Vernacular Values as a Framework for Contemporary Architectural Design: Insights from Vietnam

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Abstract

In the context of contemporary architectural design, when viewed through the lens of the "vernacular" frame of reference, three main tendencies can be identified: designs that closely retain vernacular values, entirely innovative designs, and designs that balance traditional and modern expressions. In this context, this paper examines the continuity of vernacular values within contemporary architectural practices, recognising that architecture is an organic entity that can only achieve sustainable growth when rooted in suitable land, as the land itself continually evolves in response to change. Vernacular architecture, therefore, is the focus of this research, not only regarded as a source of inspiration, but also as a system of lessons capable of promoting the rethinking of contemporary design practices. The research addresses two main questions: (1) What factors constitute the vernacular values of architecture? and (2) How have these values been incorporated in contemporary Vietnamese architecture?

The research focuses on residential and community housing, arising in response to generations of users reflecting their living habits, beliefs. They are also a response to the climatic conditions, as well as the local natural resources.

The study employs secondary document analysis, synthesis of influencing factors, and comparisons of case studies as research methods. It reveals four vernacular factors, which are: (1) geography and climate, (2) materials and construction techniques, (3) customs and traditions, and (4) belief and religion. Accordingly, a system of indicators and variables is construed to form an analytical framework for the analysis of the case studies.

In conclusion, this paper proposes a diagrammatic framework that articulates the levels of vernacular continuity, at three levels of transformations: retained, evolved, and reinterpreted.

Keywords: Vernacular architecture, Contemporary design, Residential architecture, Community housing, Local identity.

Introduction

Rapid urbanizations across the world have posed numerous challenges, including excessively increased populations, high building densities, the reduction of socially communicative spaces, and an increasing impact on global warming. These circumstances have prompted architects and researchers to re-examine vernacular values for sustainable

architectural design. As a result, vernacular architecture is reconsidered as a system of design intelligence that embodies environmental adaptation, material sustainability, and socio-cultural continuity, forming a critical frame of reference for contemporary architectural practice. According to Kenzo Tange, cited in Con (1999:8), vernacular architecture is created through natural conditions, climate, and human living habits, resulting in spaces, proportions, and architectural forms that are appropriate to their context; this is the essence of traditional architecture.

Nevertheless, the engagement with vernacular values is expressed in diverse design approaches. Some projects focus on preserving the spatial and formal characteristics of vernacular prototypes, while others depart from them entirely to pursue innovations and technological advancements. Many attempts, however, seek to reinterpret vernacular principles through new design languages. This is also the case in Vietnam.

In this context, this study aims to explore the core values of Vietnamese vernacular architecture and examine their continuity within contemporary design practices. It addresses two primary research questions:

(1) What factors constitute the vernacular values of architecture? and
(2) How have these values been incorporated into contemporary Vietnamese architecture?

The research thus contributes to a deeper understanding of how vernacular factors can be sustained, adapted, and re-contextualised in contemporary design, reinforcing the ability of architecture to evolve naturally from its cultural and environmental roots.

Literature Review

Vernacular Architecture

In order to define the term vernacular, it is necessary to return to the origins and the most fundamental stages of human existence, as the concept of the vernacular rrepresents a long process through which communities develop a unified and appropriate response to their living environment day by day (de Miguel, et al., 2024). Although the basic human needs are quite similar, people differ in terms of the locations in which they live and the response processes also differ. In fact, this leads to different experiences and ways of responding to common issues in their own regions thereby revealing more clearly the local aspects of each region around the world. In other words, geography is the primary factor shaping vernacularity, in which climate and natural resources–important subsets of geography–contribute to the creation of new methods, materials, and technologies that carry indigenous characteristics into the modern era (Chruszczow, et al., 2023).

Beyond geography, traditions also serve as a powerful source of local identity, clearly expressed in vernacular architecture. There, social and cultural elements play a dominant role. In fact, it can be said that early vernacular houses have been built by the inhabitants themselves, driven by their own vital needs for shelter. The form of architecture has been shaped by its close connection to events in human life, reflecting people's innate ability to create living spaces with a soul (de Miguel, et al., 2024). With the capability to interweave the spirit of place, memory, and Nature, vernacular architecture helps people not to forget the potential of their locality while pursuing new discoveries (Khoi, 2014).

Both Rapoport (1969) and Oliver (1987) articulate these clearly. They show that vernacular architecture has arisen primarily in response to social needs, modified by the climate and the place yet couched in traditions.

Thus, vernacular architecture can be defined as the built form created by local communities in direct response to their specific environmental conditions, with its design shaped by factors such as available natural resources, cultural values and construction techniques. This architectural expression symbolises human creativity and adaptability, demonstrating how people have skilfully and intelligently constructed shelters that harmonise with their surroundings (Thanh, 2023).

Residential and Community Housing

According to Con (1999) and Turner, cited in de Miguel, et al. (2024), vernacularity, with its spontaneous nature, is exemplified in the architectural forms of residential buildings. As known, houses are always defined by their functions and are designed to accommodate daily activities of the occupants, emphasising liveability and continuity across generations. Effective housing integrates all essential elements while embodying aesthetic, social, and environmental principles that support both individual and communal lifestyles (Ibrahim, 2020).

In community architecture, public spaces are a notable example of vernacular expressions, as they foster daily activities and social interactions (Gilmore, 2017). When it comes to community housing, particularly in the Vietnamese context, the structure of the village communal house (đình làng) clearly represents a cultural public space that embodies the spiritual values of the communities, which have been deeply rooted over time (Thi, 2023). Architecturally, it stands as evidence of a long historical development; therefore, community architecture not only served as an engaging place, but also represents the soul of a nation, where religion, culture, and administration encounter (Thai, 2021).

Ultimately, understanding, integrating, and promoting vernacular qualities in residential and community architecture is essential, as these architectural spaces are deeply connected to people's daily lives and collective identities, reflecting the continuity of lifestyle and cultures across generations. This perspective is also supported by Knapp (2024), who argues that genuine societal value for the development of vernacular elements is essential for truly enhancing the economy and the cultural naturalism of a region or nation.

Potential Vernacular Factors

These studies have reinforced the emergence of four potential vernacular factors as follows:

(1) geography and climate,
(2) materials and construction techniques,
(3) customs and traditions, and
(4) beliefs and religions.

Therefore, these four factors need to be examined to identify their roles and influences on vernacular architecture across the two layers of analysis: a general theoretical synthesis and a localised interpretation within the Vietnamese context.

Geography and Climate

Climate is shaped by a combination of geographical elements, including solar radiation, temperature, humidity, breezes, and diverse terrains composed of land, water, and mountains. Climate, thereby, plays a decisive role in architectural design, as buildings must withstand extreme conditions, such as intense heat and cold, heavy rain or snow, and wind from various directions. According to Sourch (2023), throughout history, the necessity to withstand harsh weather conditions has driven people to construct shelters, leading to the evolution of numerous building techniques, forms, and materials adapted to specific environments.

Moreover, geological features have a significant influence on the development of construction materials and building techniques. Across different architectural types, such as residential buildings, the materials used in vernacular structures are typically sourced from areas near the construction sites, reflecting the rich geological diversity of the local environment (Lott, 2023). Consequently, each region has given rise to houses that adapt to the local climate using available natural resources.

For instance, buildings in the cold regions are designed to retain heat, while those in the hot, humid climates must pay special attention to cross-ventilation (Tung, 2023). Articulating this, Crespo et al. (2014) demonstrate how vernacular architecture adapts to local climatic conditions in three situations. First, in warm subtropical climates, Southeast-facing courtyard houses with high roofs optimise ventilation and rainwater collection. Second, in cold or mountainous climates, dwellings are compact and clustered, featuring sloped roofs that drain

rainwater efficiently while still preserving interior heat. In contrast, in underground structures, land temperature and summer breezes are key factors in maintaining comfort within the dwellings.

In fact, as climate change has become a pressing global issue, people are turning to vernacular architecture in search of sustainable solutions for contemporary design (Zhang, et al., 2024). Vernacular architecture has evolved into a 'learning tool' after a long process of formation, shaped by the real needs and lived experiences of its inhabitants (Crespo, et al., 2014). As Con (1999) note, studying vernacular architecture also means studying local climatic conditions.

Materials and Construction Techniques

Vernacular architecture is increasingly reconsidered as a practice that both adapts to climate and strengthens social cohesion. Rather than treating buildings as neutral objects, many scholars regard them as socio-technical systems in which materials and construction techniques work together to shape space, comfort, and cultural meaning (Nilsson, 2013; Katie, 2007).

From this perspective, materials are not merely surface finishes but the very substances that constitute a building–such as earth, bamboo, timber, brick, lime, and other local materials. They embody engineering properties (strength, responsiveness to moisture and heat, and durability) while also carrying social biographies (origin, labour, frameworks, and custom) that influence design decisions throughout the building's life cycle.

Moreover, construction techniques refer to the procedural knowledge required to transform materials into components and assemblies, encompassing the methods, tools, sequences, and tolerances used in the process. As Nilsson (2013) points out, these techniques are rooted in on-site making and local social conditions. To avoid confusion, it is helpful to distinguish techniques from technologies: techniques concern how the work is performed (for example, layered ramming of earth, bamboo weaving, and fire-safe thatch lapping), whereas technologies are the supporting systems that expand and stabilise those techniques (for example, machines, standards, and digital workflows from file to factory) (Katie, 2007).

Building on this foundation, research on the effects of materials highlights the expressive potentials of the building envelopes in contemporary urban contexts. When traditional materials, whether drawn directly from Nature (such as stone, earth, bamboo, and leaves) or processed (like fired brick, tiles, and ceramics), are applied appropriately, they generate a strong regional identity and a distinctive aesthetic experience, ranging from bare-brick towers to laterite walls and rammed-earth construction. At the same time, successful hybrid experiments such as bamboo-reinforced constructions demonstrate that modernity can harmoniously coexist with local identity when climate responsiveness and indigenous craft are respected (Duc, 2018).

In summary, materials can be considered 'substance plus capacity' that shape form, performance, and social meaning, whereas construction techniques represent 'embodied procedural knowledge' that bridges design intent and built reality, expressing local craftsmanship and cultural identity. When these perspectives are combined with green material policies, construction waste management, and learning-by-doing education, vernacular architecture can advance along a sustainable and contemporary path, preserving both the affective power of materials and a strong cultural identity.

Customs and Traditions as the Social Foundation of Space

In vernacular architecture, customs and traditions are the collective habits and rules shared within a community across generations. They encompass the ways people behave, cooperate, and organise social life within a region. In other words, they function as the *social softscape* that governs the *spatial hardscape*–for instance, the houses, pathways, communal courtyards, and gathering places. According to Giang (2025), customs not only determine building techniques but also shape moral order, gender roles, intergenerational relationships, and religious rituals in rural life. Accordingly, they significantly affect the *spatial arrangement* in architectural design.

Rapoport (1969) reveals in House Form and Culture that traditional architectural forms do not originate from stylistic imitation but from social conventions collectively established and orally transmitted through generations. These conventions serve as an unwritten "design code," ensuring that cultural values are embedded in both the spatial forms and the layouts. Similarly, Zare & Kazemian (2014) argue that architecture and culture are inseparable; the form and function of a building always reflect the communal ethics, climatic adaptation, and spiritual beliefs of its inhabitants. Therefore, customs and traditions can be seen as the transition between living spaces, transforming architecture into a vibrant expression of culture rather than a static physical structure of walls and roofs.

In the modern era, migration and urban lifestyles have led to the gradual decline of many traditional customs. The spirit of social interaction has been replaced by a more private and individualistic way of life. Nevertheless, studies in provinces such as Ha Giang and Quang Nam demonstrate that customs are adapted rather than abandoned. For example, by retaining shared hearths or multifunctional communal courtyards in new housing models, communities can still preserve solidarity, reciprocity, and social cohesion. Customs and traditions are not outdated relics meant for display but living values–a flexible social mechanism that connects architecture to everyday life. Through these factors, local cultures can adapt to the changes of modern times while maintaining the spirit of community and the intimate bonds between people, places, and Nature.

Beliefs and Religions as the Spiritual Foundations of Space

Beliefs and religions form the spiritual foundations of vernacular architecture. They help people understand the relationships between themselves, the community, Nature, and the spiritual world. Therefore, a house is not merely a dwelling place, but also a symbol of how people perceive life and the universe. Rapoport (1969) shows that in the traditional societies, the sacred and the secular are interconnected. Every act of housing construction-from choosing the site and orientation to organising spatial layout-carries religious significance. In Vietnam, this is evident in the way altars, communal houses (đình), pagodas (chùa), and temples (đền) are deeply integrated into everyday life. In essence, the dwellings and the sacred places coexist in a single unified form.

Unfortunately, rapid urbanisations and commercialisation have led to the erosion of sacred meanings in many spaces. Therefore, contemporary architects are now pursuing the concept of "adaptive sacredness"–creating modern spaces that still preserve a sense of peace and reverence, such as multi-faith rooms or open community centres.

In summary, beliefs and religions are deeply intertwined spiritual values within vernacular architecture. They provide lessons in the organisation of building forms and spatial arrangements, where the residents seek a balance between material and spiritual life as well as harmony with Nature and spirituality.

Drawing on this literature, these determinants are organised into a structured framework comprising four primary factors, along with corresponding indicators and variables derived from the global vernacular logic of architecture (Table 1).

Table 1: Summary of potential vernacular factors (factors – indicators – variables)
Source: Authors compiled from the literature review

Factor	Indicator	Variable (Conceptual/theoretical level)	Citations
Geography and Climate	Topography and landform	- Adapted architectural form. - Compact and clustered layout - Use of terrain for drainage and protection	(Lidon de Miguel, et al., 2024); (Lott, 2023); (Sourch, 2023)
	Building shape and orientation	- Orientation of openings for cross ventilation - Shapes that retain heat, land temperature, and optimise summer breezes	(Crespo, et al., 2014); (Tung, 2023)

	Temperature, humidity, and rainfall responses	- High-sloped roofs for drainage - Courtyard design	(Crespo, et al., 2014); (Tung, 2023)
Materials and Construction Techniques	Material availability and sourcing	- Local materials (earth, bamboo, brick, timber, lime) - Natural materials (stone, earth, bamboo, and leaves) - Processed materials (fired brick, tiles, and ceramics)	(Chruszczow, et al., 2023); (Lott, 2023)
	Physical properties	- Thermal, moisture, and strength performance - Building envelope behaviour	(Lott, 2023); (Nilsson, 2013)
	Craftsmanship and Socio-technical systems	- Structural typologies and joinery methods. - Layered ramming of earth, bamboo weaving, and fire-safe thatch lapping - Connection between materials, labour, frameworks, and custom	(Nilsson, 2013); (Katie, 2007)
	Hybridisation and technology adaptation	- A combination of traditional and engineered materials (eg, bamboo-reinforced constructions)	(Duc, 2018)
Customs and Traditions	Social interaction and community structure	- Social order as design code → traditional architectural forms - Public-private zoning → spatial arrangement - Shared courtyards	(Gilmore, 2017); (Rapoport, 1969)
	Spatial hierarchy	- Pathways, house, and gathering places - Religious rituals - Shared hearths or multifunctional communal spaces	(Lidon de Miguel, et al., 2024); (Knapp, 2024); (Giang, 2025)
	Collective practice and ritual acts	- Communal construction - Labor exchange	(Giang, 2025); (Iizuka, 2012)
	Gender and generational order	- Gender spatial division - Intergenerational relationships	(Giang, 2025)
Belief and Religion	Symbolism and sacred orientation	- Organisation of building form and spatial arrangement - Plan axis - Ritual acts (site selection, ground-offering, column erection)	(Thi, 2023); (Zare & Kazemian, 2014)
	Integration of sacred and domestic	- Dwelling as coexistence of sacred–secular - Altars are deeply integrated into living spaces	(Khoi, 2014); (Thai, 2021)
	Contemporary sacred reinterpretation	- Multi-faith rooms or open community centres	(Thi, 2023); (Zare & Kazemian, 2014)

Insights From Vietnam

Moving from theory to context, insights from Vietnam illustrate how vernacular practices translate environmental and cultural adaptation into building forms, techniques, and spatial design.

Climate-adapted Design

Regarding climate, since few design approaches can simultaneously enhance benefits and minimise the harmful effects of the local climate, vernacular architecture may not consistently deliver a complete climatic narrative in a specific area. However, in Vietnam, a tropical country, people have long adapted effectively to heat and humidity. Here, Vietnamese vernacular architecture clearly reflects the hot, humid climate while also demonstrating the human ability to adapt to the environment in the design of their shelters (Con, 1999).

Examples across the country demonstrate a range of adaptive solutions. In the Mekong Delta, the ancient houses in Dong Hoa Hiep village respond to floods and saltwater intrusion by integrating river systems, ponds, and gardens to regulate the water flow and drain water more effectively. The houses are also designed with sloped roofs that facilitate rainwater drainage while providing shade during the hot weather (Na & Cong, 2025). Taking another example from the ancient townhouses in Hoi An (a cultural heritage in central Vietnam), although the orientation of the façade is not prioritised due to its commercial function, an inner courtyard is typically placed at the center of the house to provide ventilation and natural light, creating a comfortable living environment in the harsh climate of central Vietnam (Phuong, et al., 2010). Similarly, in the northern delta region, traditional houses are designed to stay cool in the summer and avoid cold winter winds, with a front yard including fish ponds, gardens, rockeries (hòn non bộ) and wide roofs with shutters (phên) to prevent unpleasant sunlight and rain (Anh & Quang, 2023).

Materials and Construction Techniques

Moving to structural expressions, the relationships between materials and construction techniques reveal a layered dialogue between crafts, ecology, and modernisation. Traditional building practices, rooted in the 'thổ & mộc' – paradigm of earth and wood, transform natural abundance into architectural intelligence. Rammed earth walls in Ha Giang, bamboo frameworks in the Central Highlands, and laterite masonry in Duong Lam exemplify how local craftsmen mastered the tactile behaviour of matter: its porosity, breathability, and capacity to balance humidity and temperature.

In this context, construction is not a separate technical phase but a ritualised process of making, in which manual layering, joining, and lashing embody social cooperation and ancestral continuity (Nilsson, 2013). This embodied know-how has evolved into hybridised techniques in contemporary Vietnamese architecture. Designers such as Vo Trong Nghia reinterpret bamboo and cane through engineered joints, prefabricated modules, and digital optimisation, thereby bridging vernacular tactility with structural precision (Duc, 2018). The result is a synthesis in which the technique itself becomes a language of sustainability, minimising embodied energy while reasserting regional identity.

At the industrial scale, scholars and policymakers advocate a 'new tradition' of materials by combining recycled inorganics (AAC, foamed concrete, stone composites) with engineered organics (WPC, artificial bamboo, cement-board 'wood') in order to reduce extraction while preserving familiar textures and emotional resonance (Thang, 2023).

In essence, Vietnam's insights lie in its capacity to translate manual wisdom into technological systems. By viewing materials as 'substance plus capacity' and techniques as 'embodied procedural knowledge,' the country's emerging construction culture connects vernacular intimacy with industrial reproducibility, thereby advancing a sustainable, affective, and distinctly Vietnamese material modernity.

Customs and Traditions

In addition to its environmental and material logic, vernacular architecture functions as a social system, deeply rooted in customs and spirituality. In the traditional Vietnamese villages, house construction has never been a private family matter but a communal act. Villagers practised mutual labour exchange (đổi công)-taking turns to help one another build houses while sharing both workforce and materials. This process was often accompanied by rituals such as land-offering ceremonies and the erection of the principal columns. These acts

expressed gratitude to Nature and reinforced communal solidarity. Thus, a house became not merely a physical shelter but a symbol of human connection and mutual trust.

These customs also shape public spaces–the settings for collective village life. For instance, among the Cơ Tu, the Gươl house (Fig. 1) is constructed through communal labour under the ritual guidance of the village elder and serves as the spiritual and social centre of the community. Among the Hrê, the stilt house (Fig. 2) is designed according to cosmological and moral concepts, symbolising the interconnection between people, ancestors, and Nature. These examples show that building a house is not merely a technical activity but a social and spiritual ritual that strengthens the internal bonds within a community.

Fig. 1: Gươl house in Quảng Nam province
Source: Tung, et al., 2025

Fig. 2: The Hrê stilt house
Source: Thong, 2023

Beliefs and Religions

Beyond social cooperation, architecture in many ethnic communities also embodies *spiritual values* and *beliefs*. In many ethnic communities, spiritual beliefs and daily life are closely intertwined. Among the Cơ Tu people for example, the Gươl house stands at the center of the village; it serves both as a communal meeting hall and a sacred space. The entire village participates in its construction under the guidance of the elderly of the village. The main central pillar symbolises strength, unity, and the spirit of the ancestors. The process of building the house follows traditional rituals, meaning that construction itself is a sacred ceremony (Iizuka, 2012).

For the Hrê people, the stilt house embodies the concept of harmony between people, Nature, and ancestors. Every architectural element carries its own meaning: the principal column represents moral integrity and strength; the hearth connects the living with the departed; and the main door marks the boundary between the human world and the spiritual realm (Xuyen, 2022). In this sense, a house can be seen as a map of beliefs, where morality, Nature, and spirituality merge into a single whole.

Even in urban areas, this spiritual mindset persists. Hanoi's Old Quarter is a prime example: temples, communal houses, and shrines dedicated to the Mother Goddess are interwoven with residential and commercial spaces. These sacred places serve as the spiritual heart of the community, helping the residents to maintain their identity and moral values amid the pressures of modern life (Tri, 2013).

Ultimately, these insights from Vietnam indicate how vernacular architecture transcends the binary of tradition and modernity. It integrates adaptation to climate, material craftsmanship, traditional building techniques, and community customs and beliefs into a unified spatial philosophy that continues to inform sustainable design thinking today. Based on the four identified factors, Table 2 continues to synthesise the indicators and accompanying variables in a localised direction, particularly in Vietnam.

Table 2: Summary Table of Localised Vernacular Factors in Vietnam
Source: compiled by the authors from the literature review

Factor	Indicator (localised expression)	Variable (as observed in the Vietnamese context)	Citations
Geography and Climate	Hot and humid adaptation design	- Courtyard for ventilation and daylight (Hoi An) - Roof overhang for shading - Wide roofs with shutters to control rain and sunlight (Northern Delta)	(Con, 1999), (Na & Cong, 2025), (Phuong, et al., 2010), (Anh & Quang, 2023)
	Flood management	- Integrating river systems, ponds, and gardens (Mekong Delta and Northern Delta)	(Na & Cong, 2025); (Anh & Quang, 2023)
Materials and Construction Techniques	Local material typologies	- Wood, earth, bamboo	(Nilsson, 2013)
	Material properties	- Porosity, breathability, and weatherability	(Duc, 2018); (Thang, 2023)
	Craft-based techniques	- Rammed-earth walls (Ha Giang), bamboo framework (Central Highlands), laterite brick (Duong Lam) - Manual joining, layering, and lashing as a communal ritual	(Nilsson, 2013)
	Hybridisation in modern practice	- Engineered bamboo - Prefabricated components - Combining recycled inorganics with engineered organics	(Duc, 2018); (Thang, 2023)
Customs and Traditions	Social interactions	- Shared spaces like courtyards for social gatherings	(Thi, 2023)
	Collective practice and ritual acts	- Mutual labour exchange - Land-offering ceremonies - Erection of the principal columns	(Iizuka, 2012); (Xuyen, 2022); (Thi, 2023)
	Continuity of communal practices	- Adaptation of customs in new housing (multifunctional yard, shared kitchen)	(Thi, 2023); (Xuyen, 2022)
Belief and Religion	Ritual symbolism in structure	- Primary axis - the communal house stands at the centre of the village - The stilt house embodies the harmony between humans, nature, and ancestors. - Principle column, hearth, and main door design (Hrê, Cơ Tu)	(Xuyen, 2022); (Thi, 2023)
	Continuity of sacred spaces in the modern context	- Altars integrated into the dwelling (Hanoi Old Quarter)	(Tri, 2013); (Iizuka, 2012); (Thi, 2023)

Research Methodology

This study employs a secondary research method combined with case study analysis. To begin with, the research questions are addressed through a systematic literature review and content analysis of professional publications, scientific articles, scholarly journals, and specialised online sources.

Fig. 3 illustrates the overall research flow. First, secondary data on the general theory of vernacular architecture are reviewed to identify the key factors influencing architectural design and construction. These factors are then categorised into four analytical lenses:

(1) geography and climate,
(2) materials and construction techniques,
(3) customs and traditions, and
(4) belief and religion.

Subsequently, these four factors are investigated in more detail through a comprehensive literature review across two dimensions of analysis: a general theoretical synthesis and a contextualised interpretation in Vietnam. This has been already accomplished.

Following this, the indicators and variables are coded to form a framework for case study analysis (Fig. 4) using a parallel comparison method (vernacular ↔ contemporary). The analysis aims to identify patterns that are retained, evolved, or reinterpreted, thereby developing diagrams that illustrate the relationships among the four vernacular factors and their levels of continuity in contemporary designs in Vietnam.

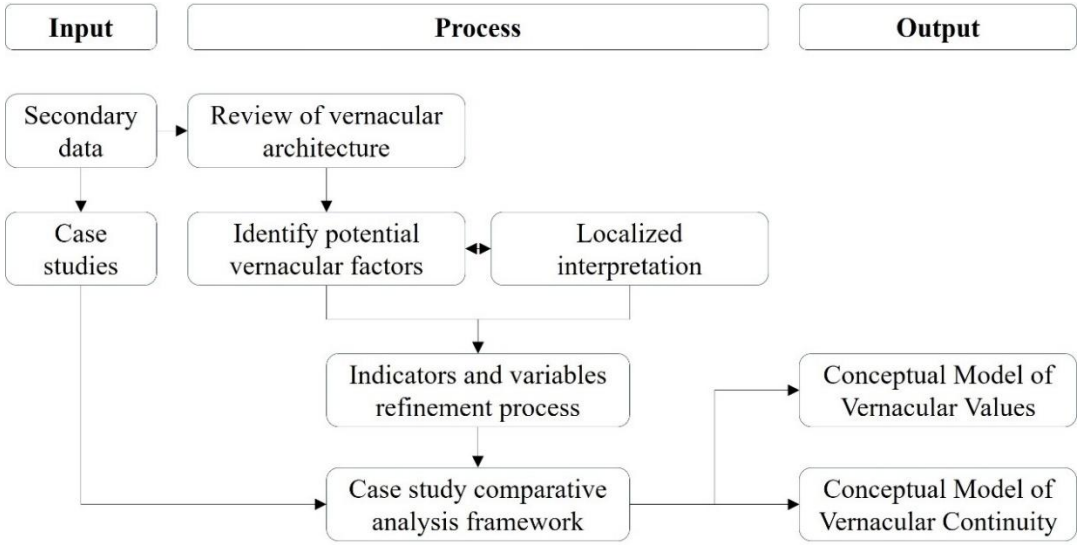

Fig. 3: Research framework
Source: Compiled by authors, 2025

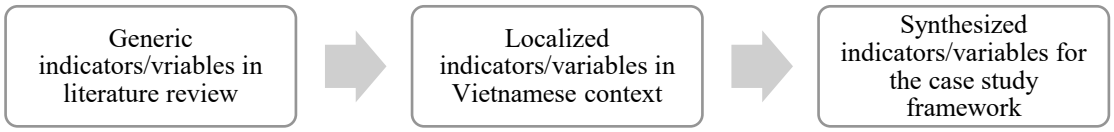

Fig. 4: Indicators and variables refinement process
Source: Compiled by authors, 2025

Case Studies

Case Studies Selection

This section analyses the case studies using a parallel comparison approach (vernacular ↔ contemporary). To ensure an objective comparison, the selected case studies are positioned within the same reference framework of natural and socio-cultural conditions, as follows:

- Geographical scope: the southern construction climate zone of Vietnam (B Zone) is defined as the primary study area (Fig. 5).
- Ethnic scope: three language-based groups, Viet-Muong, Mon-Khmer, and Malayo-Polynesian**,** are selected, as their settlements are predominantly located within the B climate zone.

This approach also contains certain limitations. Regarding traditional vernacular housing and communal houses, it is often difficult to identify specific, well-documented examples; therefore, the study relies on synthesised secondary data. In contemporary architecture, the analysis focuses on two representative projects: a single house and a communal house, both chosen for their effective use of locally available materials and context-responsive design strategies**.**

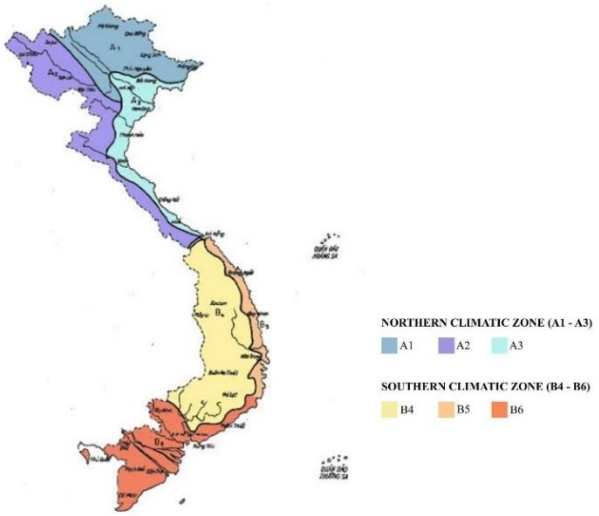

Fig. 5: Climatic construction zoning map of Vietnam
Source: VNMOC, 1997

Case Study Framework

The case study framework (Table 3) is developed by synthesising the indicators and the variables derived from the general theoretical literature (Table 1) and their localised interpretations within the Vietnamese context (Table 2), following the indicator and variable refinement process illustrated in the Fig. 4. The cross-matching matrix between the indicators (Table 4) is designed to broaden the analytical perspective of the case studies, allowing information to interact across the different dimensions. In addition, the matrix helps to define and visualise the interrelationships among the four vernacular factors.

Table 3: Case Study Framework
Source: compiled by the authors from the Tables 1 and 2

Factor	Indicator	Indicator code	Variables
Geography and Climate	**Topography**	**GC1**	- Site elevation - Foundation type (ground/stilt /semi-ground) - Terrain adaptation (natural or artificial shape)
	Building Orientation & Shape	**GC2**	- Building axis (N–S, E–W, SE) - Slope roof and overhang depth - Shading (by plants or shading devices)
	Hot and humid adaptation design	**GC3**	- Openings and courtyards - Cross-ventilation layout - Window louvre design - Insulated materials (brick, laterite, adobe)

			- Perforated walls/floors - Double-layer roof or roof pitch
	Drainage & flood management	**GC4**	- Elevated plinth/stilt floor - Rainwater retentions
Materials and Construction Techniques	**Material Origin**	**MC1**	- Locally available materials (Earth, bamboo, timber, brick, tile, laterite) - Recycled/renewable materials
	Material Properties	**MC2**	- Porosity, moisture - Thermal insulation - Weatherability - Durability
	Craftsmanship	**MC3**	- Traditional joinery (lashing, pegging, mortise-tenon) - Layered ramming of earth, bamboo weaving, and fire-safe thatch lapping - Ornamentation - Division of labour
	Hybridisation & Modern Adaptation	**MC4**	- Engineered / mixed materials - Prefabrication / modular assembly
Customs and Traditions	**Community Interaction**	**CT1**	- Communal spaces/courtyard - Public–private zoning - Shared hearth/kitchen
	Spatial Hierarchy	**CT2**	- Front–back sequence (veranda → compartment → rare / kitchen) - Access order (guest → owners → ancestor) - Transitional spaces (courtyard, corridor)
	Gender & Generational Zoning	**CT3**	- Men's vs women's zone - Sleeping zones ordered by generation - Shared hearths or multifunctional communal spaces (elder near hearth or altar)
	Collective Practices	**CT4**	- Mutual labour exchange - Communal construction (land-offering ceremonies, erection of the principal columns, shared material use)
Belief and Religion	**Spatial Symbolism**	**BR1**	- Orientation toward sacred direction - Axis linking heaven–Earth–human - Symbolic centre (principal column, hearth, main door)
	Rituals & Ceremonies	**BR2**	- Site selection ceremony - Main column erection - Land offering ritual
	Sacred & Domestic Space	**BR3**	- Altar placement - Ancestor worship zone / Shrine within dwelling
	Adaptive Sacredness (Modern Context)	**BR4**	- Multi-faith / meditation spaces - Sacred garden or courtyard - Light & material for spiritual atmosphere

Table 4: The cross-matching matrix between indicators
Source: Compiled by the authors from the Table 3

	GC1	GC2	GC3	GC4	MC1	MC2	MC3	MC4	CT1	CT2	CT3	CT4	BR1	BR2	BR3	BR4
GC1	■			■												
GC2		■	■							■			■			
GC3		■	■			■			■							
GC4	■			■												
MC1					■		■									
MC2			■			■										
MC3					■		■					■		■		

MC4																
CT1																
CT2																
CT3																
CT4																
BR1																
BR2																
BR3																
BR4																

Comparative Analysis

Based on the case study framework (Table 3), this part begins the comparative analysis between two pairs of cases (vernacular ↔ contemporary), each representing a different building type mentioned in the section 2.2. The first pair (Ede longhouse ↔ Hoang Tuong house & studio) represents the single-house type, while the second pair (Gươl house ↔ Cam Thanh community house) represents the communal-house type. The selection of these vernacular case studies is based primarily on the availability of reliable secondary data. Meanwhile, the contemporary case studies are chosen for their innovative use of local materials, craftmanship continuity, and context-responsive design approaches**.**

Ede Longhouse and Hoang Tuong House & Studio

In terms of the single-house type, two case studies are compared: The traditional Ede Longhouse and the Hoang Tuong House & Studio. Longhouse is a typical dwelling of large matriarchal Ede families, one of the Vietnamese ethnic groups residing in the Central Highlands. Hoang Tuong House and Studio, designed by Truong An Architecture, employs construction designed to meet the requirements of a contemporary artist who wanted his private house to be combined with a studio function, offering a space for artistic creativity.

	Ede Longhouse	**Hoang Tuong House & Studio**
Type of Architecture	Vernacular	Truong An Architecture
Location	Dak Lak Province, Viet Nam	Ho Chi Minh City, Viet Nam
Year of completion	N/A	2017

Table 5: The comparative analysis between Ede longhouse and Hoang Tuong House & Studio
Source: Compiled by the authors, 2025

Indicator code	**Ede longhouse**	**Hoang Tuong House & Studio**	**Interpretation**
GC1	- Site elevation is 1 meter. - Stilt foundation. - Natural terrain of the Central Highlands.	- Site elevation is 1.8 meters. - Stilt foundation. - Given plot.	In direct adoption, the foundation condition leads to the elevation of the floor.
GC2	- Building axis: N–S. - The thatched sloped roof creates shading at two ends of the house.	- Depend on the given plot – in this case: N-S. - Slab extends out to form a porch and overhang for the floor below. - Sloped roof and roof overhang of 1 meter.	Increase the function of the roof – not only a cover system, but also creating below-space areas.
GC3	- Avoid cold NE and hot SW wind. - Elevated floor for airflow. - Inner hallway in the West - opposite to the bedrooms. - Roof layers are tied tightly. - Floor layers of bamboo and wood covering the beams.	- Floor-to-ceiling window. - Elevated floor for airflow. - Vertical, black-painted louvre system to control light on the second floor. - Double layers of metal-sheet roof for ventilation, heat and noise reduction. - Front courtyard with natural lakes and ponds for heat reduction.	Continue using the vernacular ventilation solution, but incorporate new materials.

GC4	The two secondary roofs at both gable ends are to prevent rain splashing.	- The ground floor of the main building is raised 1.8 meters above the natural ground level, providing a safe and dry space in rainy seasons. - During the rainy season, water will be led to the pond in front of the house and discharged into the canal.	Adopt measures to address climate change effects; incorporate local solutions and consider the surrounding environment.
MC1	- Alang grass (for thatched roof). - Timber, bamboo for frame, flooring and wall.	Local materials that reduce the CO2 emission: Corrugated iron roof, rough stone-patterned bricks, lightweight steel.	Modern materials or structures reapply traditional climatic principles.
MC2	- Elevated floor reduces ground humidity. - Thatched roof for thermal insulation (Fig. 6)	- Elevated floor reduces ground humidity (Fig. 10) - Exposed material surfaces allow natural moisture. - Water ponds reduce heat from the atmosphere.	Direct adoption of a climatic solution.
MC3	- The thatched roof is placed upside down and tied, the top bent down to keep it from slipping. - Carved stairheads with symbolic patterns *(k'sâu)*.	There are not many decorative details, except for the host's own artwork.	Experiential continuity with local identity.
MC4	- Modules follow the columns and bays *(kmek, êđa)* (Fig. 7) - All beams and rafters are carved and constructed by hand/human power.	- The house uses a lightweight steel frame. - Metal-sheet roof, and black-painted steel louvres.	Modern materials and structures reapply traditional climatic principles.
CT1	-*'gar': the* largest space for communal activities of family and neighbourhood. - *'Adring kiêu'*: space for young men and women gathering.	- The living area and studio are connected by stairs and a central open courtyard (Fig. 11) - The studio is separated from the living area to focus on creativity. - Limit walls to be close to nature, using only columns and sliding glass doors.	More spaces for private activities are highlighted, with a modern structure that reapplies spatial logic.
CT2	Front porch → Guest zone (communal and gathering area) → Private family area (bedroom) → Kitchen area (Fig. 8)	- Front coutyard → Private home → Art studio/Working zone. - Front courtyard and inner pond are for transition. There is also an inner skylight and a side veranda, with one bridge to cross the front embankment (Fig. 12)	Almost no changes regarding the vernacular architecture flow.
CT3	- Front door for guests and men, back door for women. - Rooms divided by rank: homeowner, youngest daughter, other daughters/wife's sisters. - Men's area near guest zone (gar).	- No division of male-female areas. - The bedroom area is also not divided by generations, only separating the master bedroom and the guest bedroom. - The communal area will be the front yard, living room and veranda where people can have meals together.	From a strict division to more open spaces that are easily accessible to all users.
CT4	- Before the house handover ceremony, relatives and neighbours will be invited to attend. - Guests will attend the ceremony together, help	The construction process mainly involves only the homeowner, architect, and construction company.	Not heavily involved in the community/ neighbourhood.

	prepare the ceremony, whoever knows how to play the gong will sit down and play. - Guests will drink rice wine together and chat. - After finishing this house, another house will be built until everyone has a home.		
BR1	The homeowner's chair (jihưng) is an important part, made of solid wood, placed in the middle of the house, near the gong area (Fig. 9)	- Apart from considering the ventilation and lighting position to create comfort for the house, there is no evidence that the orientation of the house is toward the sacred direction. - The symbolic centre of the house is the natural pond right in front of the house, marking the main elevation and entrance.	Symbolic centres change from a specific space reserved for the owner to a marking point in the architecture.
BR2	Avoid houses facing E-W, as this is the direction of the dead.	N/A	
BR3	- A kitchen dedicated to preparing ritual offerings right next to the living room - the gathering place. - Row of 'ché' - used to brew rice wine for ceremonies.	N/A	
BR4	Space for 'gong' - Ede culture, opposite to the living space.	Courtyards and gardens are designed to enhance the atmosphere and create a more enjoyable living experience for users.	Both cases serve as places that enhance the user's experience and spiritual comfort.

Fig. 6: Thatched roof and the exterior of the Longhouse
Source: Vietnam Museum of Ethnology, 2021

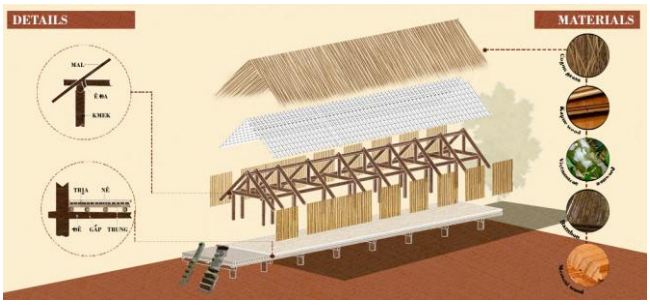

Fig. 7: Exploded diagram of the Longhouse structure
Source: Students' illustration instructed by the first author, 2024

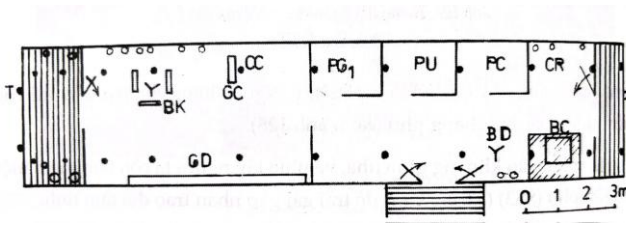

Fig. 8: Living space layout of the Ede longhouse
Source: Tung, 2023

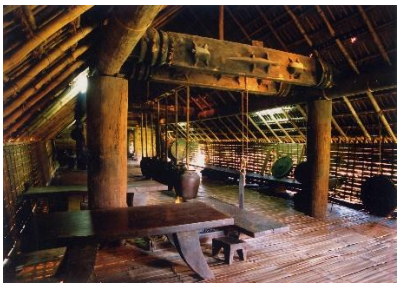

Fig. 9: Interior of the Longhouse with the chair of the homeowner.
Source: Vietnam Museum of Ethnology, 2021

Fig. 10: Hoang Tuong House and Studio - Elevated floor
Source: González, 2018

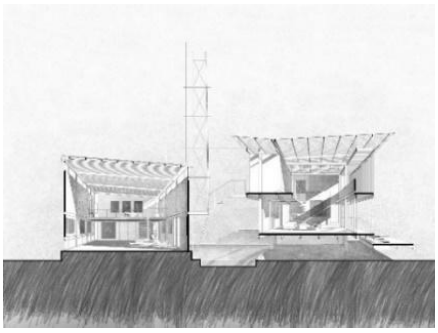

Fig. 11: Two blocks connected by an inner courtyard
Source: González, 2018

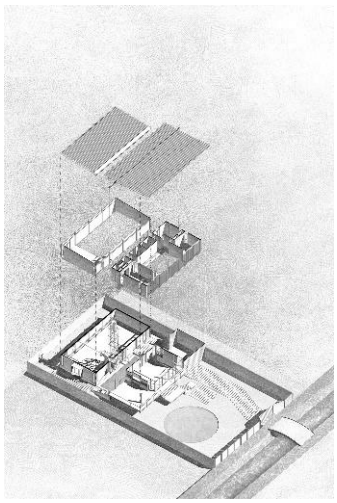

Fig. 12: Circular diagram of the Hoang Tuong House and Studio, showing the natural pond and embankment.
Source: González, 2018

Co Tu - Gươl House and Cam Thanh Community House

This section compares the Co Tu Gươl house, a vernacular communal hall of the Central Highlands and Central Vietnam, with the Cam Thanh Community House by 1+1>2 Architects. The Gươl exemplifies vernacular architecture characterised by four attributes: climate adaptation, material, belief system and customary practices. Cam Thanh reinterprets these attributes for a contemporary public building, taking into account the specificities of modern architecture.

	Gươl house	Cam Thanh Community House
Type of Architecture	Vernacular	1+1>2 Architects
Location	Central Highlands & Central of Viet Nam	Quang Nam, Viet Nam
Year of completion	N/A	2013

Table 6: The comparative analysis between Gươl House and Cam Thanh Communal House
Source: Compiled by authors, 2025

Indicator code	Gươl house	Cam Thanh Community House	Interpretation
GC1	- Placed on the village's highest, driest spot, central and visible. - Stilt house; timber posts on ground/stone plinths, floor raised ~1.2–1.6 m for ventilation and flood/pest protection. - Follows natural slope/terrace; minimal earthworks (Fig. 13)	- Constructed on flat, lowland terrain - central symbolic placement preserved. - Uses reinforced concrete foundation directly on the ground. - Retains natural site vegetation (areca garden) and terrain texture.	From high, stilted sitting to lowland RC-on-grade
GC2	- Oriented Southeast (SE) to catch morning light and avoid monsoon rain. - Steep thatched roof (~57–60°) with wide overhangs for shading and runoff.	- (SE–NW) orientation optimises daylight and ventilation, limits west heat gain. - Layered roof (thatch + bamboo + air cavity) functions as a passive double-skin. - Pergola with vines and areca palms recreates natural shading.	Core climate intent kept; covering method shifts
GC3	- Interior is open-plan, no solid walls, allowing full cross-ventilation. - Perforated bamboo floors and open gables release warm air, allowing upward cooling airflow. - Thatched palm and bamboo layers - Double-layer roof structure (main rafters + inner thatch) - Shading achieved through deep curved eaves (1.5–2 m) and surrounding tree canopy; no separate devices needed.	- Open-air courtyard at centre ensures vertical airflow & daylight. - Tall operable doors/windows on both façades enable cross-ventilation. - Double-layer roof (bamboo rafters + palm thatch) improves insulation; gaps at the ridge vent allow hot air to escape. - Non-fired brick walls add thermal mass; green shading canopy complements natural cooling. (Fig.18)	Same passive-cooling logic; method shifts
GC4	N/A	N/A	
MC1	- All materials are harvested from nearby forests, ensuring sustainability, availability, and easy repair.	- Built from local materials - Uses traditional craft methods for weaving and thatching, encouraging local labour and renewable sourcing.	Local, renewable materials and craft preserved;
MC2	- Thatch vapor-open; raised floor + long eaves limit wetting. - Thick thatch → cool interiors; high roof enables stack ventilation. - Turtle-back roof sheds typhoon winds; periodic re-thatching needed. (Fig.13)	- Palm-leaf roof + bamboo framing provides natural breathability and thermal comfort. - Non-fired brick adds durability and moisture resistance. - Layered roof design reduces heat gain and improves rain protection.	Envelope changes from breathable & light to massy & controlled
MC3	- Mortise/seat joints, scarf/notch joints; rattan lashings at rafters & braces; no exposed metal (pegs used locally where needed). - Carved central post, beams/rails; T'ring/rooster, buffalo, dance motifs.	- Hybrid system: timber–bamboo frame using traditional lashing plus minimal bolts for stability. - Prefabricated panels (bamboo + non-fired brick) reinterpret weaving logic. (Fig.17)	From ritual handcraft to hybrid prefabrication - craft spirit kept

	- Elders site/ritual; men frame/roof; women weave/thatch; youth/community lash & finish.	- Local artisans and villagers involved under the architect's supervision, maintaining a communal labour ethos. - Decorative expression simplified—structural rhythm replaces ornament.	
MC4	- Avoids metal sheets to preserve comfort and identity. - Uses light, natural materials (woven bamboo, thatch) with non-metal joints and numbered parts for easy assembly and replacement. (Fig.15)	- Prefabricated bamboo frames are produced locally for rapid assembly and cost efficiency. - Emphasises repairable modularity and community-based fabrication.	Keeps the repairable, light-natural logic; updates to hybrid prefabrication.
CT1	- Entire Gươl is a collective domain - no private rooms. - Interior arranged symmetrically for elders, men, women, and guests by custom. - No private cooking, only communal feasts and offerings. (Fig.14)	- The multifunctional hall serves as an open communal space for reading, meetings, and exhibitions. - Cafeteria and courtyard function as modern equivalents of the shared hearth, fostering social interaction. - Maintains public openness and symmetry, though activities diversify.	Keeping tradition but re-establishing modernity.
CT2	Front-back sequence: - Front veranda (entry + greeting) → main hall (ceremony, meeting) → rear zone (ritual/ancestral area) (Fig.14)	- Sequential zoning retained: lobby → multifunctional hall → exhibition/rear courtyard. - Flexible partitions allow reinterpretation of access order (public → semi-public → private). - Uses open-air courtyards as transitional breathing spaces	Front–back sequence kept; connectivity reworked into transitional buffers.
CT3	Men's vs women's zone: - No partition walls - zoning implied by hearths and seating. Sleeping zones ordered by generation: - Temporary resting spots; elders near the central hearth, youths along edges. (Fig.14)	- Open-plan layout with flexible bamboo partitions that allow multifunctional use similar to traditional zoning by activity. - The central hall acts as an inclusive social space for all ages and genders. - Shaded courtyards and semi-open halls extend communal interaction.	Keep the traditional space, but create separation with modern methods.
CT4	Mutual labour exchange: - The entire village contributes labour, materials, and food; work is seen as a ritual duty and social bond. - Materials (X'riếng, bamboo, rattan, leaves) collected together from the community forest.	- Community collaboration in design and building, guided by local authorities and architects. - Locally sourced materials used, echoing shared resource tradition. - Collective workshops and local craftsmen replace formal rituals.	Traditional ceremonies are preserved, but the rituals are simplified.
BR1	- The central post (D'rưng măng) acts as the cosmic axis, connecting sky, earth, and people. - The D'rưng măng, main hearth, and front entrance align along a ritual axis - spiritual heart of the community.	- The main hall and courtyard form a linear axis of gathering and circulation, recalling the sacred spatial order. - Though without a ritual post, the open atrium and roof intersection emphasise light and vertical connection	Applying tradition but with simplicity.
BR2	- Elders and spiritual leaders choose a central, elevated site;	- The main bamboo frame is assembled first, referencing the act	The collective spirit is preserved, while

	perform land-offering rituals to ask ancestral permission. - The D'rưng măng (central post) is the first erected, symbolising the soul and stability of the Gươl.	of "raising the structure." - The project involves community participation, echoing the collective spirit of traditional ceremonies.	formal rites are simplified.
BR3	- No fixed altar; sacred focus is the central post carved with ancestor and spirit motifs. - The central area near the post acts as a ritual Shrine for the village's collective ancestors and spirits.	- Main hall centre becomes the communal focus-a reinterpretation of the ritual core. - Exhibition and meeting spaces replace the ancestral Shrine but maintain central gathering and symbolic unity. (Fig.16)	Transforming the form while preserving tradition
BR4	- Gươl functions as a spiritual centre, hosting rituals for ancestors and forest spirits.	- Community hall and courtyard reinterpret sacred core into a collective cultural space.	The function shifts from ritual to communal culture.

Fig. 13: Guol House in Gian Bi village, Hoa Bac.
Source: Hy, 2025

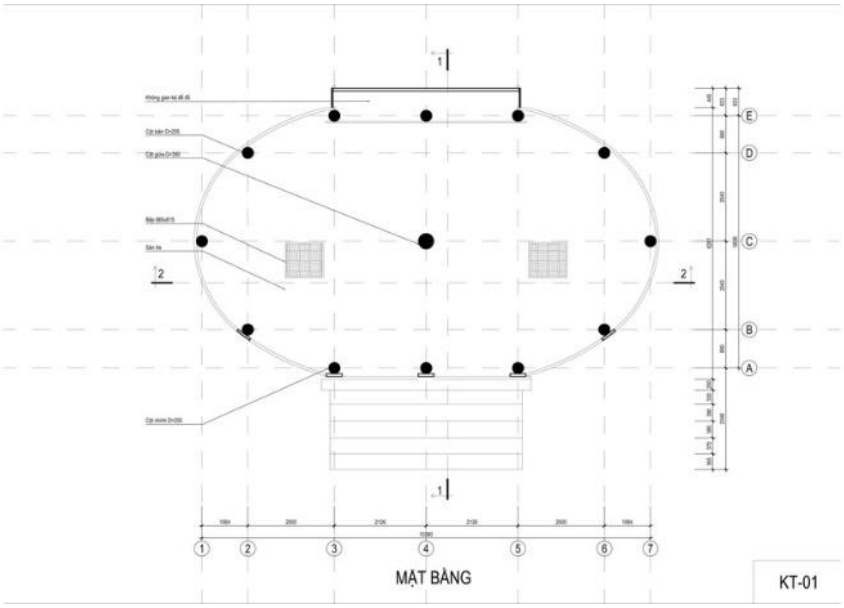

Fig. 14: Gươl House Floor Plan
Source: Tung, et al., 2025

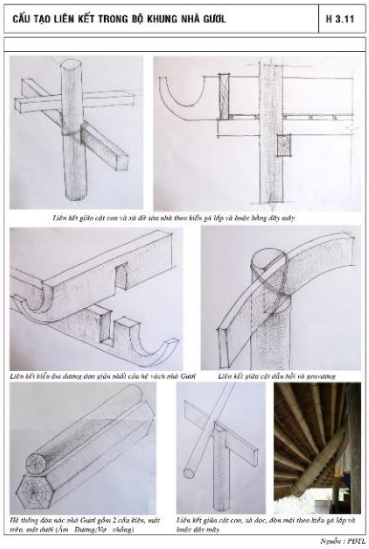

Fig. 15: Link structure in the frame of the Gươl house.
Source: Hy, 2025

Fig. 16: Community living space - Cam Thanh Community House
Source: Hao, 2013

Fig. 17: Cam Thanh Community House - bamboo & non-fired brick hybrid.
Source: Hao, 2013

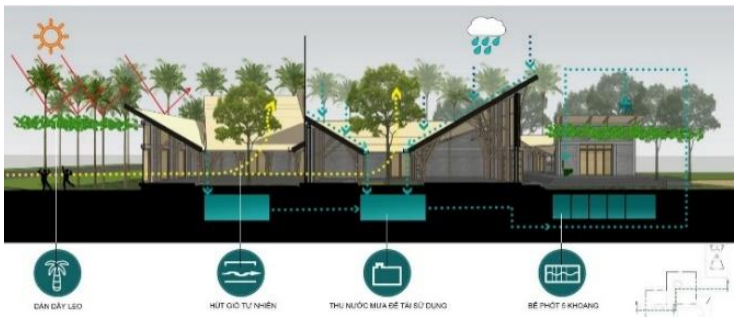

Fig. 18: Passive systems diagram - ventilation - Cam Thanh Community House
Source: Hao, 2013

Findings

These studies have strengthened the identification of four possible vernacular influences as suggested before: (1) geography and climate, (2) materials and construction techniques, (3) customs and traditions, and (4) belief and religion. These four factors are further supported through two layers of analysis: a general theoretical synthesis and a localised interpretation within the Vietnamese context.

Accordingly, a framework of indicators and variables is developed (Table 3), along with a cross-matching matrix (Table 4). Based on these outputs, this paper proposes the conceptual model of vernacular values (Fig. 19) to answer the research question: *What factors constitute the vernacular value of architecture?* The model illustrates the bold circular outline as a mutual interaction of environmental, material, social, and spiritual factors; the vertical axis represents the relationship between nature and society, from *environmental adaptation* to *social order*; the horizontal axis represents the relationship between materiality and spirituality, i.e., *material craftsmanship* and *spiritual symbolism*;

Finally, it is argued that the vernacular core is the intersection where these four elements converge to form architectural identity.

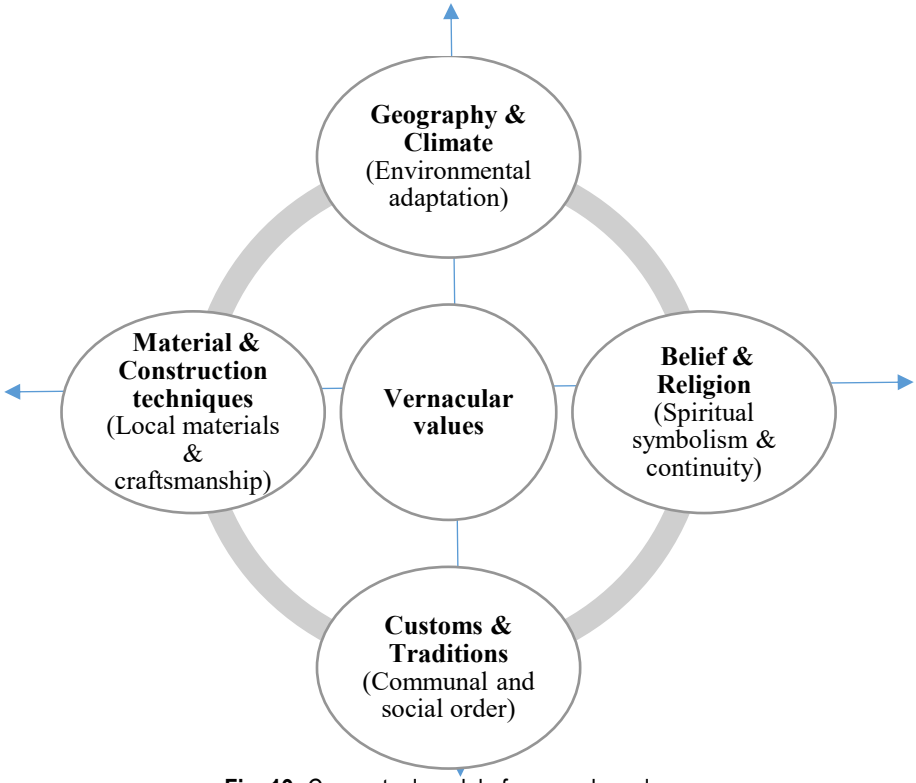

Fig. 19: Conceptual model of vernacular values
Source: Compiled by the authors, 2025

The comparative analysis between vernacular and contemporary case studies shows how vernacular values evolve. As a result, a diagram of vernacular continuity is proposed to address the second research question: *How have these values been incorporated into contemporary Vietnamese architecture?* Fig. 20 illustrates how climate adaptation, material–craft techniques, social customs, and spiritual beliefs continue to inform and shape sustainable architectural design in Vietnam through three modes of transformations: (1) *Retained* – retaining the original form and spirit, (2) *Evolved* – transforming the form to adapt to a new context but remaining the vernacular spirit, and (3) *Reinterpreted* – abstracting the original spirit with a new design language.

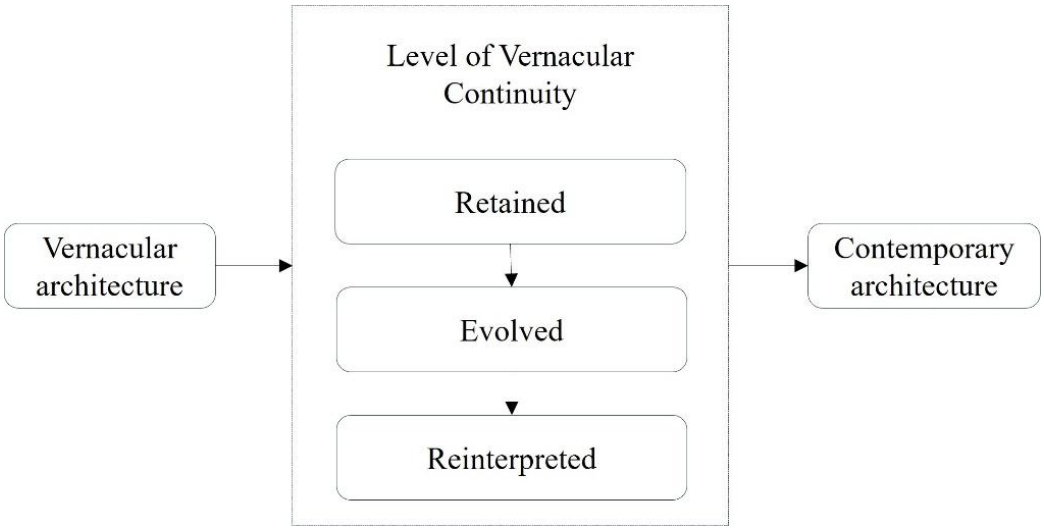

Fig. 20: Level of Vernacular Continuity
Source: Compiled by the authors, 2025

Conclusions

This paper identified four vernacular factors that affect architectural design and construction: (1) geography and climate, (2) materials and construction techniques, (3) customs and traditions, and (4) beliefs and religions. Through case study analysis, a system of indicators and variables has been synthesised to form an analytical framework. Moreover, a diagram illustrating the level of vernacular continuity is proposed, clarifying the three levels of transformations: retained, evolved, and reinterpreted.

It is thus concluded that the continuity of the four vernacular factors is interpreted thematically. Environmental continuity (under the geography-climate factor) reflects climate- and topography-adapted design, such as cross-ventilation, natural lighting, shading, rainfall prevention, and flood management: in other words, passive design strategies. Material continuity (under the materials-construction techniques factor) demonstrates the evolution of new construction technology, improving building efficiency while still retaining the local characteristics of materials or craftsmanship. Social continuity (under the customs-traditions factor) expresses the innovative transformation of communal spaces through various alternatives to multifunctional spaces in order to sustain social interaction. Finally, the spiritual continuity (under the belief-religion factor) transforms sacred meanings into atmospheres shaped by light, material, and spatial narratives.

Nevertheless, the research acknowledges several limitations. First, although this paper identifies and analyses four vernacular factors that are theoretically comprehensive, they do not encompass the entire set of vernacular determinants. Secondly, the selected case studies were geographically within the southern climatic zone (Zone B) of Vietnam and are culturally limited to three language-based ethnic groups (Viet-Muong, Mon-Khmer and Malay-Polynesian). Furthermore, due to limited time and human resources, only two pairs of studies were analysed.

Therefore, future studies should both increase the number of case samples (within the same frame of reference) and broaden the climatic and cultural scope to include other regions and ethnic groups (outside the frame of reference) for broader generalisation. Finally, the study lacks empirical data, such as on-site surveys, drawings, and photographic documentation, as well as quantitative environmental measurements, which are essential for further validation and comparative analysis in future research.

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Ethical Conduct

This research was conducted in accordance with the standard ethical practices. However, it did not involve any interactions with people.

Availability of Data:

The data supporting this study are derived from various archival sources, and literature. They are available from the author upon reasonable request.

Conflict of Interest: The author declares no conflict of interest.

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