynasties such as the Pal and Katyuri, and the eventual emergence of more modern styles like *nimdari.*

THE DUPURA STYLE OF TIBARI: A HISTORICAL PERSPECTIVE

Indian architecture, woodcraft, and stone art have been in continuous alliance throughout history. From the Harappa and Mohenjo-Daro civilizations to the palaces, forts, pillars, stupas, and sculptures of the Mauryan period, this union has shaped the nation's aesthetic legacy. Post-Mauryan art, under kings such as the Shungas, Kanvas, Kushans, and Shakas continued this tradition, giving rise to distinct architectural styles like Gandhara, Mathura, and Amaravati, particularly seen in stupa construction and sculpture.

The Gupta period further advanced Indian architecture with the famous caves of Ajanta and Ellora, as well as those in Bagh, Junagadh, Nashik, and Mandapeshwar. The Nagara style of temple architecture also flourished during this time, along with other regional styles such as Odisha, Khajuraho, and Solanki. In South India, the Rajsingh-Nandivarman-Chola temple architecture, Chola sculpture, Nayak, Besar, Vijayanagara, and Hoysala styles left a lasting impact.

A study of these historical periods is crucial to understanding the evolution of building techniques in Uttarakhand, particularly the influence of medieval Indian architecture. Styles like the imperial and provincial architectures of Bengal, Malwa, Bijapur, and Sikh dynasties, along with those of the Khilji, Tughlaq, Lodhi, and Mughal dynasties, played significant roles in shaping the region's unique blend of architecture, woodcraft, and stonework.

INFLUENCE OF THE PAL AND KATYURI DYNASTIES

The architectural development of Uttarakhand is deeply influenced by the Pal and Katyuri dynasties. The Pal dynasty (8th to 12th centuries) significantly impacted the region, particularly through their contributions to the Bakhli construction style, which emphasized the use of wood and stone in housing. The Katyuris who ruled between the 7th and 11th centuries,

are remembered for their intricate temple and *tibari* designs. Notable temples such as Gopinath in Gopeshwar, Adi Badri, Jageshwar, and Bageshwar showcase stone as the primary construction material, with elaborate woodwork blending the natural environment with cultural motifs. The Katyuris introduced motifs such as serpents and religious symbols into their wood carvings, which later reached their peak in the construction of *tibaris*—wooden verandas supported by intricately carved pillars. These dynasties shaped Uttarakhand's architectural identity, influencing not just religious structures but also everyday homes. The Bakhli houses of Kumaon, particularly in Almora, reveal the Chand dynasty's influence. These homes, built in clusters around a shared courtyard, showcase intricate wooden craftsmanship, a tradition that traces back to the earlier influence of the Katyuri and Pal dynasties.

EVOLUTION OF ARCHITECTURAL STYLES: FROM EKPURA TO NIMDARI

The architectural history of Uttarakhand is marked by several distinct styles, including *ekpura, dupura, tipura, chaupura,* and *nimdari*, each representing different periods and social structures.

1. *Ekpura* (Granary Style): The *ekpura* style was primarily functional, designed for agricultural societies. These single-room structures served as granaries, built with thick walls made from locally sourced materials like wood, stone, and mud. The buildings were constructed to protect stored grains from pests and weather, with sloped roofs to manage water runoff during heavy rains or snowfall.

2. *Dupura:* A development from the *ekpura* style, *dupura* structures added a second room or floor, reflecting an increase in rural complexity. The ground floor was typically used for storage or livestock, while the upper floor served as living quarters. The multi-functional design also reflected the growth of joint families and social status.

3. *Tipura*: The *tipura* style introduced a three-tiered design, with the ground floor used for storage, the middle for living spaces, and the upper for granaries. These buildings were often adorned with carvings and intricate woodwork, symbolizing wealth and status.

Houses with Nimadari style

Houses designed in the tibari style

4. *Chaupura*: A more elaborate four-tiered structure, *chaupura* homes were built for elite families and featured multiple floors for different functions, with the top floor reserved for religious or cultural activities. The architecture was characterized by ornate wood carvings and stonework, reflecting the growing influence of art in building design.

5. *Tibari:* The *Tibari* style, prominent in medieval Indian architecture, made its way into Uttarakhand, focusing on open spaces such as verandas. The verandas, supported by carved wooden pillars, were an essential aspect of Uttarakhand homes, providing ventilation and a space for social interaction. The sloped roofs protected families from rain and snow, making this style particularly suited to the local climate.

6. Bakhli Houses: The Bakhli houses emerged during the later periods, particularly under the Chand dynasty. These houses were built in clusters around a common courtyard, fostering a sense of community among the residents. Made from stone and wood, the shared courtyard allowed families to interact while also providing functional living space.

7. Nimdari Style: The Nimdari style is the most recent evolution, incorporating modern materials like brick and concrete but retaining traditional elements such as sloped roofs and wooden balconies. The larger windows and verandas reflect a growing focus on natural light and ventilation, blending traditional Uttarakhand architecture with modern construction techniques.

THE DECLINE OF TRADITIONAL ARCHITECTURE

Despite their beauty and functionality, traditional architectural styles in Uttarakhand are under threat. The rise of modern construction methods, utilizing cement and steel, has led to the replacement of many *tibari* and *bakhli* homes. Wealthy individuals often purchase old structures at high prices, only to replace them with modern homes, erasing a part of Uttarakhand's cultural and architectural heritage.

Traditional building materials such as walnut, deodar, pine, and tun wood, along with construction methods that incorporated stone blocks and wooden beams, are becoming increasingly rare.

Walls were once plastered with a mixture of wheat husk and clay, while floors were coated with cow dung and red soil, creating eco-friendly and durable homes. However, these techniques are at risk of being lost to time.

PRESERVING UTTARAKHAND'S ARCHITECTURAL HERITAGE

The *tibari* and *bakhli* are more than just architectural styles; they are symbols of Uttarakhand's civilization, culture, and connection to nature. These traditional methods offer ecological and geographical benefits that modern construction cannot match. Therefore, it is crucial for the government and architectural experts to promote the preservation of these styles, particularly in rural tourism initiatives. By doing so, we can ensure that this part of Uttarakhand's cultural identity remains intact for future generations.

The hope is that, through dedicated preservation efforts, Uttarakhand's architects and craftsmen will revive the ancient art of wood and stone construction, ensuring that these unique structures continue to inspire admiration and appreciation. The spirit of medieval Indian architecture, as embodied in the *tibari* and *bakhli* styles, must be kept alive for the benefit of future generations.

CONCLUSION

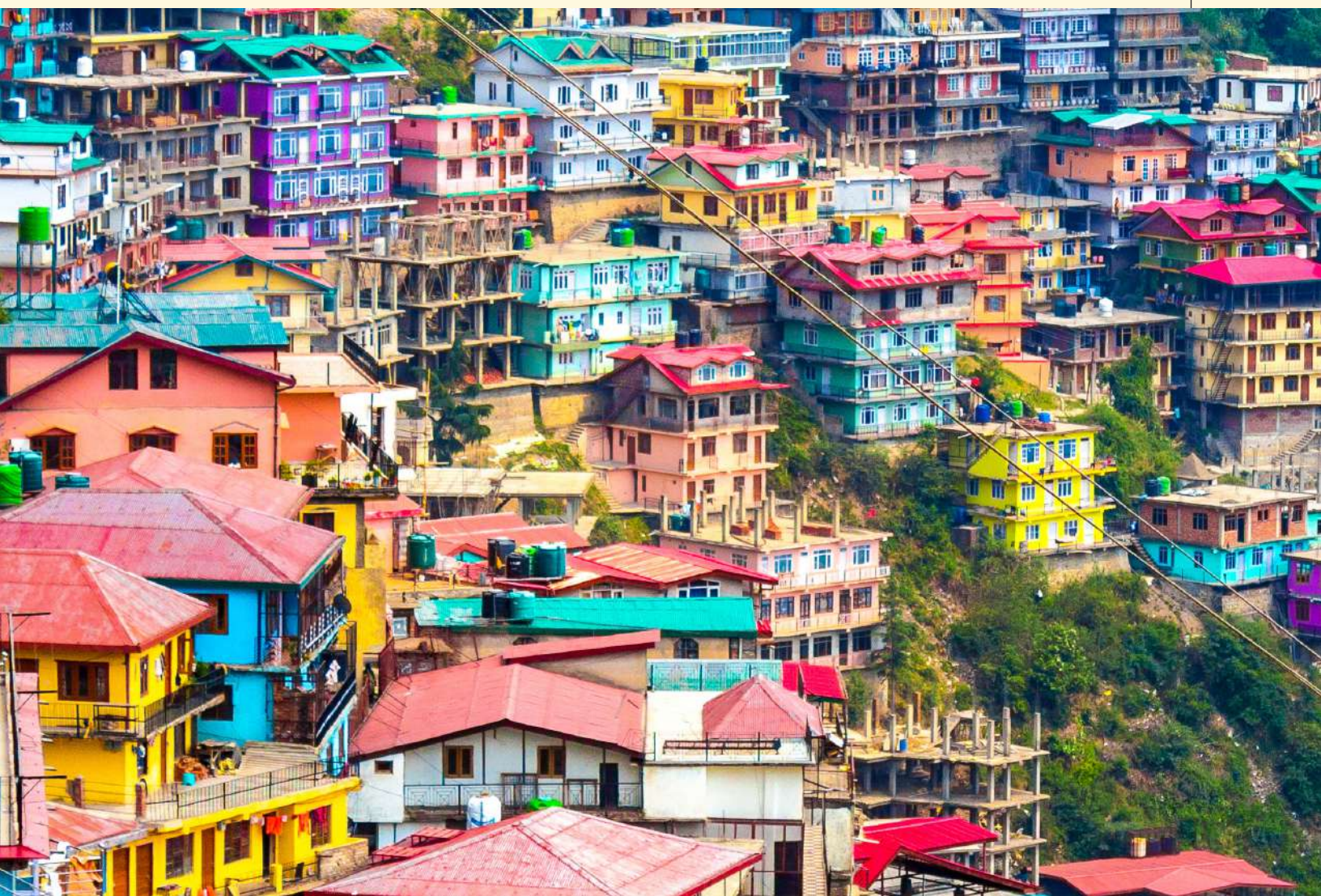
The rise of traditional architectural styles in Uttarakhand, from the simple *ekpura* granary to the more complex *nimdari* designs, reflects the region's evolving social structures and craftsmanship. The influence of dynasties such as the Pal and Katyuri, along with the unique use of wood and stone, has left an indelible mark on Uttarakhand's architectural landscape.

However, with the growing prevalence of modern construction methods, there is a risk that this rich heritage will be lost. It is imperative to recognize and preserve the ecological and cultural significance of these traditional styles, ensuring their survival for future generations.■

Traditinal Dupura style houses

ARCHITECTURAL WISDOM IN THE HIMALAYAS

Lessons from Uttarakhand's Traditional Structures



Chris Vipin and Adharsh MS
School of Architecture
Christ Deemed to be University
Bangalore

In the heart of the Himalayas, Uttarakhand's built environment tells a story in stone and wood. Traditional knowledge, honed for centuries, weaves a profound connection between structures and their mountain setting. This article explores this remarkable resilience, using research and surveys to unveil the secrets of Uttarakhand's disaster-resistant architecture.

THE ESSENCE OF TRADITIONAL KNOWLEDGE

Traditional knowledge, passed down orally through generations, is deeply rooted in cultural experiences and skills. The challenging climatic and physiographic conditions of Uttarakhand necessitated human adaptation, leading to the development of sustainable built forms. These traditional practices, evolving over centuries, provide a model for integrating natural, climatic, socio-cultural, and economic factors into the built environment. The survival of traditional structures during various natural disasters underscores the value of this knowledge.

For instance, during the 2013 Kedarnath disaster, the ancient stone masonry structures of the Kedarnath Temple remained intact despite the devastation around them. Similarly, traditional buildings in Kutch and Ahmedabad demonstrated resilience during earthquakes, while bamboo structures in Bihar withstood flood pressures. These examples highlight the potential of traditional construction techniques to inform contemporary disaster-resistant architecture

UTTARAKHAND'S BUILT ENVIRONMENT

Uttarakhand, situated in the Middle Himalayan region, is characterized by variable geological and physiographic conditions. The region's architecture reflects the interplay between natural conditions and human ingenuity. Settlements in the hill regions are generally classified into ridge, midland, and valley settlements, each responding uniquely to the environmental and socio-cultural context.

RIDGE SETTLEMENTS

Ridge settlements are strategically located on southern slopes to maximize sunlight exposure and protect against cold northern winds. This positioning minimizes snow accumulation in winter and ensures abundant water availability during summer. The steep slopes also facilitate water drainage during monsoons, preventing hydrological hazards.

VALLEY SETTLEMENTS

Valley settlements develop near water sources like rivers and lakes, with important buildings situated at higher altitudes. These settlements are often scattered, with houses located near farmlands to optimize water usage for agriculture. The proximity to water sources supports rice cultivation, which requires significant water.

MIDLAND SETTLEMENTS

Midland settlements, preferred for their relatively flat terrain, offer flexibility in built form and are used for both agriculture

and cattle grazing. These settlements are spread in all directions, often developing along contours to reduce the need for slope modifications. Public buildings are centrally located, with houses clustered around open spaces used for daily activities and social gatherings.

STUDY AND FIELD OBSERVATIONS

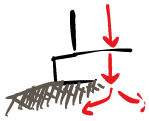
A pilot study was conducted from Dehradun to Uttarkashi, focusing on midland settlements. The study revealed that these settlements prioritize southern slopes for maximum sun exposure and proximity to water sources. Buildings are constructed along natural contours, respecting the landscape and ensuring water retention downstream. This organic layout integrates detached houses clustered around communal open spaces.

In villages like Dakhiyantgaon, Koti Banal, and Dharali, traditional multistoried structures were observed. These buildings, often made of wood and stone, have withstood harsh climates and natural hazards for ages. Typically, two ornamented structures with sloping roofs stand opposite each other, with an open stone-paved space in between. One structure serves as a dwelling, while the other, a granary, stores grains.

KEY FEATURES CONTRIBUTING TO DISASTER RESILIENCE INCLUDE:

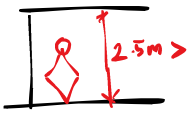
- Simple, regular, and symmetrical designs minimizing twist during hazards.

- Heavy base platforms keeping the center of gravity low, reducing overturning during seismic events.



- Small, light wooden projections reducing vulnerability to earthquakes.

- Low ceiling heights maintaining thermal comfort.



- Wooden floors absorbing vibrations.

SINGLE-STORY GRANARIES

The granaries, intricately carved wooden structures, rest on raised stone platforms. These buildings, used for grain storage, feature verandas for crop storage and social activities. The granaries are typically connected to the main dwelling via a chain, symbolizing the interconnectedness of living and storage spaces.

CHALLENGES AND FUTURE DIRECTIONS

With modernization, traditional construction practices are increasingly replaced by concrete and steel, compromising the contextual needs of the region. Deforestation and time constraints also contribute to the decline of traditional practices. Younger generations often migrate to urban areas, leaving traditional structures in disrepair.

To preserve and adapt traditional knowledge, it is crucial to raise awareness about the sustainability of these heritage structures. Government initiatives should promote the use of local materials and traditional techniques in new constructions. Community participation in designing and executing government projects can create employment opportunities and foster pride in traditional wisdom.

By integrating traditional knowledge with contemporary needs, we can develop sustainable, disaster-resistant habitats that honor the architectural heritage of Uttarakhand. Preserving these practices will provide future generations with a glimpse of the region's rich architectural tradition and offer valuable insights into sustainable development.

CONCLUSION

Uttarakhand's traditional architecture, shaped by centuries of knowledge, offers valuable lessons in sustainability and disaster resilience, emphasizing the importance of preserving and adapting these practices for a sustainable future.■

THE ARCHITECTURAL GENIUS OF UTTARAKHAND KOTI BANAL STYLE

Ozam Aktar and Ashik S
School of Architecture
Christ Deemed to be University
Bangalore

Uttarakhand, situated in a region highly prone to earthquakes, developed the unique architectural style of Koti Banal almost a thousand years ago. Radiocarbon dating reveals that the local population adopted earthquake-resistant construction methods quite early.

The intricate designs of Koti Banal buildings reflect a sophisticated understanding of seismic forces and the need for durable structures. This architectural style emerged as a direct response to the natural seismic challenges of the region, utilizing locally available materials and community-based knowledge. The primary objective was to prevent structural collapse, ensuring the safety of its inhabitants.

TIMBER AND STONE CONSTRUCTION

Koti Banal buildings are distinct for their alternating layers of timber and stone, skillfully joined at the corners. Wooden beams span from wall to wall, reinforcing the overall structure. This design divides the building into four sections, providing additional stability and flexibility. The upper floors often include wooden balconies, while timber ladders, typically carved from single tree trunks, connect the different levels of the structure. The roof is made of local stones known as *patthal*, supported by a wooden framework that complements the earthquake-resistant design.

THE ROLE OF WOOD IN KOTI BANAL BUILDINGS

Wood plays a crucial role in Koti Banal architecture, not only structurally but also decoratively. Similar to modern reinforced concrete structures, these buildings rely on wooden frames to bear loads, with stones filling the gaps between them. The stone walls handle vertical loads, while interconnected wooden joists absorb horizontal seismic forces. To further improve resilience against earthquakes, diagonal beams were often added to the structure. These buildings were typically raised on stone-filled platforms two to four meters above ground level, a design feature that lowers the center of gravity and minimizes the risk of overturning.

KEY CONSTRUCTION TECHNIQUES

Koti Banal architecture incorporates several important features to enhance earthquake resistance. Builders used horizontal bands of timber or reinforced concrete at critical points, such as at the lintel level, to tie the walls together and prevent failure during seismic activity. These bands allowed the safe transfer of forces generated during earthquakes, providing the necessary ductility to the structure. The simplicity of the building design, with its symmetrical shape and well-distributed columns and walls, contributed to its ability to withstand seismic forces, whereas more irregular structures were prone to twisting and collapsing during earthquakes.

STABILITY THROUGH PLATFORM ELEVATION

A significant aspect of Koti Banal design is the practice of elevating buildings on solid stone platforms, which kept the center of gravity low. This feature reduced the overturning risk for these tall structures, making them more resilient in the face of seismic shocks. The stone-filled platforms were also crucial for maintaining structural integrity during large-scale tremors.

FUNCTIONAL AND INSULATING FEATURES

Traditional Koti Banal homes included a basement called the *goth*, which was used to house cattle. The *goth* had a single entrance leading into the courtyard, and a wooden staircase connected it to the upper floors. This design allowed residents to

access the cattle in winter without stepping into the snow-covered courtyard. The slightly open lid between floors facilitated the rise of heat from the cattle below, warming the upper living spaces naturally. In addition, timber beams and clay-covered wooden floors provided effective insulation, while the wood also acted as a shock absorber during seismic events.

CULTURAL SIGNIFICANCE AND DECORATIVE ELEMENTS

Beyond its structural features, Koti Banal architecture was also rich in aesthetic and cultural expression. Many homes featured hand-carved ladders and motifs, reflecting a close connection between temple design and domestic architecture, especially in the Kumaon region. These carvings added a sense of identity and cultural significance to the structures, emphasizing their role not just as homes, but as artistic expressions of the local community.

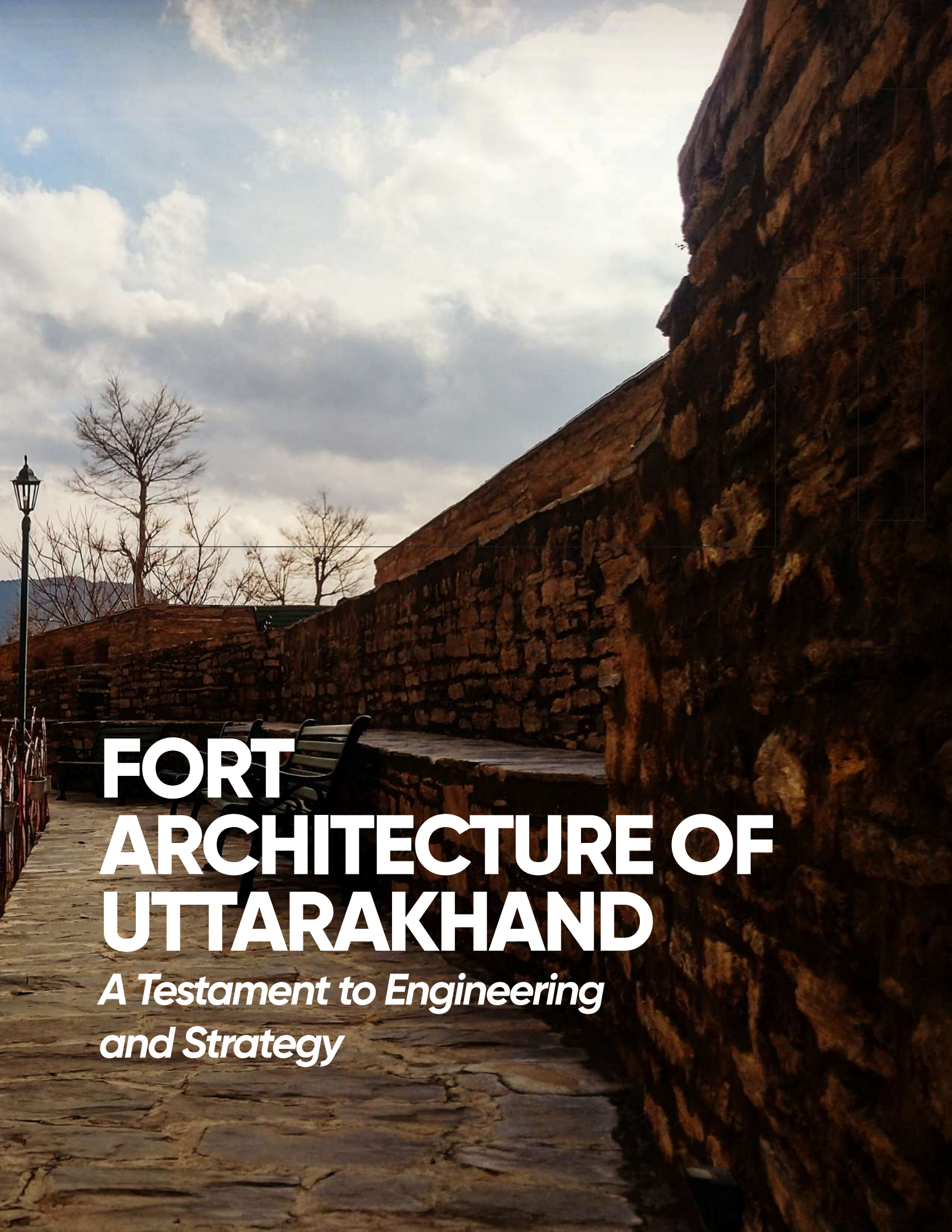
CHALLENGES AND PRESERVATION OF KOTI BANAL ARCHITECTURE

Despite its architectural ingenuity and cultural importance, many Koti Banal homes are disappearing due to maintenance challenges and the desire for modern comforts. The traditional materials and methods require frequent upkeep, which is often considered impractical by contemporary standards. However, addressing these concerns through thoughtful modifications could allow the style to thrive once again, blending traditional resilience with modern convenience.

To ensure the survival of Koti Banal architecture, it is crucial to raise awareness about the importance of preserving these heritage structures. By protecting these buildings, future generations will be able to witness and appreciate Uttarakhand's rich architectural traditions. Preservation efforts would also open up opportunities for researchers to study and explore the relevance of Koti Banal's eco-friendly and sustainable practices in contemporary construction, offering insights into how ancient methods can inform modern architecture.

CONCLUSION

Koti Banal architecture stands as a testament to the ingenuity of Uttarakhand communities in responding to the seismic challenges of their environment. Its unique blend of earthquake-resistant design, traditional knowledge, and cultural expression makes it a valuable architectural heritage. With proper preservation and adaptation, this ancient style can continue to inspire and provide sustainable solutions for modern building practices in seismically active regions. ■



FORT ARCHITECTURE OF UTTARAKHAND

A Testament to Engineering and Strategy

Dr. Vivek
Assistant Professor
Department of Civil Engineering
NIT, Srinagar
Uttarakhand

Uttarakhand, nestled in the lap of the Himalayas, is not only known for its natural beauty but also for its historically significant fort architecture. The forts of this region stand as a testament to ancient engineering, architectural ingenuity, and the strategic foresight of their builders. Unlike the grand and ornate palaces of the plains, the fortifications of Uttarakhand are rugged and pragmatic, designed primarily to serve military functions while harmonizing with the challenging geography and climate of the region. This technical exploration delves into the engineering aspects, materials, construction techniques, and defensive strategies employed in these architectural marvels.

Fig 1 is the technical image representing the fort architecture of Uttarakhand, showcasing the key features such as thick stone walls, bastions, watchtowers, and strategic defensive elements.

Fig 1

Fig 2

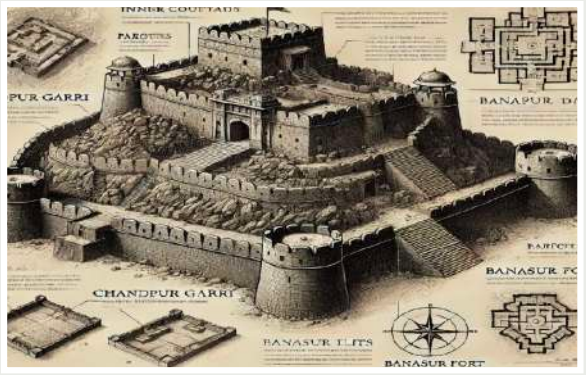
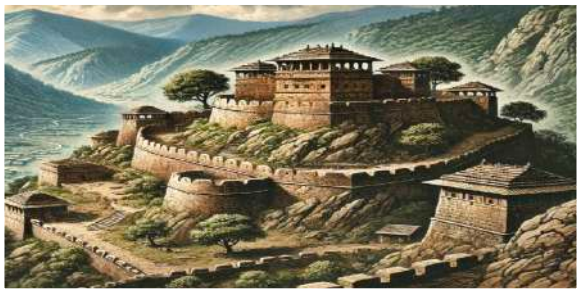


Fig 2 is another technical illustration that highlights the architecture of forts in Uttarakhand, such as Chandpur Garhi and Banasur Fort. Banasur Fort emphasizes the strategic elements like bastions, watchtowers, and defensive features with their respective locations.

LOCATION AND STRATEGIC POSITIONING

One of the most critical aspects of fort architecture in Uttarakhand is their strategic placement, often on elevated terrain such as hills or ridges. These high vantage points provided clear visibility of approaching enemies, natural defense against invasions, and control over key trade and military



routes. The rugged, mountainous terrain was leveraged to the builders' advantage, with the fort walls often blending into the cliffs and escarpments. For example, Chandpur Garhi was constructed at a commanding height that allowed defenders to have a sweeping view of the valleys below, making it nearly impossible for an enemy to approach unnoticed.

Forts like Banasur perched at over 1,800 meters above sea level, utilized the natural landscape as part of their defense strategy. The difficult terrain itself became an obstacle for invaders, with steep, narrow paths leading up to the fort, making any siege a logistical nightmare. These forts were not only military bastions but also centers of regional administration, serving as symbols of power and authority.

Fig 2 is an illustration of Banasur Fort in Uttarakhand, highlighting its architectural features. It showcases the fort strategic design, built on a hilltop with strong stone walls, bastions, and defense points. The fort is set against the backdrop of lush, mountainous terrain, reflecting its historical significance and engineering ingenuity.

ENGINEERING MATERIALS AND CONSTRUCTION TECHNIQUES

The primary building materials used in Uttarakhand forts were locally available stones, such as granite, slate, and quartzite. These stones were chosen for their durability, resistance to weathering, and ease of procurement. The fort walls, often several meters thick, were constructed using dry masonry or with lime mortar, depending on the location and available resources. In some cases, mud mortar was used in less critical areas, which also provided natural insulation.

Wood played a crucial role in the construction of interiors and roofs, especially in multi-storey structures. Timber, particularly from cedar, oak, and pine trees, was abundantly available in the region and was used for beams, floors, and rafters. The combination of stone and wood offered

structural flexibility, which was vital in an earthquake-prone region like Uttarakhand.

KEY CONSTRUCTION TECHNIQUES

Dry Stone Masonry: It is a method in which stones are laid without any binding material. This technique was commonly used for constructing defensive walls. The large stones were meticulously fitted together to form robust and enduring structures.

Lime Mortar Construction: In more critical areas, lime mortar was used to bind stones together, creating a stronger and more weather-resistant structure. This method is seen in the thick perimeter walls, which could withstand both the harsh climate and potential attacks.

Terraced Construction: Given the sloping landscape, forts were built in tiers, with each level having specific functional areas, such as barracks, storage, and living quarters. This terraced design helped in distributing the weight of the structures and maintaining stability on uneven terrain.

DEFENSIVE FEATURES

The defensive architecture of Uttarakhand forts was primarily influenced by the need to adapt to the region's challenging terrain while ensuring maximum protection against invaders. These structures demonstrate a sophisticated understanding of military strategy and construction techniques, providing both passive and active defense mechanisms.

THICK, IMPENETRABLE WALLS

The walls of forts in Uttarakhand are a defining feature of their defensive design. Built using locally sourced stone, these walls are typically several meters thick, providing both strength and insulation. The use of stone, combined with lime mortar or mud, creates a highly durable barrier that could withstand both natural erosion and human attack.

Stone Masonry: The use of dressed and undressed stone in dry or wet masonry ensured that the walls were both strong and stable, often reinforced with internal chambers filled with rubble. This also provided resistance against seismic activity, a crucial consideration in the earthquake-prone Himalayan region.

Tapered Design: In many forts, the walls taper slightly as they ascend, increasing their stability while making it more difficult for attackers to scale. This technique also reduced the weight of the upper sections, minimizing the risk of collapse.

FORTIFICATION LAYERS AND PERIMETER DEFENSES

Uttarakhand forts often feature multiple layers of defense, making them harder to penetrate. These layers typically included outer walls (ramparts), an inner fortified core, and intermediate defensive structures such as bastions and battlements.

Ramparts and Parapets: High ramparts often encircled the fort, creating a formidable first line of defense. On top of these walls were parapets with narrow slits (embrasures) through which archers and soldiers could fire at enemies without

exposing themselves to return fire.

Crenellations: Crenellations, or alternating gaps and solid sections on the parapets, allowed defenders to launch projectiles while remaining shielded. The height of these walls, combined with their crenellated design, offered extensive coverage from all angles.

BASTIONS AND WATCHTOWERS

Bastions are protruding sections of the wall that allow defenders to cover a larger area, preventing attackers from approaching the walls directly without being seen. These bastions, often circular or polygonal in shape, housed troops and artillery, enabling them to shoot in multiple directions.

Circular Bastions: The round shape provided structural strength and allowed for a wider field of view, preventing blind spots and enabling defenders to cover approaches from all angles. Circular bastions also helped to deflect artillery fire, as cannonballs would glance off the curved surface rather than penetrate.

Watchtowers: Watchtowers were constructed at key points around the perimeter to ensure early detection of approaching enemies. Elevated above the rest of the structure, they provided a vantage point for long-range surveillance. Towers were often connected to signal systems, such as flags or fires, to communicate with other forts or settlements.

GATES AND ENTRANCES

Fort gates in Uttarakhand were particularly well-fortified, as they were the most vulnerable points in the fort's defenses. Multiple defensive strategies were employed to protect entrances from enemy attacks.

Narrow, Winding Entrances: Gates were often narrow and set into long, winding

Pithoragarh Fort

Fort at Chandpur Garhi

passages designed to slow down attackers and make it difficult for them to use battering rams. These passages often included sharp turns that prevented direct line-of-sight access and limited the use of siege weaponry.

Heavy Wooden Doors: Fort gates were constructed from thick, reinforced wood, often bound with iron plates and studded with metal spikes to deter attempts to break them down. These doors could be locked and reinforced from within, providing a last line of defense in the event of an invasion.

Murder Holes and Portcullises:
Above the entrance gates, small openings called murder holes were used to drop stones, hot oil, or other projectiles onto attackers. Some gates also featured portcullises—heavy, vertically-sliding wooden or metal grilles—that could be lowered to block the passage quickly in case of an attack.

MOATS AND DEFENSIVE DITCHES

Although the mountainous terrain often made moats unnecessary, some fortifications, particularly those located on flatter terrain or lower elevations, featured dry moats or defensive ditches. These acted as an additional obstacle, preventing enemies from easily approaching the fort walls.

Dry Moats: Instead of being filled with water, many moats were dry ditches, sometimes lined with sharp stones or spikes to hinder attackers. These ditches could be crossed only at specific points, usually narrow bridges, which were easily defensible and could be retracted or destroyed in case of an assault.

INTERNAL DEFENSE ZONES AND BARRICADES

Forts in Uttarakhand often featured an internal division of spaces for enhanced security. The inner fortifications were typically divided into smaller defensive zones, including courtyards, inner gates, and barricaded passageways, ensuring that even if an attacker breached the outer defenses, they would have to face additional challenges inside.

Inner Forts and Citadels:
The inner core of the fort, often referred to as the citadel, housed the fort commander and key officials. This area was typically

Bansur Fort, Champawat

the most heavily defended, with the thickest walls and most complex defensive features. It also served as a last refuge for the defending garrison in case of a siege.

ARROW SLITS AND GUN LOOPS

As warfare evolved, the design of Uttarakhand's forts adapted to new weapon technology. Arrow slits and gun loops were narrow vertical openings in the walls, designed for defenders to shoot arrows or firearms at attackers while remaining protected.

Archery Ports: Early fortifications were equipped with small archery ports that allowed defenders to use longbows and crossbows effectively. These ports were angled to allow for maximum battlefield coverage without exposing the archer to enemy fire.

Gun Loops: With the advent of gunpowder weapons, gun loops became a standard fortification feature. These were wider than archery ports and designed to accommodate muskets and small cannons. The inclusion of such features shows the adaptation of the region's forts to new military technology.

CONCLUSION

The fort architecture of Uttarakhand represents a remarkable fusion of strategic military design and adaptation to the region's harsh, mountainous terrain. These forts, constructed using locally available materials like stone and wood, were strategically positioned on elevated landscapes to provide natural defense and panoramic surveillance. Key defensive features, including thick walls, bastions, watchtowers, narrow gates, and complex internal layouts, showcase the ingenuity of the builders in protecting against invaders. The evolution of these structures over time, incorporating advanced technologies like gun loops, highlights the adaptability of these forts to changing warfare tactics. Uttarakhand's fort architecture is not only a testament to historical military strategy but also an enduring symbol of resilience, local craftsmanship, and environmental harmony, reflecting the region cultural and historical heritage. ■

52 GARHS OF GARHWAL

Nagpur Garh: It was in Jaunpur Pargana.	**Chandpur Garh:** It was the fort of Suryavanshi King Bhanu Pratap.	**Vangarh Garh:** It was situated close to Vangarh.
Kolli Garh: The Bachhawan Bisht people lived here.	**Chaunda Garh:** This fort of Chaundal caste was in Sheeli Chandpur.	**Bhardar Garh**
Ravaan Garh: It was on the Badrinath route and the Ravani people were in the majority here.	**Top Garh:** It belonged to the Topal people.	**Chaundkot For**t: Its remains can still be seen on the hill
Phalyan Garh: It was in Phaldkot and was the fort of Brahmins of Phalyan caste.	**Rani Garh:** It was established by a queen and hence it came to be known as Rani Garh.	**Nayal Garh:** It was the fort of Nayal caste.
Vagar Garh: It was the fort of Nagvanshi Rana caste.	**Shriguru Garh:** This fort belonged to Padiyar caste.	**Ajmir Garh:** It belonged to the Payal caste.
Kuili Garh: This was the fort of Sajwan caste.	**Badhan Garh:** People of Badhani caste lived here.	**Kanda Garh:** It was the fort of the Rawat caste.
Bharpur Garh It was also	**Lohbagh:** This fort was the fort of Negi caste.	**Savligarh**
Kujni Garh: It is also associated with the Sajwan caste, the last Thokdar (village chief) here was Sultan Singh.	**Dasholi Garh:** This fort was made famous by a king named Manavar.	**Badalpur Garh**
Sil Garh: It was also a fort of the Sajwan caste	**Kandara Garh:** People of Kandari caste lived here.	**Sangela Garh:** People of Bisht caste lived here.
Mungra Garh: This fort was situated in Rawai and belonged to the Rawat caste.	**Dhaun Garh:** It was the fort of Dhoniyaal caste.	**Gujaru Garh**
Raika Garh: It was a fort of Ramola caste.	**Ratan Garh:** People of Dhamada caste lived here.	**Jaunt Garh**
Molya Garh: This fort was situated in Ramoli and also belonged to the Ramola caste.	**Erasu Garh:** This fort was above Srinagar.	**Dewalgarh**
Upu Garh: This fort belonged to the Chauhan caste.	**ldia Garh:** People of ldia caste lived here.	**Lodgarh**
Nala Garh/ Nalapani/Nalagarhi: Located in the Dehradun district,Nalagarh is situated at Khalanga in the present day.	**Langur Garh:** Its traces are still there in Langur Patti.	**Jaunpur Garh**
Sankari Garh: This fort situated in Rawai belonged to the Rana caste.	**Bagh Garh:** It was the fort of the Negi people.	**Champa Garh**
Rami Garh: It belonged to the Rawat caste.	**Garhkot Garh:** This fort belonged to Bagdwal Bisht caste.	**Dodrakanra Garh**
Biralta Garh: This fort belonged to the Rawat caste.	**Gartang Garh:** It was the fort of Jadh people.	**Bhuvana Garh** **Lodan Garh**

PALACES OF UTTARAKHAND

an Architectural Overview

Dr. Kiran Mamgain
Assistant Professor
School of Arts and Humanities
Christ Deemed to be University
Bangalore

Uttarakhand's palace architecture, especially in the Garhwal and Kumaon districts, is influenced by the surrounding landscape, local handicraft, and historical settings. These palaces blend traditional Himalayan architectural features with designs influenced by Delhi (Mughal influence) and Rajasthan (Rajput influence), two nearby regions.

In addition to offering commanding views of the environs, many palaces are perched on elevated platforms or hilltops, which act as natural barriers against intruders. With characteristics like small windows to prevent heat loss, strong walls for insulation, and slanted roofs to handle heavy snowfall and rainfall, the structures are made to resist the harsh climate.

The two main building materials that are easily obtained in the area are stone and wood. Because these materials are strong, the buildings can withstand the impacts of ageing and calamities like earthquakes and landslide. Slate roofs are a common architectural feature in palaces, as they offer both visual appeal and weather protection for the structures.

Because of the region's violent past, palaces are typically protected by high, thick walls. Numerous buildings have defensive features and resemble tiny forts. The multi-tiered, sloping roofs of Uttarakhand palaces are a defining attribute. By shedding rain during the monsoon and snow during the winter, these roofs help shield buildings from water damage. Throughout the palace complex, central courtyards are a typical feature that offer open space for social gatherings and activities. The palace-courtyards also let in natural light and ventilation.

The intricate wooden carvings on the palace doors, windows, and balconies are well-known. Intricate geometric patterns are frequently combined with religious and mythological themes in these artworks. Architectural features that demonstrate the influence of Mughal and Rajput architecture are arches, *jharokhas* (overhanging enclosed balconies), and ornamental columns. These were frequently seen in royal apartments or guest rooms meant for distinguished guests.

A lot of palaces feature several floors, with a different purpose for each level. The royal family frequently occupied the upper floors, with servants, guards, and administrative offices located on the lower levels. The royal family's private apartments frequently contained more elaborate features, like lavish furnishings, elaborately carved ceilings, and access to private balconies with expansive views.

The presence of a temple within the royal complex or its near proximity to one highlights the region's robust religious customs. This illustrates the royal family's trust in heavenly protection as well. Rivers, mountains, and woods are common natural aspects used into the design. Palaces are created to harmonize with their natural surroundings, sometimes using terraces or gardens that imitate the slopes of the hills.

Tehri Garhwal Palace: One of the most famous examples, the Tehri Garhwal Palace exhibits a mix of Garhwali traditions and Rajput architecture, with impressive courtyards, halls, and decorative elements.

TEHRI GARHWAL PALACE

Tehri Garhwal Palace: One of the most famous examples, the Tehri Garhwal Palace exhibits a mix of Garhwali traditions and Rajput architecture, with impressive courtyards, halls, and decorative elements.

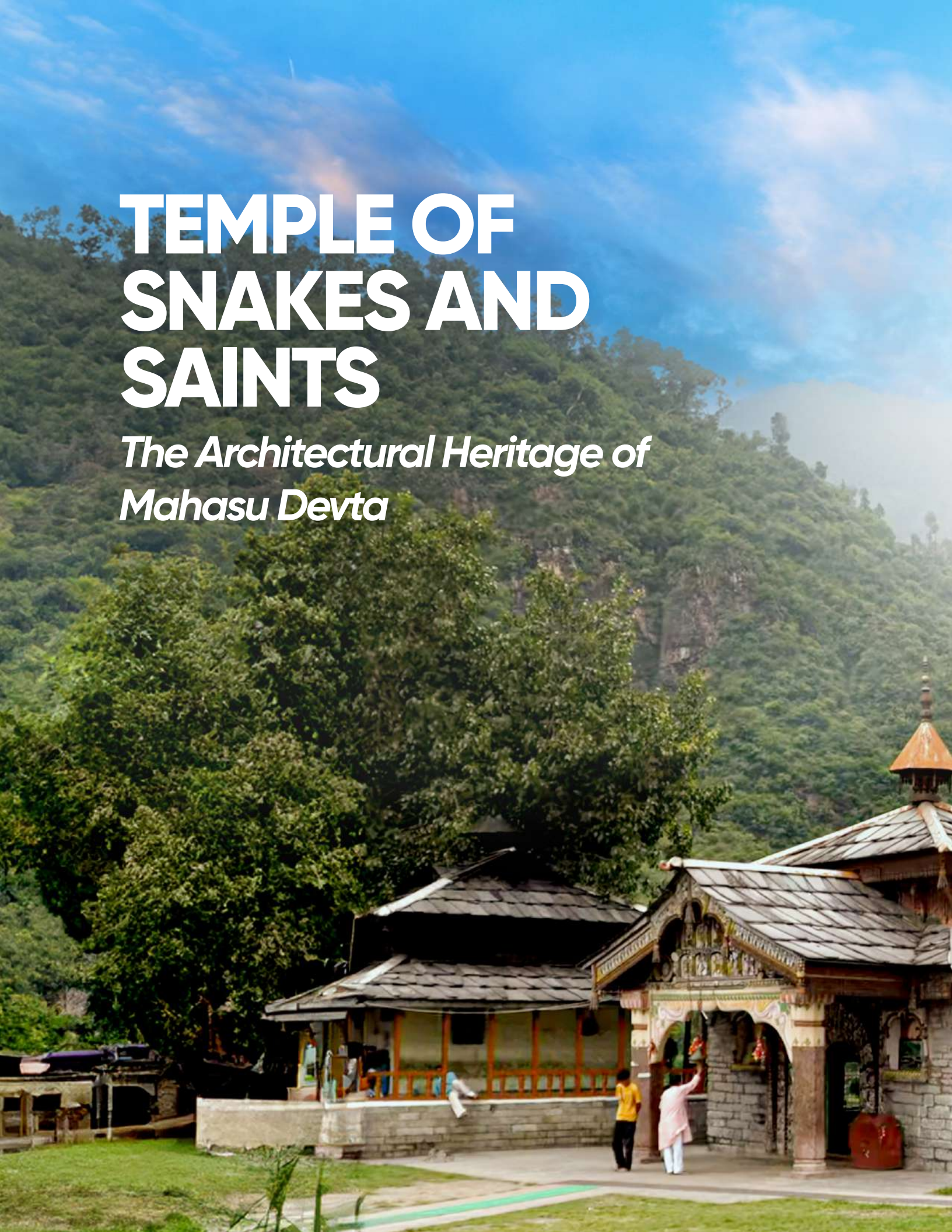
BALIGHAT PALACE

Balighat Palace (Champawat): Situated in the Kumaon region, this palace is known for its simplistic yet elegant design and connection to the Chand dynasty.

ALMORA FORT PALACE

While now mostly in ruins, this structure once housed the rulers of the Kumaon region and reflects a mix of fortification and palace design.

That the architectural competence of Uttarakhand combines its natural surroundings with the traditions of nearby regions is demonstrated by the style of its palaces. These palaces, which reflect the authority of the royalty while being sensitive to the particulars of the Himalayan terrain, are both defensive, aesthetically pleasing, and useful. These palaces have a unique attractiveness and durability due to their use of local resources, elaborate wood carvings, and fort-like constructions and probably this is one of the prominent reasons why these hisorical monunents withstand all types of challenges that time offered. ■



TEMPLE OF SNAKES AND SAINTS

The Architectural Heritage of Mahasu Devta

Manoj Estwal

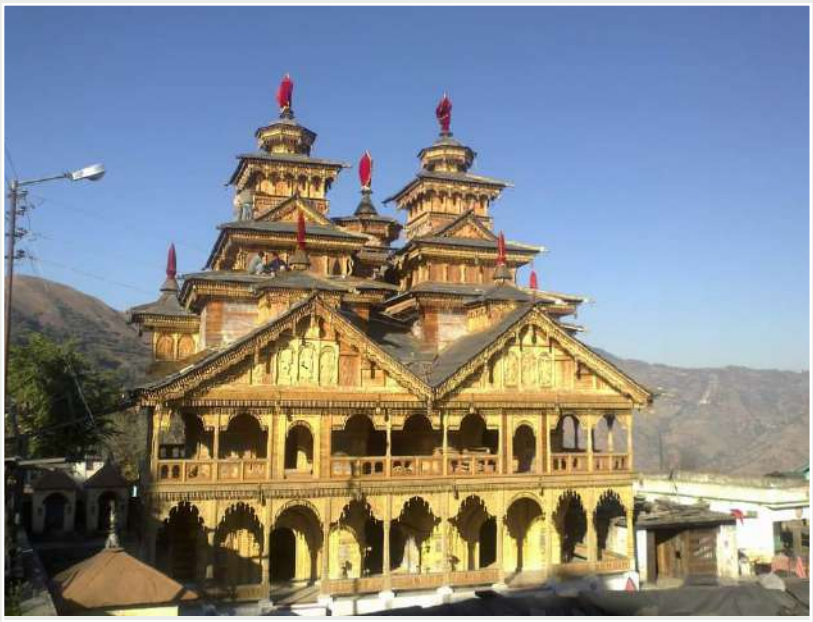
Journalist
Editor of Himalayan Discovery
Dehradun

The Jaunsar Bawar tribal region, rich in folk culture and religious beliefs, spans an area of 350 square miles, as estimated during the British period. Nestled between the rivers Tamsa and Yamuna, the entire region venerates Mahasu Devta as its primary deity. One of the notable religious sites in the area is Nagthat, located about 80 km from Dehradun via Mussoorie Yamuna Bridge or 85 km via Vikas Nagar and Kattapathar. This place, known as the "Land of Snakes," is significant for its historical association with snake worship, a practice referenced in religious texts. The region is bordered by Seela, Lachha, Dwina, and Bisoi villages. Just three kilometers from Nagthat lies Bisoi, where an intricately designed Mahasu Temple showcases exquisite woodcraft. The construction of this temple is a marvel of craftsmanship, funded by the devotion of locals and employing skilled artisans. Indra Singh Negi, a regional social worker, noted that KC Kudiyal, an engineer educated at IIT Roorkee, designed the temple. Artisans from villages in Himachal Pradesh and Uttarkashi were brought in to complete the woodwork. These craftsmen passed on their skills to local laborers, many of whom continue working on the temple complex today.

Mahasu temple, Hanol

THE MYTHOLOGY BEHIND MAHASU DEVTA AT BISOI

The story of orgin of Mahasu Devta's presence in Bisoi is fascinating. It is said that a water source known as Devpani, located between Bisoi and Dwina, played a crucial role in the deity's arrival. A woman from Dwina village reported seeing a snake with a jeweled hood while fetching water. Initially dismissing it as an illusion, she eventually burned incense as advised by her family to repel the snake. The snake disappeared, leaving behind its jeweled hood (umbrella), which she brought home. However, strange occurrences such as laughter and crying began to plague the household, prompting them to seek help from a local priest (devmali). The Devmali revealed that the umbrella belonged to Mahasu Devta and that it needed to be worshiped.



Mahasu temple, Thaina

After consulting the village elders, Mahasu Devta indicated his preference for Bisoi as his temple site. The construction was said to be guided by ants, which created a symbolic map in a local field. Despite challenges, including the inauspicious destruction of a crop to clear the temple site, the temple construction began, with water sourced from Devpani. The temple was completed on Basant Panchami, and since then, an annual Devnritya (dance of the gods) is held on this day.

VASTU SHASTRA OF MAHASU TEMPLES

The Mahasu Temple is an architectural wonder, blending woodcraft and stone masonry. Dr. Yashwant Katoch, a renowned historian, explains that the temple style, commonly referred to as Chhatrarekha Prasad or Yamuna style, is unique to the region. It combines elements of the Nagara style, predominant in North Indian temple architecture, with the use of cedar wood and minimal iron or clay mortar. In this style, 70-75% of the structure is wood, while stone constitutes 20-25%. Temples in this style are usually built with three sections: the sanctum sanctorum *(garbha griha)*, the *mandap*, and the *ardha mandap*. Access to the sanctum is restricted to priests, while devotees can gather in the *mandap* for worship. The temples are distinguished by their *chauntra* (platform), *Jal Bawdi* (water source), and ornate towers *(Shikhara)*. The architectural features echo the grandeur of ancient Himalayan temples, with designs that symbolize the merging of circular and quadrangular shapes.

Originally, all Mahasu temples were built in the *ekpura* and *chhatrarekha prasad* styles. However, as communities grew wealthier, these temples were transformed into larger, *dupura*-style temples in their respective locations. The construction was funded through community donations, with many locals contributing their time and labour due to their deep faith in Mahasu Devta. Interestingly, the entrances of all these temples face south, except for the temple dedicated to Char Mahasu ki Maa on the

Mahasu temple, Bisoi

Mahasu temple, Lekhsiar

banks of the Tamsa river in Mandrath, which faces east. Whether situated along the Tamsa, Yamuna, Rupin, or Supin rivers, most of these temples have entrances that face west or northwest. While the Mahasu temple at Hanol is located on the banks of the Tamsa river, the larger Mahasu temples in villages like Bisoi, Lakhwad, and Laksyar are situated along the Yamuna river, with all their entrances oriented to the west or northwest. In contrast, the entrance of the Pandava's temple in Lakhamandal, also located in this valley, faces east. Among the Mahasu temple group, the temple at Hanol is considered to be the oldest in Uttarakhand. This temple is a unique *ekpura* temple in the *chhatrashal* architectural style that is divided into three sections. In its outer room, devotees perform *ardaas* (prayers), *dev stuti* (praise of the deity), and *ratri jagran* (night vigils), with many worshippers lying on a bed of thorns

Mahasu temple, Lakhwar

to seek Mahasu's blessings for resolving their difficulties. In the second section, devotees can have *darshan* (sight) of Mahasu, while the priest, from the third room, applies a tilak on the devotees. Entry into the third room is strictly reserved for the priest alone.

THE ROLE OF TRADITION AND DEVOTION

For the people of Khatt Bahlad and Jaunsar Bawar, their devotion to Mahasu Devta is deeply ingrained in their identity. The temple serves not only as a spiritual center but also as a cultural symbol, embodying the community's resilience and faith. The priests, in an age-old tradition, would fetch water from Devpani for temple rituals. Over time, as this journey became difficult, a water reservoir was created within the temple premises, easing the burden on the priests while maintaining the sanctity of the rituals. Today, the temple remains a central part of the community's life, with annual festivals such as *Dev Jagra* and *Bhaand Puja* continuing to draw crowds. However, there is a growing concern that the region's rich cultural heritage is slowly fading. The youth are encouraged to embrace and preserve these traditions, ensuring that the cultural and spiritual legacy of Jaunsar Bawar endures.

CONCLUSION

The Mahasu Temples is a testament to the devotion and craftsmanship of the Jaunsar Bawar people. Its intricate woodwork, unique architectural style, and rich mythology make it a significant cultural and religious site. Visitors to the region are not only captivated by the temple beauty but also by the enduring traditions that it represents. For those exploring the western area of Uttarakhand, a visit to these temples offers a glimpse into the deep-rooted faith and artistry of this fascinating region. ■

FRIENDS PUBLICATIONS & SOPHIYA PUBLICATIONS

Educational Publishers

Head Office : 56, Sector-16 B, Avas Vikas Colony, Agra-282007 (UP), India
Corp. Office: Plot No. A-4 & 5, 3rd Floor, Logix Park, Supremework,
Near Metro Station, Sec-16, Noida-201301
Phone: 8755909948, 8077499153, 8077499184
E-mail:info@friendspublication.com, orders.friends@gmail.com
Website: www.friendspublication.com
Branches: Delhi, Lucknow, Indore, Bengaluru, Jaipur

Decoding Uttarakhand's

TEMPLE ARCHITECTURE WITH DR. YASHWANT SINGH KATOCH

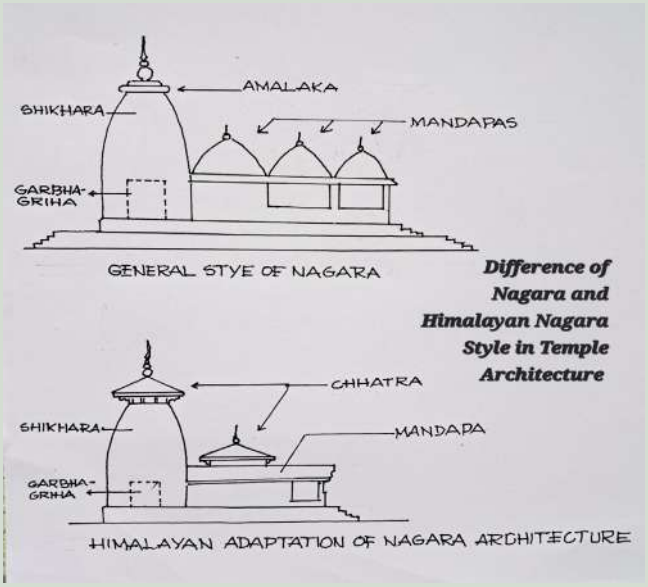
Dr. Yashwant Singh Katoch, a distinguished historian and archaeologist from Maso village in Pauri Garhwal district, has made significant contributions to Uttarakhand's cultural and architectural heritage. He was honoured with the Padma Shri award last year for his pioneering work in the field. A founding member of the Uttarakhand Research Institute, established in 1973, Dr. Katoch's research includes critical editions like Atkinson Himalayan Gazetteer and extensive fieldwork documenting archeological sites such as Kanvashram and Mahasu Devta. His books, including Archaeology of the Central Himalayas and Military Tradition of Uttarakhand, offer valuable insights into the region's history. As a key figure in the Central Himalaya Granth Series, he remains committed to preserving Uttarakhand literary and historical heritage. Dr. Katoch study of Uttarakhand's ancient temples is particularly noteworthy. His meticulous documentation continues to serve as a foundational resource for further research and exploration. Even at the age of 70, his passion and sharp intellect remain undiminished, and making conversations with him about Uttarakhand's heritage a privilege. With his vast knowledge and precision, he unravels the region's ancient legacy with great depth and clarity.

उत्तराखण्ड की विशेष भौगोलिक विशेषताएं इसके वास्तुकला को कैसे प्रभावित करती हैं? क्या आप बता सकते हैं कि किस प्रकार की स्थलाकृति (topography) ***और जलवायु*** (climate) ***ने उत्तराखंड के विभिन्न क्षेत्रों में निर्माण शैलियों को आकार दिया है?***

उत्तराखण्ड भौगोलिक दृष्टि से मध्य हिमालय कहलाता है। यह सम्पूर्ण भु–प्रदेश चिर–हिमाच्छादित महाहिमालय के दक्षिण पार्श्व में तराई–भाभर के पाद–प्रदेश से उच्च पर्वतीय भाग को समाहित करता है। जो शीतकाल में अधिकांश हिम से ढक जाता है। वर्षा ऋतु भी तेज वर्षा से युक्त पर्वतीय भूमि को विध्वंस करती है। इन जलयुक्त तथा भौगोलिक विशेषताओं ने यहाँ की मन्दिर शैली को प्रभावित किया। देव मन्दिरों का छोटा आकार, रेखा प्रासाद के ऊपर काष्ठ छत्र तथा यमुना की पर्वतीय घाटियों में मन्दिरों में काष्ठ का अधिक प्रयोग, ये तीन विशेषताएं पर्वतीय निमार्ण शैलियो में दिखाई देती है। जो मैदानी क्षेत्र के मन्दिरों में नही दिखायी देती।

आपने उत्तराखंड की वास्तुकला धरोहर में भी विभिन्न तरीकों से योगदान दिया है। क्या आप इस संदर्भ में अपने कुछ योगदानों का उल्लेख कर सकते हैं?

उत्तराखण्ड की वास्तुकला पर मेरा अध्धयन निरन्तर



निगत कई दशकों तक चलता रहा। वास्तुकला की यह धरोहर मुझे सतत अपनी ओर आकर्षित करती है। फलस्वरूप मैंने प्रथम बार उत्तराखण्ड के देवालयों की शैलियों को संस्कृत वास्तुशास्त्रों के आधार पर प्रस्तुत किया। मन्दिरों का मेरा यह वर्गीकरण नितान्त शास्त्रीय था। एवं उसे पुरातत्ववे. ताओं की स्वीकृति मिली। अनेक मन्दिरों को प्रथम बार प्रकाश में लाया। उनका कालक्रम निर्धारित किया। मेरा यह योगदान, मेरी पुस्तक ''मध्यमि. हमालय की कला'' (2012) में देखा जा सकता है। यह पुस्तक उत्तराखण्ड विश्वविद्यालयों के पुरातत्व विधार्थियो को मार्गदर्शक सिद्ध हुई।

कुमाऊँ, गढ़वाल और जौनसार क्षेत्रों की वास्तुकला शैलियों में प्रमुख अंतर क्या हैं?

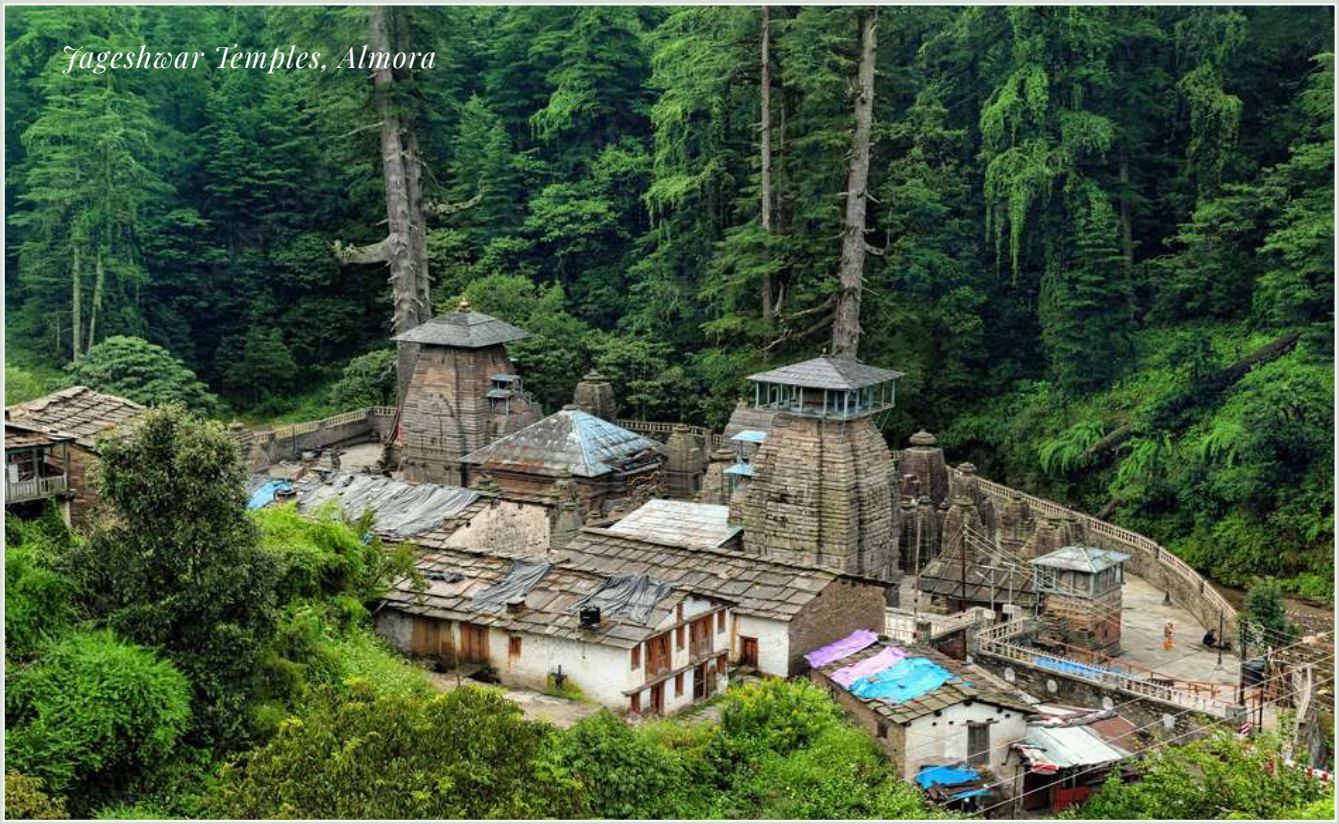
सम्पूर्ण उत्तराखण्ड के देवमन्दिरों के निरीक्षण, अध्ययन तथा समीक्षा से मुझे विदित हुआ कि, गढवाल तथा कुमाऊँ की वास्तुकला शौलियों में कोई अन्तर नहीं है। मात्र दो अन्तर दिखायी देते है:–

(1) गढवाल की मन्दिरों के शैलियों में विविधता है। यहां वलयाकार शिखर मन्दिरों की रचना हुई, जो कुमाऊँ में नही है। रचना शैलियों की यह विविधता यहां श्री बदरीनाथ धाम की ओर आते तीर्थयात्रियों, राजाओं द्वारा कुछ मन्दिरों की रचना द्वारा प्रकट हुई है। श्री बदरीनाथ धाम की विधमानता तथा गंगा का युग–युगीन यात्रा–पथ होना विविधता के लिए उत्तरदायी है।

(2) प्राचीनता में गढवाल के देवमन्दिर अधिक प्रचीन है। यदि हम यज्ञ–वेदियों (चितियों) की रचनाओ को देखें तो ये चितियां मात्र गढवाल में मिलती है। यमुना–उपत्यकार में, पुरोला तथा बाडवाला की चितियाँ (यज्ञवेदियां) मन्दिर रचनाओं के आद्य रूप हैं। इन दो अन्तरों की अतिरिक्त, गढवाल–कुमाऊँ की वास्तु–रचनाओं में कोइ अन्तर नहीं है।

अब हम जौनसार क्षेत्र की वास्तु–शैली पर विचार करते है। यमुना–टोन्स की घाटी में काष्ठ–मन्दिरों का पृथक विकास हुआ जो गढवाल–कुमाऊँ में नही मिलता। जौनसार बावर के ये काष्ठ मन्दिर वास्. तु शास्त्रों में ''यामुन शैली'' के मन्दिर कहे गऐ है। इनमें सम्पूर्ण रचना काष्ठ की होगी। कभी आधार प्रस्तार का तथा ऊपरी भाग काष्ठ का होता

Kedarnah Temple



Jageshwar Temples, Almora

है। ''यामुन शैली'' के इन मन्दिरों के शीर्ष त्रि–छत्र युक्त होते है। उदाहरण केलिए अनोल का महासु मन्दिर।

इस शैली की परम्परा यहां युगों से रही है। इस शैली को ग्रहण करने में दो कारक प्रधान है। (1) दृढ़ टिकाऊ काष्ठ की बहुलता, तथा (2) वर्षा की अधिकता। कुछ भी हो, जौनसार–बाबर के ये काष्ठ–मन्दिर गढ़वाल–कुमाऊँ से नितांत पृथक शैली के है।

आपने मन्दिर वास्तुकला पर बहुत अध्ययन किया है। इस संदर्भ में क्या आप कुछ प्रतिष्ठित मन्दिरों के निर्माण विधियों के बारे में बात कर सकते हैं? क्या इन संरचनाओं में कोई दिलचस्प इंजीनियरिंग उपलब्धियाँ हैं?

उत्तराखण्ड हिमालय में अनेक वास्तु शैली के देवालय बने हैं। परन्तु प्रधान देवालयों के लिए छत्र रेखा शिखरो शैली का ही प्रयोग हुआ है। इस शैली को मैंने "मध्य हिमादि शैली" के नाम से पुकारा है। यह शैली गढ़वाल कुमाऊँ हिमालय मे प्रधान रूप से प्रयुक्त हुई है। गढवाल में गोपेश्वर शिवमन्दिर, केदारनाथ मन्दिर, उखीमठ का ओंकारेश्वर मन्दिर, तथा कुमाऊँ में जागेश्वर, मृत्युंजय मन्दिर इत्यादि इस शैली के प्रधान मन्दिर है। अल्प अन्तर के साथ इन छत्र रेखा–शिखर मन्दिरों की निम्न विशेषताए हैः–

तलछन्द में पुराने मन्दिर सभी त्रिरथ विन्यास के है। बाद में पंचरथ–सप्तरथ मन्दिर भी बने। इनमें एक वर्गाकार गर्भगृह होता है। जिसके आगे एक प्रक्षेप बाहर निकला रहता है। जो अन्तराज का निमार्ण करता है।

ऊर्ध्व छन्द (Elevation) में इनमें नीचे 'अधिष्ठान', इन के ऊपर 'जंघा', उसके ऊपर कपोतपाली तथा सबसे ऊपर 'शिखर' की रचना होती है। शिखर के अंग हैः– सबसे नीचे ग्रीवा, इसके ऊपर आमलक और सबसे शीर्ष में चक्र अथवा 'आकाशलिंग'। इसके ऊपर 'कनश'। अन्तराल या किपिकि के ऊपर "थुकनाशा" तथा थुकनाशा के ऊपर 'गजसिंह' की स्थापना 'छत्र रेखा–शिखर' शैली के मन्दिरों की प्रधान विशेषता है।

निर्माण–विधियो के पश्चात मैं इन संरचनाओं की तकनीकी विशेषताओं का सक्षेप में वर्णन करूँगा। इन मन्दिरों की भित्तियाँ (Wall) काफी मोटी होती है। और विशाल प्रस्तर–खण्ड लोहे वे अंकुश द्वारा कसे रहते हैं। प्रस्तर की चिनाई (मैसनरी) बेट–तथा बैलेंस (Wait and balance) के इंजीनियरिंग सिद्धान्त पर हुई है। सम्पूर्ण संरचना के शीर्ष भाग में बहुत भार का 'आमलक'। इन

संरचनाओं को अपनी धुरीपर स्थिर रखता है।

पारम्परिक आवासीय योजनाओं, घरों में उपयोग किए जाने वाले डिजाइनों और उनकी सांस्कृतिक महत्ता के बारे में बताएं।

उत्तराखण्ड की देवालय वास्तुकला का सिंहावलोकन हम पूर्व पंक्तियों में कर चुके हैं परन्तु परम्परागत आवासी वास्तूकला की योजनाओं पर भी दृष्टिपात करना आवश्यक है। मध्य हिमालय मे आवासी वास्तुकला भी अपनी विशिष्टताओं से युक्त है। उसे यह विशिष्टता दी यहां की जलवायु ने, जनसमुदाय की आर्थिकी ने, वनस्पतिक पर्यावरण ने, पर्वत पार्श्वों पर बसे गांव, निर्धनता की मार तथा वन–सम्पदा के मध्य उन्ही पर निर्भर ग्राम्य जीवन ने यहां के आवासी संरचनाओं को प्रभावित किया। मध्य हिमालय के उपलब्ध आवासी योजनाएं अर्थात आवास गृहों के प्रमुख रूप निर्गत है।

(1) गड, दुर्ग, बूँगा अथवा कोट जो गड व्यक्तियों के निवास होते थे।
(2) क्वाडा/कोठा, के विशाल आवाश होते थे।
(3) डण्डेली जो कभी क्वाडाओ के साथ तथा कभी सामान्य आवास के साथ निर्मित होती है।
(4) साधारण ग्रामीण घर/कुडी

ये आवासी घरों के चार स्वरूप थे इनमें उपयोग किए जाने वाली सज्जा/डिजाइनो का स्वरूप तथा आलेखन भी अत्यन्त साधा था।
(1) पर्वतीय 'गड' मुख्यतः सुरक्षा हेतु निर्मित हुए थे। उन्हे विशाल प्रस्तरों तथा सुदृढ़ मिट्टियों का उपयोग किया गया है। सुरंग द्वारा अथवा मिट्टी के पाइपों द्वारा व्यवस्था होती थी।
(2) क्वाडा/कोठा सयाणा, थोकदार तथा कमीण कहे जाने वाले सामंतो के घर होते थे। यहा निर्मित हुए कोठों की रचना एक मध्यवर्ती आंगन के चारों ओर होती थी और ये दो मंजिले होते थे। इनमें 70 से 90 कक्षो के कोठे भी यहाँ निर्मित हुए। कोठों की रचना एक मध्यवर्ती आंगन के चारों ओर होती थी और ये दो मंजिले होते थे। इनमे सज्जा या अलंकार का स्थान मुख्यतः उनके प्रधान द्वार पर होता था। काष्ठ घरों की सज्जा पर्वतीय काष्ठकारों की दक्षता को बताते है। द्वार के ऊपर गणेश प्रतिमाहोती थी। कोठे पर स्तर–मिट्टी की संरचनाएं होती थी और उनके कक्ष परस्पर आवागमन के लिए जुडे होते थे।

(3) ठंडेली का होना किसी मुखिया या धनवान के आवास का चिन्ह था। ठंडेली कक्षों के बाहर कमरे होते थे। जिसका अग्र मार्ग दिवारी होती थी। इसके स्तम्भ कभी बहुत सीमित होते थे।

(4) सामान्यतः साधारण ग्रामीण धर कुडी पटाल से छाई हुई दो तीन कक्षो का आवास होता था। ये दो खण्ड के होते थे। द्वार पर सदैव गणेश रखने की प्रथा थी। उनकी दूसरी मंजिल का फर्स काष्ठ के ऊपर मिट्टी बिछा कर बनाया जाता था। मोटी खिडकी छोटी होती थी और धुआ निकालने के लिए छत पर एक छिद्र होते थे।

इन चारों प्रकार के आवासी भवनों की रचना पर्वतीय सांस्कृतिक पृष्ठभूमि से जुडी है। मध्यकालीन सयाणों–गणपतियो के आपसी संधर्ष में गढों की संरचना अनिवार्य कर दी और 17 व 18 सदी से भवन में स्थिरता आई। तब थोकदारों ने विशाल कोठे अस्तित्व में लाये। जन साधारण की ग्रामीण संस्कृति में शादी 'कुडियों' (घरों) का निर्माण होता रहा। निर्धनता इतनी थी कि इसके दरवाजे तीन चार फुट ऊँचे नही होते थे। इन ग्रामीण घरों में कभी गोशाला उन्ही घरों के पास कक्षों में होती थी। कभी गोशाला घरों से पृथक होती थी। और सभी परिवार एक ही स्थान पर अपनी–अपनी गोशाला बनाते थे। पुराने समय मे अत्याधिक था सयुंक्त परिवार थे जो कोठे पर साथ रहते व कृषि आदि के कार्य साथ – साथ करते थे। यहां आवसी घरों की रचना संस्कृति का मूल स्वरूप था।■

Tunganath Temple, Rudraprayag

गढ़ों का गढ़

गढ़वाल की भवन–निर्माण–. कला सम्बन्धों का गढ़

Dr. Paulachan Kochappilly
Professor, Faculty of Theology
Dharmaram Vidhya Kshetram
Bangalure

गढ़ों का आंचल गढ़वाल
देवदार, चीड़, साल से भरा वनांचल।
गंगा-यमुना का पावन जल
बर्फीली पर्वतों से सुरक्षित उत्तरांचल।।

गढ़वाल की संस्कृति में रीत अनोखी
भवन निर्माण में दर्शाती अद्भुत दृष्टि।
उपलब्ध समृद्ध पत्थर, पेड़ और मिट्टी
मकान की निर्मिति में सब उपयोगी।।

गढ़वाल के मकान का हो अध्ययन
भवन भी संस्कृति का असली दर्शन।
प्रकृति का संरक्षण और पशुपालन
रिश्तों की माला में पिरोया है इंसान।।

मकान बाहर से दिखते मजबूत
छत बनी होती चट्टान से पूरित।
सूरज-चांद के साथ रहते दिन-रात
भवन की कतारें करती दृश्य अद्भुत।।

ज्यादातर मकान होते दुमंजिला
स्थानीय पत्थरों से बनी आधार शिला।
पत्थर और पेड़ से निर्मित शिलाशाला
भवन का बनता सुन्दर सिलसिला।।

गृह भीतर सर्दी में गरम
गर्मी में सहज और नरम।
ज्यादा न कम, सब कुछ व्यवस्थित
बिंब श्रद्धा और आस्था से भरा, संतुलित।।

पशुशाला है निचला मंजिल
मानव रहता ऊपर, जीवन खुशहाल।
बोध कराता रिश्तों का गहराई मूल
सत्य प्रतीक, सन्तुलित भूमंडल।।

गढ़-मकान में पशुओं का सम्मान
गढ़-भवन में मानवों का रहन-सहन।
शिलागृह में है ईश्वर का स्पन्दन
संबन्धों का गढ़, अद्भुत दर्शन।।

नूर तरंग का मंगल काल
जहाँ हो रिश्तों का माहौल
माटी, मृग, मानव का हाल
गढ़वाल की निर्माण कला, बेमिसाल।।

IMPERIAL IMPRESSIONS

The Influence of Colonial Architecture on Uttarakhand's Identity and Landscape

Dr. Surendra Singh Bisht
Tarun Kumar Bhatt
Department of History and Archaeology
HNB Garhwal University (Central University)
Srinagar Garhwal, Uttarakhand

Colonial architecture in India pertains to the architectural designs and constructions erected during the colonial governance era, predominantly by the British, Portuguese, Dutch, and French. The colonial era in India lasted for several centuries, first with the entrance of the Portuguese in the 16th century, succeeded by the Dutch, French, and ultimately the British, who exerted a substantial and enduring influence on Indian architecture. The earliest colonial architecture in India was the construction of churches. Although there were many churches in the south dating back to the early centuries AD, St. Francis Church established by the Portuguese in Cochin in 1510 AD is considered the first church in India established by the Europeans.

The British colonial period in India, from the mid-18th century to the mid-20th century, saw the establishment of numerous hill stations in the Himalayan region. Uttarakhand, known for its temperate climate and scenic scenery, became a preferred destination for British officials seeking relief from the scorching temperatures of the plains. The establishment of these hill stations was driven by a combination of factors, including the need for a cool climate, strategic military considerations, and the desire to recreate a home away from home for the British in India. Hill stations like Mussoorie,

Nainital, and Ranikhet were established to cater to the need for sanatoriums and summer retreats. These motivations were reflected in the architecture, which borrowed heavily from European styles but was adapted to suit the local environment. These hill stations were carefully and systematically designed and constructed, integrating British architecture and urban planning features. Colonial architecture served a purpose beyond mere aesthetic appeal or a symbol of the empire wealth. It served as a platform to showcase the supremacy of Britain. Within Britain, a discussion arose on the choice of embracing classical or gothic architectural styles for development projects. To ensure meticulous attention to the architectural standards of construction in both their country and colonies, the Royal Institute of British Architects was established in 1834. Originally, the supervision of construction work was carried out exclusively by either a civil engineer or a military engineer. But later the importance of architects increased.

DEBATE ON COLONIAL ARCHITECTURE

Early architects such as T Roger Smith and William Emerson consistently underlined that there was no necessity to create any novel architectural style in India. Smith argues that like how a Roman government servant retained their Roman identity even while in exile, a British officer maintained their British identity regardless of their location within India. Therefore, he would always want the British type of architecture in India.

Christ Church, Mussoorie (Image Courtesy: Mussoorie Tourism)

Raj Bhawan, Nainital (Image Courtesy: Mussoorie Tourism)

But they soon realised that Indian climate was not suitable for his purpose, and it was impossible to copy British architecture exactly here. As a result, it was unanimously accepted that the achievement of successful colonial construction required the integration or modification of certain aspects of indigenous design. The colonial British chose to build single-story bungalows with pitched roofs and luxurious verandas for their private residences. These houses were situated in large compounds, surrounded by servant quarters. This spatial configuration significantly transformed the characteristics of the indigenous bungalow, while simultaneously ensuring the airflow that the English needed in a warm environment

Savoy Hotel, Mussoorie (Image Courtesy: ITC Hotels)

and highlighting their distinctiveness as a colonial elite. Thus, emerged new styles of architecture in India dominated by the blend of political sovereignty of mighty Romans and the Muhammadan style while keeping in mind the Indian climate.

COLONIAL ARCHITECTURE IN UTTARAKHAND

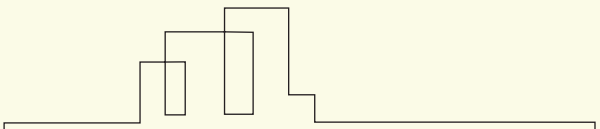
The study of colonial architecture in Uttarakhand is intriguing since it explores how European architectural styles were adapted to suit the Indian environment. The structures erected in Uttarakhand during the British era showcase a combination of Gothic, Tudor, and Victorian architectural styles, each possessing unique features.

GOTHIC ARCHITECTURE

The architectural style known as Gothic Revival, which was prominent in Europe in the 19th century, also spread to the hill regions of Uttarakhand. This architectural style is distinguished by its use of pointed arches, ribbed vaults, and expansive stained-glass windows. An exemplary instance of Gothic architecture in Uttarakhand is the Christ Church located near Mussoorie. Christ Church, constructed in 1836, is widely regarded as the oldest church in the Himalayas. The pointed arches, stone masonry, and exquisite stained-glass windows portraying Biblical scenes are characteristic of the Gothic style. The church position, encompassed by deodar trees and commanding a view of the Doon Valley, enhances its tranquil and grandiose ambience.

The Tudor and Victorian architectural styles are prominent in Uttarakhand, with steeply pitched gable roofs, ornamental half-timbering, and tall, narrow windows. The Raj Bhavan in Nainital is a prime illustration of the Tudor-Gothic architectural style. Constructed in 1899, this grand edifice bears a striking resemblance to a medieval European castle, featuring turrets, pointed arches, and expansive bay windows. The Raj Bhavan, encompassed by meticulously maintained gardens and dense woodlands, functioned as the seasonal abode of the British Governor of the United Provinces. The magnificence and magnitude of the structure demonstrate the British endeavour to recreate the majestic residences of England in the hills of India.

Local Adaptations: Although these colonial buildings were highly influenced by European forms, they were also modified to fit the specific characteristics of the local landscape. The steeply inclined roofs were not merely a matter of appearance, but rather a pragmatic decision made to endure



The structures erected in Uttarakhand during the British era showcase a combination of Gothic, Tudor, and Victorian architectural styles, each possessing unique features

the intense monsoon rains and prevent snow buildup in winter. Buildings were often constructed using local materials such as stone, wood, and slate, resulting in charming, elegant and refined aesthetics. The incorporation of expansive windows and verandas facilitated optimal illumination and airflow, which were imperative in the damp climate of the hills. One building here needs special attention. It is the Building of the Forest Research Institute. Located in Dehradun and constructed between 1922-27 AD, the FRI is a unique example of composite architecture. C G Bloomfield, who had worked with the Lutyens brothers in Delhi, was its chief architect. The wall-less porticos are characteristic of Roman architectural designs, while courtyards are typical of Indian and Oriental architecture. The brick construction exhibits a symmetrical design that highlights the authentic colonial or Victorian architectural style. The windows on the ground floors are of substantial size, while those on the first story are comparatively smaller, which is a characteristic commonly found in colonial architecture. Other buildings related to forest are of the same style showcasing the blend of architecture of Greco-Roman-Indian style.

The Forest Rest Houses (FRHs), Dak Bungalows and other structures are examples of colonial government buildings for their use, built using the finest local materials available. However, they consistently ensured that their architectural designs accurately represented their political and cultural dominance and that the structure could tolerate the specific conditions of the surrounding area. This is why colonial architecture has survived intact till date. They resemble the architectural characteristics of European buildings with slight modifications to counter the local climate.

Forest-rest-house_ -Pawalgarh

THE IMPACT OF COLONIAL ARCHITECTURE ON UTTARAKHAND

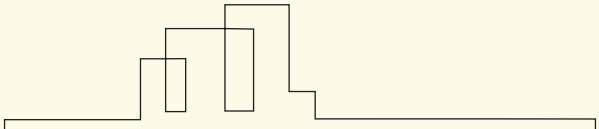
The impact of colonial architecture in Uttarakhand is multifaceted, influencing the region's socio-economic development, urban planning, cultural identity, and environmental landscape. The foundation of hill stations and the construction of colonial buildings in Uttarakhand

resulted in substantial economic prospects. These advancements resulted in the establishment of employment opportunities in the fields of building, maintenance, and services, hence offering means of sustenance for the local populace. The presence of British officers and their families also bolstered the local economy, as markets, stores, and services were established to cater to their specific needs. The development of tourism in Uttarakhand has been greatly influenced by the lasting impact of colonial architecture, with hill stations like Mussoorie and Nainital becoming prominent tourist attractions. Hotels, guesthouses, and heritage properties that inhabit these buildings frequently take advantage of their historical importance, providing tourists with an opportunity to immerse themselves in the atmosphere of the British Raj. Tourism has become a crucial catalyst for the region's economy, significantly supporting the livelihoods of several individuals.

The British created numerous educational institutions in Uttarakhand, some of which remain esteemed centres of study in the present day. Woodstock School in Mussoorie, established in 1854, and Sherwood College in Nainital, founded in 1869, are in structures that date back to the colonial era. Urban development and planning in Uttarakhand hill stations were carefully orchestrated to meet the needs of the British inhabitants while accommodating the indigenous people. The British implemented contemporary urban planning principles, such as well-designed road networks, efficient drainage systems, and communal areas. The colonial architecture of Uttarakhand has also had a significant cultural impact, shaping the region's character and legacy. The amalgamation of European architectural features with local materials and construction processes is evident in the architecture of many hill stations, reflecting the cultural exchanges between the British and the indigenous

Messmore College, Pauri

communities. The Mall Road and the Cart Road in Mussoorie, currently referred to as the Camel Back Road, was initially constructed to accommodate horse-drawn carts and continues to be a well-liked pedestrian pathway with breathtaking vistas of the Himalayas. These initial infrastructure developments established the foundation for further growth in the area, facilitating more convenient access and transit. The British also implemented public amenities such as water supply, sanitation, and power in the hill stations, establishing a model for subsequent urban growth. The enduring impact of these advancements is still apparent in the contemporary facilities and infrastructure that sustain the region's expanding population and tourism sector. The colonial architecture of Uttarakhand has had a significant cultural impact, shaping the region's character and legacy. These buildings serve as more than just historical landmarks; they represent the cultural interchange that occurred between the British and the indigenous community. The amalgamation of European architectural features with local materials and construction processes is apparent in the architecture of numerous hill stations. For instance, numerous colonial bungalows in Almora exhibit British-style verandas and bay windows, however, they are built using indigenous stone and wood. The fusion of architectural styles has given rise to a distinct history that mirrors the cultural exchanges between the British and the indigenous cultures. The historical and cultural importance of colonial architecture in Uttarakhand has prompted initiatives to save and renovate these buildings.



The impact of colonial architecture in Uttarakhand is multifaceted, influencing the region's socio-economic development, urban planning, cultural identity, and environmental landscape.

REFERENCES

Metcalf, T. R. (1984).
Architecture and the Representation of Empire: India.

Chrimes, M. M. (2016).
Architectural dilettantes: construction professionals in British India.

Gupta, S. (1988).
Some Indian Influences on Colonial Architecture In Bombay.

Scriver, P. (2006).
Placing In-between: Thinking through Architecture in the Construction of Colonial-Modern Identities. National Identities.

Stamp, G. (1981).
British architecture In India

Irving, R. G. (1982).
Architecture for Empire's Sake: Lutyens's Palace for Delhi. Perspecta.

Wallach, B. (2013).
European architecture in Asia. Geographical Review.

DEHRADUN'S FOREST RESEARCH INSTITUTE

A Historical and Architectural Masterpiece

Prof. Rajpal Singh (HOD)

Dr. Vinod Kumar Pant

(Dept. of History and Archaeology
HNB Garhwal University (Central University)
Srinagar Garhwal, Uttarakhand)

The Forest Research Institute (FRI), established in 1906 in Dehradun, represents a significant milestone in the history of Indian forestry. Emerging from the Central Forest School, which was founded in 1878 to train forestry professionals, FRI laid the foundation for systematic forestry research in India. Over the years, it has gained recognition for its contributions to forestry research and education and its stunning Greco-Roman architectural design. The concept of FRI was initiated by R C Roughton, the Director General of Forests in the early 1900s, and it was brought to life by Sir Senthil Eardley Wilmot, the then Inspector General of Forests. Initially established under the name Imperial Forest Research Institute and College, the institute expanded its role in research by creating branches focusing on forest conservation, forest action plans, botany, zoology, chemistry, and forest economics.

HISTORICAL AND ARCHITECTURAL SIGNIFICANCE

The main building of FRI was inaugurated on November 7, 1929, by Viceroy Lord Irwin. The building, situated in the Chandbagh Estate, took six years to complete, from 1923 to 1929, at a cost of 90 lakh rupees. Teak wood from Burma was used in its construction, especially for the elegant library, large assembly hall, and the grand entrance gate. The building also houses six museums and numerous laboratories, covering over 89,000 square meters. The architecture of FRI is a brilliant example of the Greco-Roman style, characterized by symmetry, grandeur, and proportion. Designed by Sir G. Bloomfield and constructed by Sardar Ranjit Singh, the building is composed primarily of brick and limestone. The symmetrical, two-story structure spans over 311 meters in length, with a width of 84 meters and a height of 22 meters.

The architecture of FRI is a brilliant example of the Greco-Roman style, characterized by symmetry, grandeur, and proportion. Designed by Sir G. Bloomfield and constructed by Sardar Ranjit Singh, the building is composed primarily of brick and limestone.

KEY ARCHITECTURAL FEATURES

1. Minarets: The main entrance is flanked by two minarets capped with white limestone domes, adding a majestic touch to the structure.

2. Columns: The building features Greco-Roman columns, incorporating the Tuscan and Doric orders. These cylindrical, long-striped columns provide strength and

support to the upper structure, lending a sense of balance and harmony.

3. Arches: Numerous arches, crafted with chain-bound bricks, adorn both the front and back portions of the building, enhancing its aesthetic appeal.

4. Pediments: Triangular structures called *trikonika* strengthen the horizontal features above windows and doors, offering solidity and cohesion to the overall design.

5. Windows and Doors: The windows and doors are crafted entirely from teak wood, further emphasizing the building's attention to detail and traditional craftsmanship.

6. Drainage Pipes: The iron drainage pipes, inscribed in a lion's mouth design, reflecting the meticulous artistry applied even to functional aspects of the building.

MUSEUMS AT FRI

The Forest Research Institute is home to six museums that showcase various aspects of forestry:

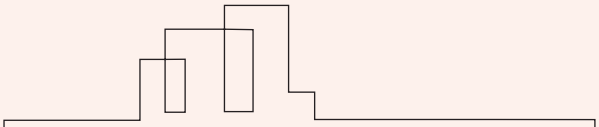
1. Silviculture Museum: This museum focuses on the scientific management of forests through models and pictures. It covers the revival and control of forests and displays vegetation from different altitudes. Various forestry tools are also on display here.

2. Timber Museum: The museum exhibits over 1,026 commercially significant trees. It also features furniture, handicrafts, and a remarkable piece of wood that is 704 years old, cut from the Himalayan forests in 1919.

3. Non-Wood Forest Products (NWP) Museum: This museum displays products such as gums, resins, food items, essential oils, and medicinal plants. It includes samples of turpentine oil and resin, and showcases the 136 bamboo species found in India, including the Giant Bamboo.

4. Social Forestry Museum: Among all museums, this is the most popular among tourists. It explains the interrelationship between forests and humans through modern tree plantation techniques, forest conservation models, and forest product-based industries.

5. Pathology Museum: The Pathology Museum displays over 900 exhibits related to tree diseases and decay, divided into two groups: hardwoods and conifers. It highlights significant diseases like heart-rot and root-rot affecting trees like teak, sal, deodar, and pine.



"FRI is home to six museums showcasing various aspects of forestry, including silviculture, timber, non-wood forest products, social forestry, pathology, and entomology."

6. Entomology Museum: This museum contains about 3,000 exhibits related to insect damage to wood, seeds, trees, plantations, and forest products. Displays are arranged by plant family, showcasing insect damage at various growth stages. Key insects include the Sal Heartwood Borer, Teak Defoliator, and Deodar Defoliator, among others.

THE CAMPUS AND ITS ROLE

FRI's sprawling campus covers 1,200 acres and includes numerous other significant buildings. Some of these are the New Forest Hospital, New Forest Higher Secondary School, the Wood Factory, the Weather Observatory, a hostel, a library, and the headquarters of the Indian Council of Forestry Research and Education (ICFRE). The campus also contains 40 roads named after forestry experts and officers, spanning a total length of 28 kilometers.
One of the most picturesque parts of the campus is the vast green field in front of the main building, where numerous types

of trees and plants are cultivated. The tree garden showcases a variety of species, making it not only a hub for forestry research but also an attraction for botanists and tourists alike.

ARCHITECTURAL HERITAGE AND TOURIST ATTRACTION

The architectural grandeur of FRI has made it a significant colonial heritage site. Preserving this architecture is not only important for the institute but also for the conservation of India's historical and architectural heritage. Its Greco-Roman design and its role in forestry research have drawn the attention of tourists, researchers, and historians from across the world.
Apart from its primary role in research and education, FRI serves as a prime tourist destination. Visitors are often captivated by the majestic structure, serene campus, and the diverse exhibits within the museums. It stands as a symbol of India's commitment to forestry and environmental conservation and has become a landmark of both scientific and cultural importance.

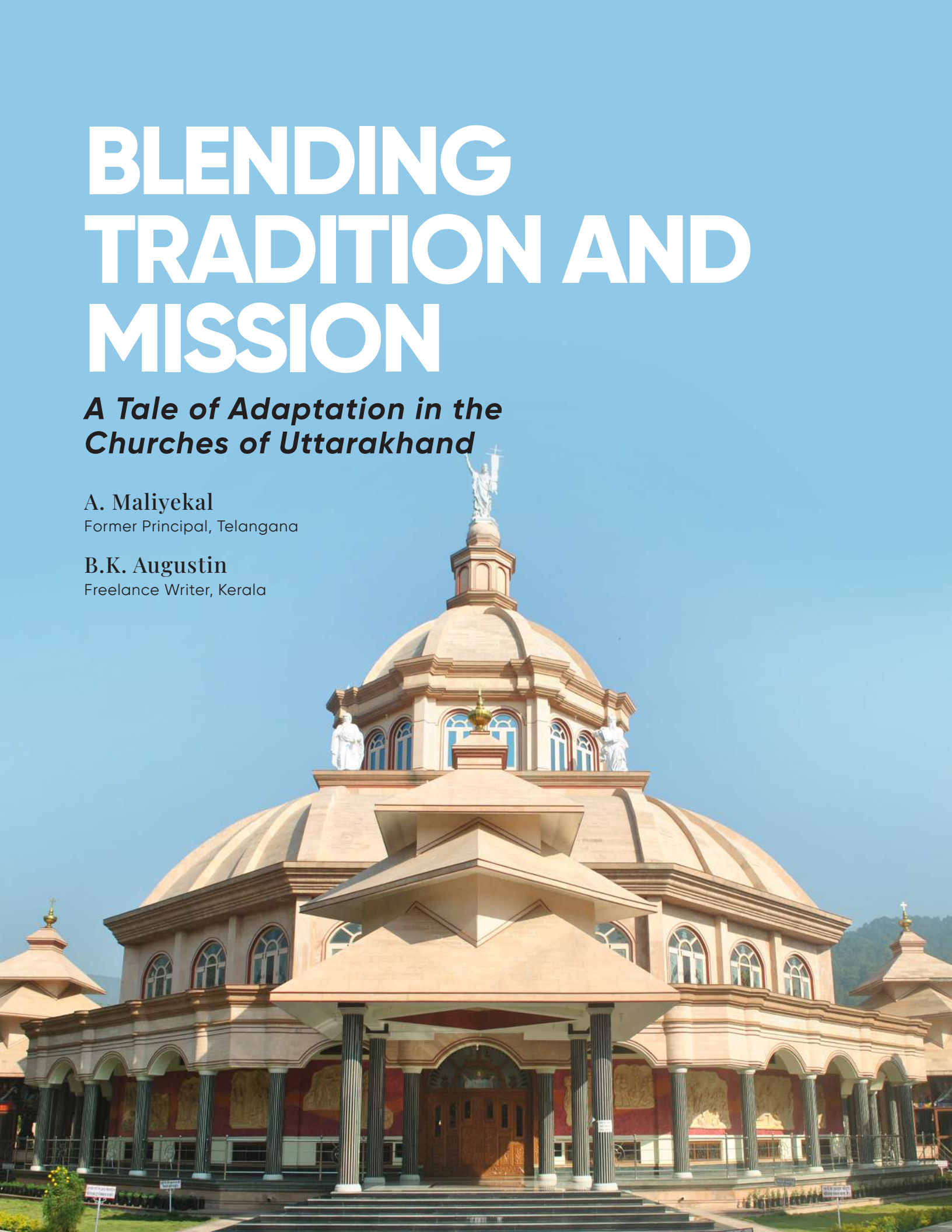
In conclusion, the Forest Research Institute is much more than a center for forestry research. Its architectural beauty, rich history, and role in conserving India's forests make it an invaluable institution in India's scientific and cultural landscape. Its preservation is essential not only for future forestry research but also for maintaining a key piece of India's colonial architectural heritage. ■

BLENDING TRADITION AND MISSION

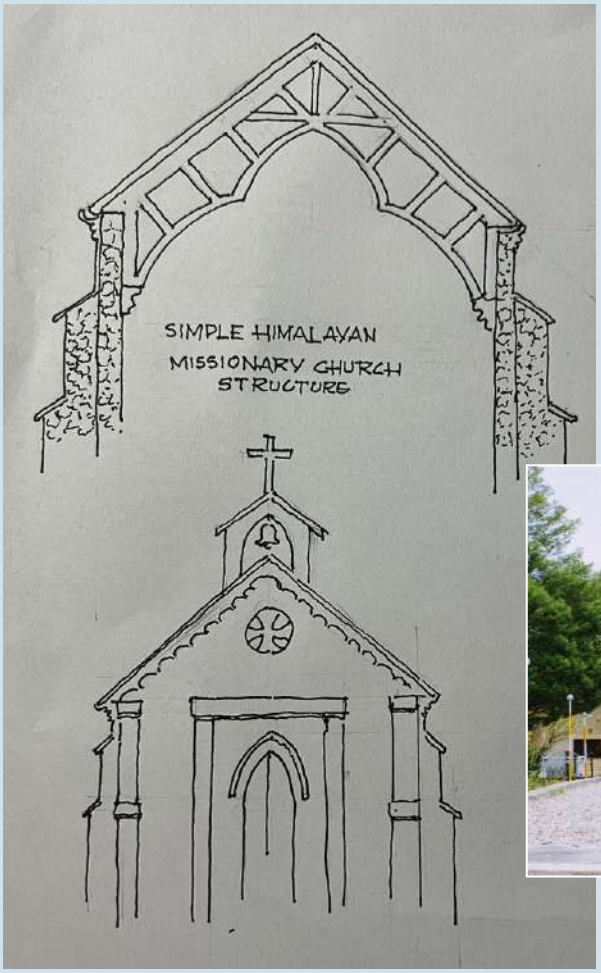
A Tale of Adaptation in the Churches of Uttarakhand

A. Maliyekal
Former Principal, Telangana

B.K. Augustin
Freelance Writer, Kerala



Most of the churches in the Himalayan hills and valleys are simple structures with basic roofs, lacking complex designs and artistry. However, they are not entirely without some colonial touches such as verandas, balconies, French doors, large windows, and colonnades. Elements like porticos, pitched roofs, eaves, stuccos, facades, and simple ornamentation are also noted, though these are primarily found in public buildings. The churches in the Himalayas generally feature Gothic windows, often closed with either stained or plain glass shutters. Externally, Catholic and Protestant churches typically resemble one another, built in a European style but using locally sourced materials and labor. Local wood, black stone, marble stone, and other types of stone are utilized in construction, with slate stone, terracotta tiles, and metal sheets used for roofing. Besides their typical external appearances, elements such as the belfry, the cross on the steeple, the narthex, and towers on either side may be found in some church buildings. The interior of the church, particularly the sanctuary and altar, shows clear distinctions between Catholic and Protestant churches. While both have the baptistry and ambo at the altar, the sanctuary reveals major differences. Catholic churches feature a crucifix and the tabernacle in the sanctuary, whereas Protestants typically display a decorated wooden or metal cross, following a strict prohibition of carved images or statues in Protestant churches. Both types of churches may include candle stands in the sanctuary. The baptismal font, commonly carved from marble, is a shared feature, as are wooden pews in the nave. One of the major attractions in both church buildings are the artistically carved wooden tie beams that support the roof. Notable examples include the Lansdown hill and the nearby St. Mary's Protestant Church and St. John's Catholic Church, which are erected close to each other. The Catholic and Protestant churches of Nainital are beautiful, featuring bell towers and facades.



St. John's church, Landsdown

At St.Francis Church in Dehradun, one can admire beautiful wall paintings in the Italian style along with a marvelous Gothic altar. A pipe organ is also present on the balcony of this church.

Indian Christian Ashram, Jaiharikhal

ARRIVAL OF THE CMI MISSIONARIES

Post-independence, India was divided into states mostly based on linguistic lines. In 2000, the government of India created its 27th state, Uttarakhand, which was formerly part of Uttar Pradesh. This state is home to the Hindu holy sites of the Chardhams—Kedarnath, Badrinath, Gangotri, and Yamunotri—and the sacred rivers Ganga and Yamuna originate and flow through the Himalayan slopes. The Meerut diocese was formed from the Agra Capuchin mission, which was started in the early 1800s and extended to China. Later, in 1972, this diocese was bifurcated, and a new diocese, the Diocese of Bijnor, was established and was entrusted to the first indigenous congregation for mission development.

This new diocese extended from the borders of Meerut to the plains of Ganges, comprising the townships of Bijnor, Kotdwar, Pauri Garhwal, Gopeshwar, and Badrinath, among others. The arrival of CMI missionaries marked a new chapter in this mission territory. The CMIs recognized the need to develop basic amenities for the local people and began their mission work by establishing various educational institutions, social welfare centers, boarding houses, centers for women's empowerment, and sacred spaces for prayer and worship. These buildings were constructed using modern technologies of concrete and metal, with a focus on space utilization rather than architectural aesthetics. As a result, most of these institutional buildings are block-structured concrete edifices erected on columns and beams.

A prominent feature of Garhwal temple architecture is the raised roofing of the Garbhagriha (Sacred seat of the deity), constructed in rising steps like a pyramid.

St. Joseph's Cathedral Church, Kotdwar

FIRST STRUCTURES BY THE CMI MISSIONARIES

In the early 1970s, the CMI missionaries initiated their first educational institution in the plains of the Himalayas. This was a concrete building raised on columns and beams, with a veranda at the center separating classrooms on either side. The structure was simple, with locally sourced bricks, plastered and color-washed only from the inside. It featured rectangular windows, doorposts, and grills, resembling the construction style of their European Methodist missionary predecessors.

In 1984, the CMI Fathers began constructing a church in the Bijnor region. This too was a simple building, aimed at space utilization with minimal architectural decoration. The church had a slanted roof with inverted beams on concrete columns and was built in a T-shape. However, the nave of the church bulges at its center like a boat. A crucifix is affixed at the main sanctuary, right behind the altar. On one side of the sanctuary is a sacristy store, while the tabernacle is placed on the other side, known as the minor sanctuary. The front of the church features two main doors, and as soon as one enters through these doors, the sacristy is encountered—a design that was unconventional at the time.

In the first half of the 1980s, the CMI missionaries also established an Indian Christian Ashram in the Himalayas. Following the Second Vatican Council, an All-India Seminar on Indian Spirituality and the Christian Ashram way of life was organized at Dharmaram College in Bangalore. This seminar was attended by figures like Bede Griffith and Vandana Devi. Sr. Vandana, who was then the Principal of Sophia College in Bombay, left her job to join the Himalayan CMI mission, seeking to lead the Ashram way of life and Indian Christian Spirituality. The first Bishop of Bijnor diocese, Bishop Gratian Mundadan CMI, allocated some land at

The tabernacle is designed in the shape of a yantra, with its two side walls adorned with Rajasthani mirror mosaics and peacocks, an ancient Christian symbol of resurrection and eternal life.

Jaiharkkal near the Garhwal Military Regiment, which had been established by the British Raj. Sr. Vandana felt that the snow-clad hills and valleys visible through the coniferous pines and oaks were ideally suited for establishing the Ashram. Thus, a bungalow with a few rooms and a fireplace was built, following a colonial plan, with wood and metal sheet roofing. Sr. Vandana designed the interior of the building to accommodate the lifestyle of Indian religious life. This Ashram was named 'Jeevandhara.'

Later, with the help of her Australian benefactor and friend Mr. Sappi, Sr. Vandana constructed seven huts of varying sizes and shapes, without altering the landscape, intended for solitude. Additionally, a hall was built for retreats, prayer, study, and reading. This bilevel, box-shaped concrete building was raised on columns and beams. The side of the building housing the prayer hall (chapel) includes the *garbhagriha* (sanctuary) with the *vimana* (tower) on top, crowned by a cross. The entire structure resembles a Hindu temple. The statues within the chapel are noteworthy for their purely Indian iconographic art. Christ is depicted as a *Sadhu* (sage) carrying a *kamandalu* (aspergillum) and seated on a lotus flower as *sthithapragna* (enlightened). Another attraction of this Ashram is its Marian *Mandap* (grotto), an open-air structure amidst the greenery of pear trees and pines. The Blessed Virgin Mary is clad in a sari, depicted in the Indian art form of Tri Bhangi, holding the baby Jesus. She is crowned in glory, and at her feet is the crescent moon, evoking the Woman and the Dragon of Revelation 12. Although this may not be considered academic architecture, it undoubtedly represents a significant stage in Indian Missionary architecture in the Himalayas.

CHURCH ARCHITECTURE

In contrast to the school buildings, hospitals, social welfare centers, and Jeevandhara Ashram, two major Catholic churches stand as landmarks in this sacred land. One is the Saint Joseph Cathedral Church at Kotdwar, and the other is St. George's Church in Rishikesh. These churches are built in a beautiful missionary architectural style that blends European design with local Garhwal art and architecture. A prominent feature of Garhwal temple architecture is the raised roofing of the *Garbhagriha* (Sacred seat of the deity), constructed in rising steps like a pyramid. The churches also feature four high-rise towers, with the one above the sanctuary being the tallest. All four towers have roofs that rise step by step, similar to temple structures. The churches are surrounded by verandas for circumambulation, adorned with

St. George's Church, Rishikesh

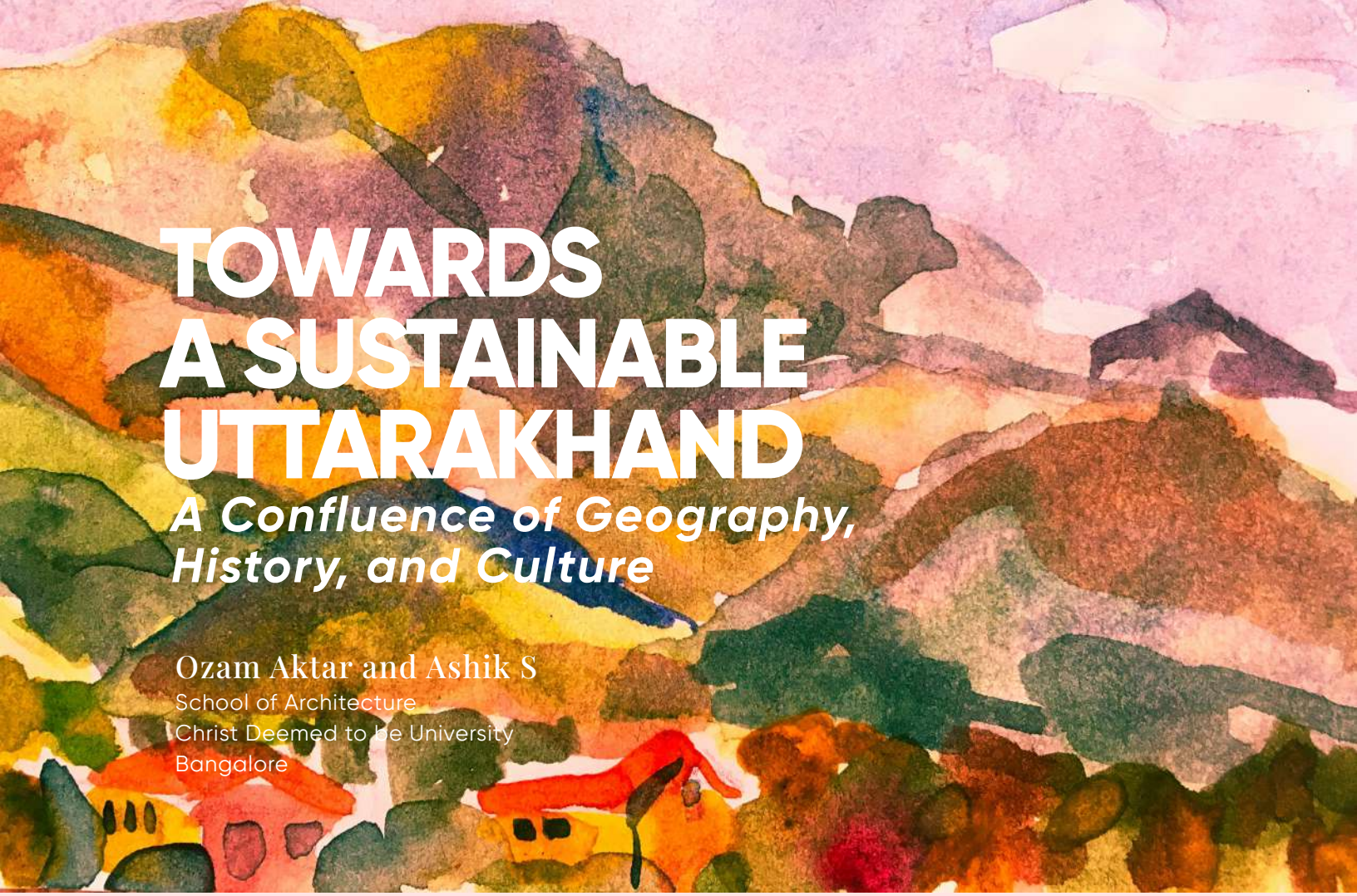
round decorative columns. The dome of the main roof above the sanctuary is a semicircular concrete dome anchored to four main pillars rising from the four corners of the

sanctuary. Windows are designed with steel glass, depicting images of saints.

The sanctuary of the church presents a distinct appearance, featuring a crucifix but no statues of saints. Above the crucifix

is a mosaic depiction of the risen Christ, set against the backdrop of a single banyan leaf surrounded by rays. The tabernacle is designed in the shape of a yantra, with its two side walls adorned with Rajasthani mirror mosaics and peacocks, an ancient Christian symbol of resurrection and eternal life. The roof slab beam, covered with mosaic designs, depicts the seven sacraments using traditional Indian symbols. Outside the church, on either side, are two mandapas dedicated to St. Mary and St. Joseph, with Garhwal-style pyramid-shaped roofs covering the statues. Each mandapa has four walls with stained glass windows depicting events from the life of the respective saint. The front mandapa has three open sides, while the church's portico and rear side feature the main doors. The church has three beautifully carved doors leading to the veranda. The veranda walls are adorned with high 'relief art' work, depicting scenes from the life and teachings of Jesus. These figures are depicted in purely Indian cultural forms. The church's bell tower, standing separately, is simple but tall. This architectural landmark is now one of the most visited Himalayan pilgrimage centers.

The second especially noteworthy church is St. George's Church, Rishikesh. The foundation stone of this church was laid in 1985 by Bishop Gratian Mundadan CMI, and it was dedicated on May 7, 1990. This church was built according to the model of Saint Peter's Cathedral at Bangalore. The Church is built in a cruciform shape, with a large dome above the intersection of the nave and transept. The tabernacle is placed in a separate tower called a sakara, which rises step by step. The walls, with mosaic artwork depicting the life and ministry of Jesus, are crowned with an icon of Christ the king, while the church's roof beams are decorated with floral designs. Externally, this church is regarded as the first truly missionary church in Uttarakhand. It represents the blending of European and Indian art styles and is considered a milestone in Indian Church architecture in the Himalayan region. ■



TOWARDS A SUSTAINABLE UTTARAKHAND

A Confluence of Geography, History, and Culture

Ozam Aktar and Ashik S
School of Architecture
Christ Deemed to be University
Bangalore

Uttarakhand, is renowned for its breathtaking landscapes, rich biodiversity, and cultural heritage. Beneath its picturesque façade lies a complex interplay between development and environmental sustainability. The quest for economic growth has led to significant ecological challenges, particularly highlighted by the devastating flash floods of 2013. As Uttarakhand continues to evolve, including its architectural identity, it becomes crucial to evaluate how to achieve sustainable development—growth that meets the needs of the present without compromising the ability of future generations to meet their own needs.

UNDERSTANDING SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT IN ARCHITECTURE

Sustainability is a multidimensional concept that integrates economic, social, and environmental considerations. In the realm of architecture, sustainable development emphasizes the need for growth that is inclusive and equitable while protecting natural resources. In Uttarakhand, the architectural landscape must respect the delicate balance of ecosystems while addressing both environmental degradation and socio-economic disparities.

THE IMPACT OF NATURAL DISASTERS ON ARCHITECTURAL PRACTICES

The 2013 flash floods in Uttarakhand serve as a poignant reminder of the vulnerabilities

faced by the region due to climate change and unsustainable practices. The disaster not only claimed thousands of lives but also caused widespread destruction, revealing the fragility of the Himalayan ecosystem. Unregulated construction and inadequate infrastructure were significant contributors to the disaster's impact. These events underscored the urgent need for integrating environmental considerations into architectural planning and design.

ARCHITECTURAL DEVELOPMENT VS. ENVIRONMENTAL SUSTAINABILITY

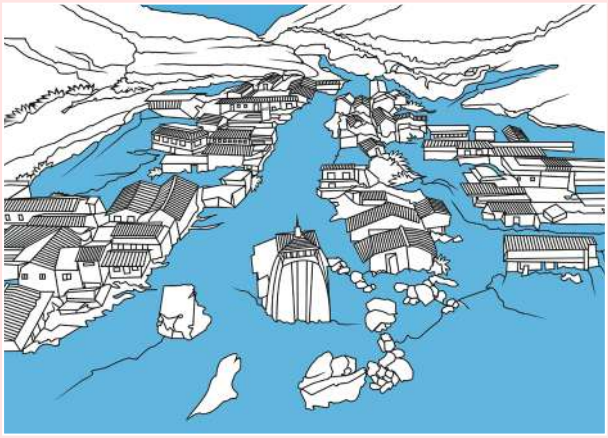
Uttarakhand has experienced significant economic growth, particularly in sectors like hydropower, tourism, and agriculture. However, the construction boom accompanying this growth has often led to environmental challenges. Modern architecture, while symbolizing progress, must not overlook the importance of harmonizing with the region's natural environment. Traditional architectural practices in Uttarakhand, which emphasize the use of local materials like stone, wood, and slate, offer valuable lessons in creating structures that are resilient and environmentally conscious.

A SUSTAINABLE ARCHITECTURAL ROADMAP FOR UTTARAKHAND

The integration of environmental considerations into architectural design is essential to preserving the state's fragile ecosystems and rich cultural heritage. In this regard, the following considerations will be crucial for the sustainable architectural development in Uttarakhand.

INTEGRATING ENVIRONMENTAL CONSIDERATIONS INTO ARCHITECTURAL DESIGN

One of the essential components of sustainable development is the integration of environmental considerations into all levels of architectural design. This includes conducting thorough environmental impact assessments for new projects, adopting



sustainable land-use planning, and ensuring that regulations protect fragile ecosystems. Architectural designs should prioritize energy efficiency, water conservation, and the use of sustainable materials, thereby reducing the ecological footprint of development.

REVIVING AND MODERNIZING TRADITIONAL ARCHITECTURE

Traditional Uttarakhandi architecture, with its deep connection to the environment, offers a blueprint for sustainable development. The revival and modernization of these architectural practices can play a key role in preserving the state's cultural heritage while promoting sustainability. Techniques such as Kath-Kuni construction, which involves interlocking wooden beams without the use of nails, can be adapted to contemporary needs, creating structures

that are both aesthetically pleasing and environmentally sound.

PROMOTING SUSTAINABLE TOURISM THROUGH ARCHITECTURE

Tourism is a vital sector for Uttarakhand's economy, and architecture plays a significant role in shaping the tourist experience. Sustainable architectural practices can enhance the eco-tourism sector by creating buildings that blend seamlessly with the natural landscape, using materials and designs that reflect the local culture. By encouraging the development of eco-friendly accommodations and tourist facilities, Uttarakhand can attract visitors while safeguarding its natural assets.

ALTERNATIVE ENERGY SOURCES IN ARCHITECTURAL DESIGN

Incorporating alternative energy sources into architectural designs is crucial for reducing the ecological footprint of development in Uttarakhand. Solar panels, wind turbines, and rainwater harvesting systems can be integrated into buildings to reduce reliance on non-renewable resources. Additionally, the use of passive solar design principles, which maximize natural light and heat, can reduce the energy demands of structures, contributing to overall sustainability.

SUSTAINABLE URBAN PLANNING AND INFRASTRUCTURE

As Uttarakhand urbanizes, sustainable planning and infrastructure development become paramount. Architectural designs must consider the long-term impact of urban expansion on the environment. Green spaces, efficient public transportation systems, and eco-friendly building codes should be incorporated into urban planning to create cities that are livable, resilient, and sustainable.

EDUCATION AND AWARENESS IN ARCHITECTURAL PRACTICES

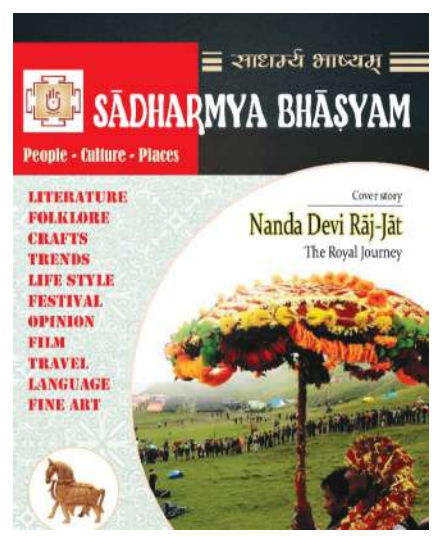
Education plays a crucial role in promoting sustainable architectural practices. Raising awareness among architects, builders, and the general public about the importance of environmental conservation, climate change, and responsible construction can lead to more informed and sustainable design choices. Architectural schools and community programs should incorporate environmental education, fostering a culture of sustainability within the field from a young age.

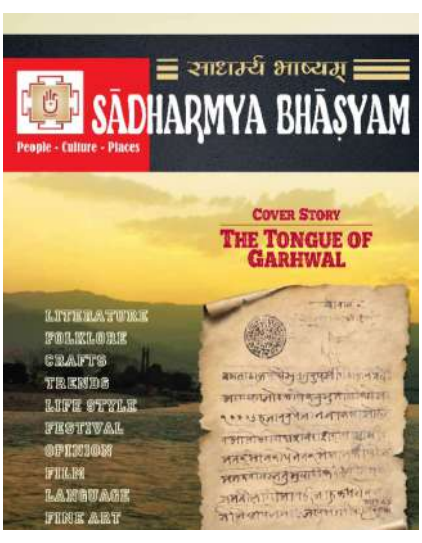
CONCLUSION

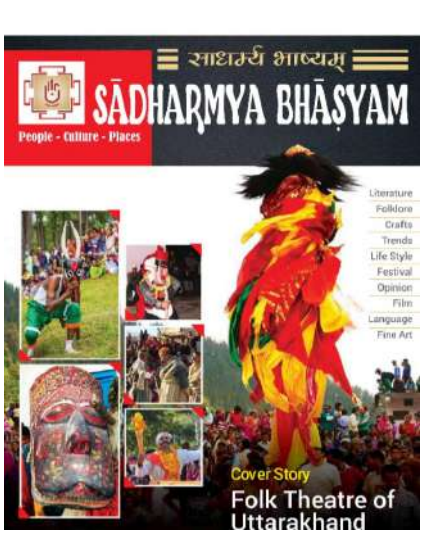
Uttarakhand stands at the crossroads where its architectural legacy can either be a testament to sustainable living or a cautionary tale of environmental neglect. The journey toward sustainable architectural development necessitates a collective effort involving government agencies, architects, local communities, and stakeholders across various sectors. By redefining architectural growth to align with ecological integrity, promoting community engagement, and ensuring governance that prioritizes environmental

SADHARMYAM

RESEARCH AND DIALOGUE CENTER







A CENTER FOR HARMONY,
CO-EXISTENCE AND COSMOVISION

Printed and published by Renish Antony on behalf of Joe Philip and printed at Sanjo Printing and Vocational Training Society, Kotdwar and published at Srinagar, Pauri Garhwal (Dt), Uttarakhand- 246174 Editor Renish Antony.