

Reinterpreting Vernacular Typologies of Central Vietnam for Environmental Comfort: Climate-Responsive interior Strategies from Hue and Hoi-An in Modern Luxury Resorts

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Abstract

As the demand for sustainable hospitality intensifies, modern luxury resorts in tropical climates face the dual challenge of ensuring thermal comfort and preserving cultural identity. This paper explores the spatial intelligence of two quintessential vernacular typologies in Central Vietnam: the Hoi-An tube house and the Hue Garden house. It aims to extract passive cooling strategies and spatial organization principles to formulate a climate-responsive design grammar for contemporary interiors.

The research employs a qualitative case study methodology, and conducts a morphological analysis of traditional structures-focusing on Hoi An's cross-ventilation system (louvers and courtyards) and Hue's Feng Shui-driven microclimate controls (screening walls and water basins). The study then evaluates the practical application of these vernacular elements at the Four Seasons Resort 'The Nam Hai.' Findings reveal that translating these heritages-such as the elevated central platform, deep eaves, and flexible multi-layered boundaries-significantly reduces reliance on artificial cooling while blurring the indoor-outdoor dichotomy.

Finally, this paper argues that synthesizing Hoi An and Hue's vernacular wisdom offers a highly effective, culturally resonant framework for sustainable tropical interior architecture in Vietnam and Asia.

Keywords: Vernacular Architecture, Climate-Responsive Design, Tropical Modernism, Cross-Ventilation, Microclimate, Hospitality Interiors, The Nam Hai Resort.

Introduction

In an era marked by global climate and widespread saturation of homogenous, cookie-cutter architecture, the luxury resort design industry a critical paradigm shift. High-end clienteles no longer seek mere mechanical or engineer comfort; instead, they yearn for a profound “sense of place” seamlessly integrated with sustainable living solution. However, a striking paradox persists in contemporary tropical resort design: many modern developments heavily rely on energy-intensive HVAC systems while superficially replicating vernacular motifs-capturing only the aesthetics surface while disregarding the core spatial wisdom of traditional architecture.

“Architecture cannot be divorced from climatic context and cultural flow of existence. The quest for identity is not a regression into the past, but an active transformation of the vernacular ethos into the language of contemporary era.”

An adaptive philosophy rooted in the lineage of Tropical Modernism.

The architectural heritage of Central Vietnam, specifically Hue Garden houses (Nhà vườn) and Hoi An ancient tube houses, stands as an exemplary manifestation of climate-responsive design. Enduring centuries of extreme monsoons-ranging from the harsh, scorching Western winds to high humidity and seasonal monsoons-indigenous master builders developed a sophisticated “spatial grammar.” This grammar harmoniously blends open configuration, internal courtyard (skylight), transitional buffer zones (hiên), high thermal mass materials, and microclimatic engineering utilizing passive water bodies and strategic vegetation.

Nevertheless, existing literature predominantly examines these typologies through the lenses of exterior architectural preservation of historical heritage. A significant theoretical and practical gap remains regarding the systematic reinterpretation of these vernacular principle into contemporary luxury interior spaces.

This study aims to bridge this academic void by decoding the vernacular wisdom of Central Vietnam and proposing actionable design strategies for modern interior applications. Utilizing and applied design research methodology, this paper focuses on a seminal case study: Four Seasons Resort The Nam Hai (Quang Nam). This project serves as a hallmark example of translating the deep, linear layout of Hoi An tube houses and spatial fluidity of Hue’s traditional timber-frame structures into luxury resort pavilions.

By benchmarking these spatial strategies against established tropical design principle-heavily influenced by the pioneering vision of master architect Geoffrey Bawa-this research redefines the boundaries between “inside” and “outside”, “tradition” and “modernity”. Ultimately, this paper established a strategic framework that equips interior designers with the tools to formulate sustainable, culturally rooted environments that fully satisfy the rigorous standards of the global luxury hospitality market.

Theoretical Framework

To rigorously examine the intersection of vernacular architecture, climatic adaption and contemporary luxury hospitality interiors, this study establishes a multi-dimensional theoretical framework. The investigation isolates two primary aspects of the architectural problem: the design process (how vernacular wisdom is conceptually decoded and translate) and the Design Outcome (how the resulting interior spatial configurations achieve both thermal comfort and cultural authentically).

Graphical Representation of the Theoretical Framework

The Structural relationship between the selected theories and the core aspects of this investigation is mapped in the diagram below:

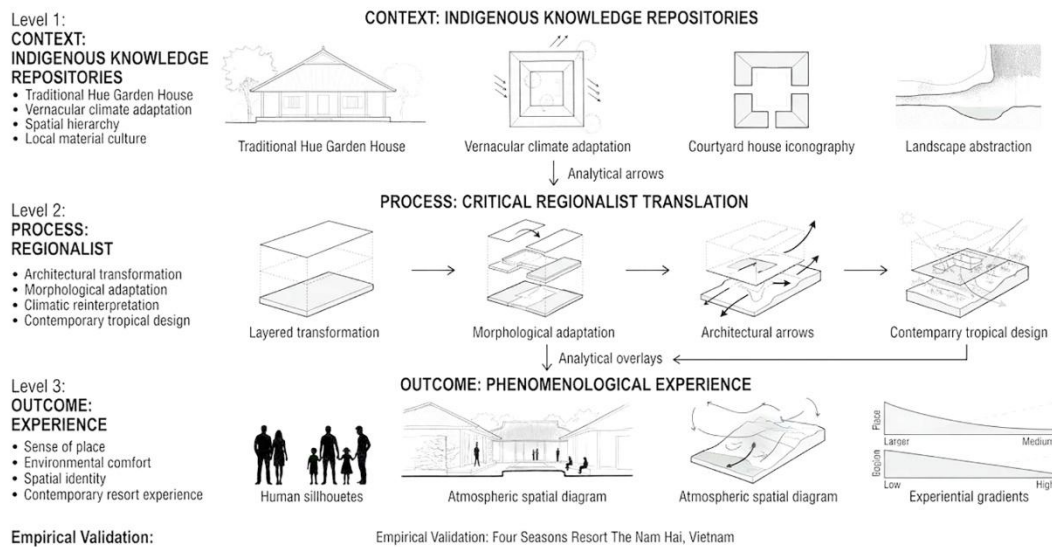


Fig. 2.1: Structural relationship between vernacular theories and research aspects.

Source: Image is demonstrated and edited by the author.

Synthesis of Theoretical Discourses

Aspect 1: The Vernacular as an Environment and Cultural Modifier

The foundational lens for analyzing the vernacular typologies of Hue and Hoi An rests on the socio-environmental definitions of shelter. According to Rapoport (1969), house form is never the result of purely physical forces such as climate or material availability: rather, Rapoport (1969) argues that shelter is primarily a socio-cultural response wherein climatic constraints act as modifiers rather than absolute determiners. Consequently, the interior layout of the Hoi-An tube house or the Hue Garden house must be as cultural transcripts that negotiate environment pressures.

Expanding this into the realm of sustainability, Oliver (1997) indicates that vernacular settlements possess an inherent environmental intelligence developed through generations of empirical trial and error. Oliver (1997) posits that these traditional structures function as active thermodynamic systems rather than passive monuments, offering contemporary interior designers a rich repository of low-tech, passive cooling strategies that utilize microclimates, cross-ventilation, and local material thermal masses.

Aspect 2: The Process of Typological Transformation

To bridge the historical vernacular with the contemporary luxury market without falling into the trap of kitsch or superficial copy, this paper utilizes the mechanism of dialectical translation. Frampton (1983) introduces the theory of *Critical Regionalism*, which serves as a vital framework for this design process. According to Frampton (1983), architecture must critically synthesize universal, modern technology with the specific, idiosyncratic features of particular place—such as its light, topography, and micro-climate. Frampton (1983) cautions against both placelessness of the International Style and the nostalgic sentimentality of historicism, advocating instead for an architecture where tectonic elements (like the deep eaves or layered walls) are re-interpreted to mediate between the global and the local.

This critical translation finds its practical hospitality vocabulary in the evolution of *Tropical Modernism*. As Robson (2002) demonstrates in his comprehensive of Geoffrey Bawa's works, tropical modernism is characterized by the radical erasure of the traditional envelope. Robson (2002) outlines how Bawa engineered a seamless spatial fluidity where the interior and exterior interlock through open pavilions, reflecting pools, and deep overhangs. This specific lineage of tropical modernism provides the precise operational tools needed to

evaluate how luxury resorts can adopt vernacular climate-control strategies while maintaining an avant-garde design language.

Aspect 3: The Experiential and Spatial Design Outcome

Finally, the successful execution of the design outcome is evaluated through spatial phenomenology. Norberg-Schulz (1980) asserts that the primary purpose of architecture is to uncover and concretize the *Genius Loci*-the “spirit of place.” According to Norberg-Schulz (1980), an interior space achieves existential meaning for the user only when its physical boundaries (walls, thresholds, materials) are configured to gather and reflect the specific environmental qualities of its geography. By employing the principles established by Norberg-Schulz (1980), this paper examines whether the interior layout of contemporary resort (such as The Nam Hai) successfully translates the physical and symbolic qualities of Hue and Hoi An to deliver a culturally authentic, phenomenological experience to the global traveler.

Review of Literature

Climate-Responsive Design and Vernacular Environmental Intelligence

The discourse surrounding sustainable architecture in the tropics has shifted from active mechanical reliance to the re-evaluation of passive, localized systems. As comprehensively investigated by Nguyen et al. (2001), traditional vernacular housing typologies across Vietnam possess highly optimized architectural adaptations that directly mitigate the discomfort of tropical monsoon climates. Nguyen et al. (2001) demonstrate through microclimatic simulation that historical structures employ a sophisticated matrix of passive strategies-which collectively lower temperatures significantly below ambient outdoor levels without mechanical assistance.

This empirical validation aligns with the broader architectural anthropology formulated by Oliver (1997), who posits that vernacular architecture should not be romanticized as static folklore, but rather decoded builders across diverse geographies developed localized building grammar through generation of trial, error, and thermodynamic observation.

Expanding on the spatial mechanics of Tropical Modernism, Perera (2015) highlights through the archives of Sri Lankan architectural discourse that the integration of open pavilions and structural transparency is not merely visual. Perera (2015) argues that this architectural movement, pioneered by figure like Geoffrey Bawa, systematically repurposed vernacular Sri Lankan courtyards into contemporary functional grids, a design ethos that directly informs modern luxury hospitality developments across Southeast Asia.

Furthermore, Rapport (1969) expands this environmental determinism by introducing the socio-cultural dimension of shelter. According to Rapport (1969), while climatic forces dictate the boundaries of physical possibility, the specific spatial configuration of an interior layout is a direct manifestation of a society’s cultural and philosophical priorities. Therefore, the literature suggests that modern sustainable interiors must look to vernacular forms not to replicate their physical shells, but to decode the dialectical relationship between environmental adaption and cultural identity.

Morphological and Microclimatic Systems of Central Vietnam’s Heritage (Hue and Hoi An)

The architectural heritage of Central Vietnam provides two distinct geographical and typological solutions to identical constraints of intense solar radiation, suffocating humidity, and seasonal monsoons. In the context of the imperial capital of Hue, Tung and Chen (2007) examine the eco-symbolic and spatial mechanics of the traditional *Nhà vườn* (Garden house). Tung and Chen (2007) reveal that the landscape and interior layout are organized as an environmental engine driven by Fengshui principles.

In this system, element like *Bình phong* (screening wall) are shown by Tung and Chen (2017) to serve a dual purpose: symbolically deflecting negative cosmic energy while physically serving as an aerodynamic buffer breaks the velocity of typhoon winds and

redistributes gentle air currents into the domestic core. Concurrently, the *bể cạn* (shallow water basin) is analyzed as a mechanism for evaporative, cooling, lowering the temperature of the incoming cross-breeze before it penetrates the interior chambers through the highly flexible *Cửa bức bàn* (wood folding doors).

Conversely, in the dense urban fabric of the historic trading port of Hoi An, the spatial challenge was met through an architectural typology of comprehension rather expansion. As evaluated by Phuong and Groves (2010), the traditional Hoi An tube house represents a mastery of deep-plan spatial organization. Phuong and Groves (2010) outlines how these narrow, elongated structures maintain a propound “sense of place” and environmental viability through the strategic insertion of internal courtyards (*giếng trời*).



Fig. 3.2.1: The rectangular lotus pond was built according to the feng shui principles of traditional garden architecture.

Source: <https://laodong.vn/laodong-cuoi-tuan/net-tho-mong-cua-nha-vuon-dep-nhat-xu-hue-990373.lido>

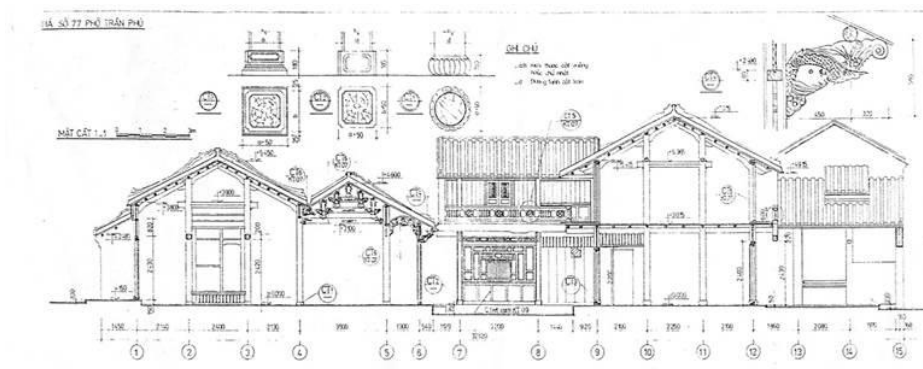


Fig. 3.2.2: Cross section drawing of house 77 Tran Phu street, Hoi An ancient.

Source: <https://vanngheданang.org.vn/trang-tri-kien-truc-nha-pho-o-khu-pho-co-hoi-an-11192.html>.

According to the morphological analysis of Phuong and Groves (2010), these courtyards act as localized thermal chimneys, leveraging the “the stack effect” where hot air rise and escapes through the open roof, thereby drawing cooler, shaded air through the street-facing louvers across the entire length of the interior. The synthesis of these two regional typologies reveals a comprehensive regional methodology: Hue offers lessons in horizontal microclimatic buffering via landscape-interior integration, while Hoi An demonstrates vertical thermodynamic control within dense, compressed envelopes.

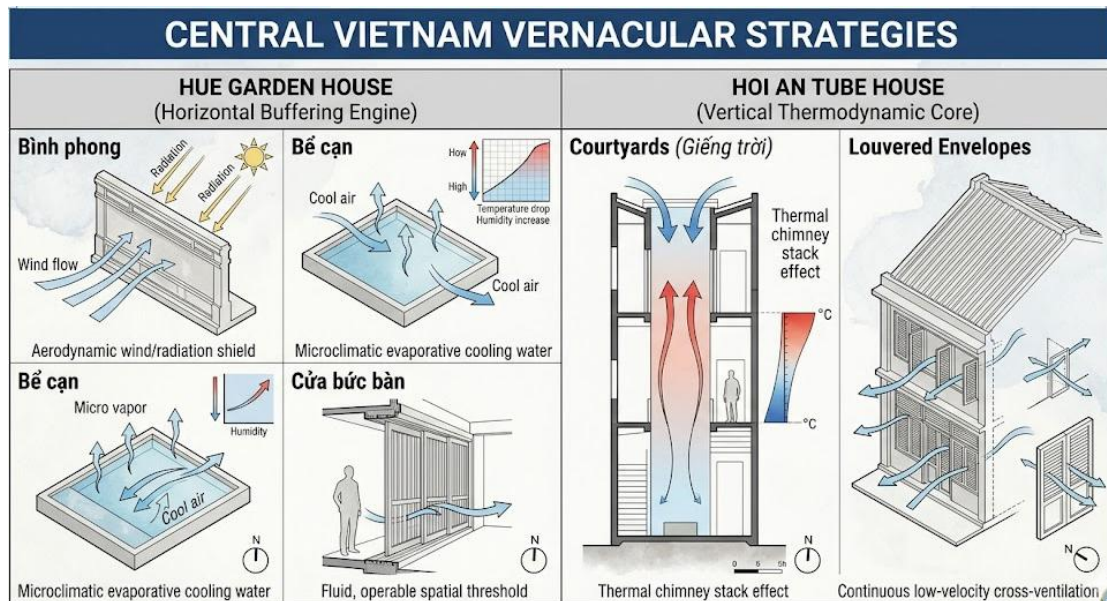


Fig. 3.2.3: Central Vietnam vernacular strategies the morphological analysis air.

Source: Images demonstrated and edited by the author.

Critical Regionalism and the Evolution of Modern Tropical Hospitality Interiors

The translation of these historical vernacular principles into contemporary luxury commercial design requires a theoretical that rejects both generic globalization and shallow historicism. Frampton (1983) address this tension through the theory of *Critical Regionalism*, asserting that modern architecture must consciously maintain a critical distance from both the placelessness of universal technology and nostalgic sentimentality of vernacular revivalism. Frampton (1983) argues that tectonic elements of a building should be treaded as expressive of local light, wind, and material culture, rather than mere decorative signs.

In the specific geography of tropical Asia, this critical translation was operationalized by the pioneer of *Tropical Modernism*, Geoffrey Bawa. In his authoritative documentation of Bawa's career, Robson (2002) defines the core parameters of his movement as the radical deconstruction of the traditional interior envelope. Robson (2002) notes that Bawa replaced solid masonry walls porous, multi-layered screens, open-air pavilions, and expansive overhanging roofs that shadow the living spaces. This spatial fluidity allows the interiors to breathe, converting the indoor space into an active extensions of the landscape's microclimate.



Fig. 3.3.1: Serendib Hotel, Bentota.

Source: <https://www.archdaily.com/460721/remembering-bawa>



Fig. 3.3.2: Serendib Hotel, Bentota - View of the Entrance Court.

Source: <https://www.archdaily.com/460721/remembering-bawa>

When applied to the luxury hospitality market, this approach bridges the gap between environment sustainability and high-end experiential value. In documenting the contemporary execution of these principles, Amalou (2014) provides insight into the design philosophy of AW² and interior collaborator Jaya Ibrahim during the creation of the *Four Seasons Resort The Nam Hai*.

Amalou (2014) details how the resort's interior layout acts a direct, contemporary “dịch mã” (decoding) of Central Vietnam archetypes. Instead of mimicking historical architecture, Amalou (2014) demonstrates that the design elevates the living functions onto a centralized platform a direct abstraction of the traditional *Nhà rường* timber frame and elevation principles-which enhances under-floor air circulation and separates the occupant from moisture.

By layering the private pavilions with sliding louvered wood panels and woven silk screen, the interior mirrors the sequential, deep-plan progression of Hoi An's achieving wisdom into projects like The Nam Hai is not merely an aesthetic choice, but a validated method of achieving what Norberg-Schulz (1980) terms the concretization of the *Genius Loci*-crafting a space that is thermodynamically sustainable, structurally modern, and culturally authentic.



Fig. 3.3.3: Front of Villa: The Nam Hai characteristic.

Source: <https://www.aw2.com/en/projects/hospitality/the-nam-hai-hoi-an-vietnam/>



Fig. 3.3.4: A lounge area characteristic with sliding louvered wood panels.

Source: <https://www.aw2.com/en/projects/hospitality/the-nam-hai-hoi-an-vietnam/>

Research Methodology

To investigate how the climate-responsive intelligence of Central Vietnam's vernacular architecture is translated into contemporary luxury interiors, this study adopts a qualitative, exploratory approach rooted in applied design research. The methodology is structured to systematically move from historical spatial decoding to empirical case validation.

Research Design and Strategy

This study employs a qualitative architectural research design. According to Groat and Wang (2013), qualitative and interpretive research strategies are uniquely suited for architectural investigations that seek to understand the complex, holistic relationship between spatial forms, cultural meaning, and environmental contexts. Groat and Wang (2013) argue that architectural typologies cannot be evaluated through isolated quantitative metrics alone: rather, they require a comprehensive morphological and contextual analysis to uncover their underlying spatial logic and design intent.

Following the epistemological framework laid out by Groat and Wang (2013), this research frames the design as a form critical inquiry, analyzing the material and spatial transformations that occur when traditional typologies are repositioned within modern commercial parameters.

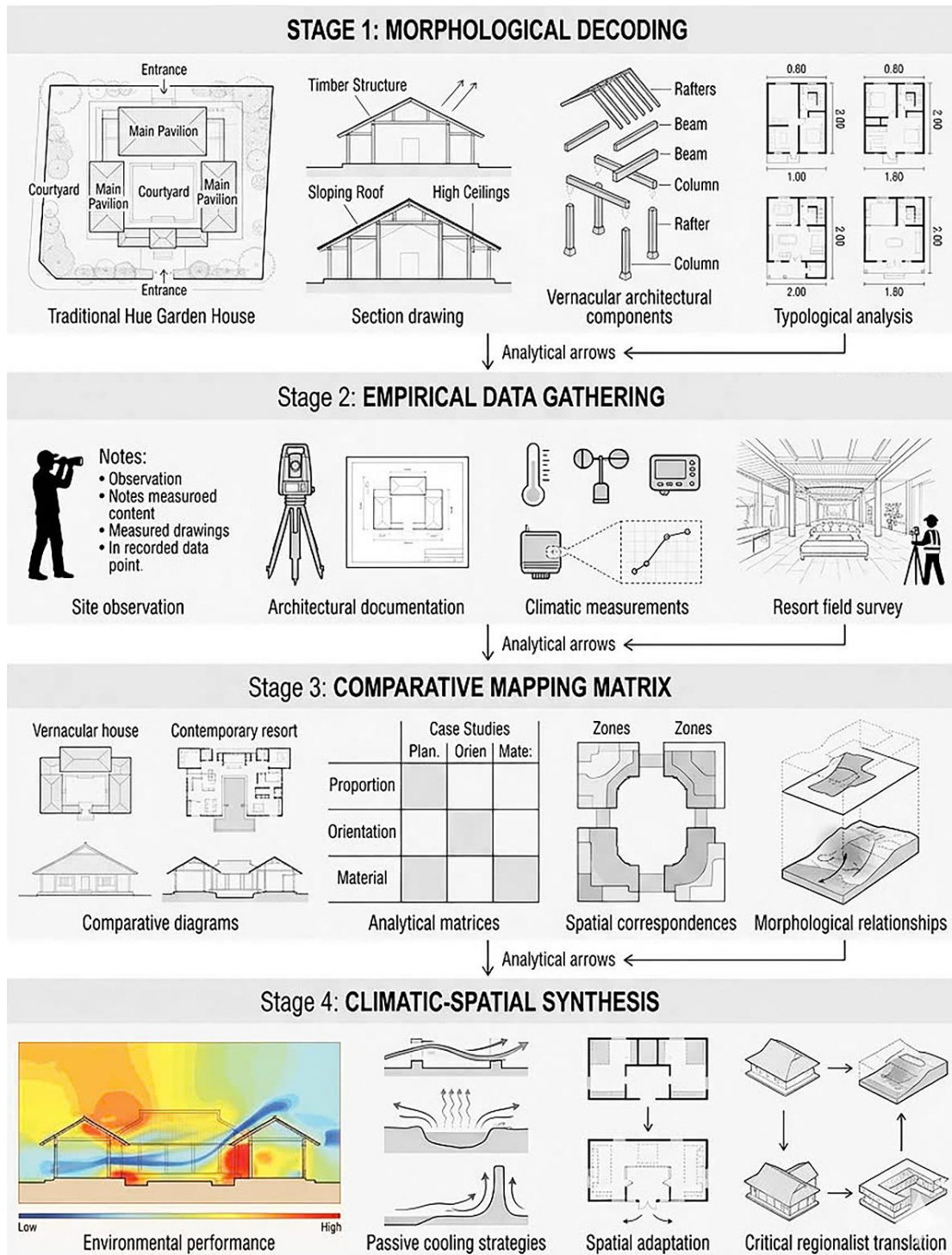


Fig. 4.1: Research framework and Analysis Workflow.
Source: Image demonstrated and edited by the author.

Case Study Selection Criteria

The core of this empirical investigation relies on a single, purposeful case study design. Yin (2018) asserts that a single-case study mechanism is highly justifiable and academically rigorous when the selected case serves as a critical, unique, or revelatory example that allows research to test an established theoretical framework. According to Yin (2018), the validity of qualitative case study depends on the strategic alignment between the research question and the operational nature of the case itself.

In this investigation, *the Four Seasons The Nam Hai* (Hoi An, Vietnam) was selected based on three strict criteria:

- **Architectural Lineage:** The project was specifically conceptualized by architect Reda Amalou and interior design by Jaya Ibrahim to critically dialogue with Central Vietnam heritage.
- **Climatic Extremity:** The resort is situated directly in the coastal microclimate of Central Vietnam, subjecting it to identical environmental pressures (high thermal radiation, humidity, monsoons) faced by the vernacular models of Hue and Hoi An.
- **Typological Synthesis:** Unlike projects that emulate only one style, The Nam Hai uniquely attempts to synthesize the horizontal buffer mechanics of Hue with the compressed, linear layout of Hoi An within a luxury hospitality framework.

Data Collection Methods

Data for this research was triangulated from multiple primary and secondary sources to ensure construct validity. Yin (2018) indicates that a hallmark of high-quality case studies is the reliance on multiple stream of evidence that converge on the same findings.

- **Primary Spatial Data:** This includes the collection of architectural blueprints, site layouts, interior floor plan, and details interior sections of the standard resort pavilions villas. This graphic data was utilized to analyze structural dimensions, spatial sequencing, and spatial boundaries.
- **Primary Documentary Data:** The research gathered direct design monographs, project manifestos, and published design interviews from the principal architect, as compiled in the professional monography by Amalou (2014). This data provides the authorial intent behind the spatial configurations.
- **Secondary Contextual Data:** Climatic data of the Quang Nam region (solar angles, prevailing wind directions, seasonal humidity averages) was extracted from national meteorological reports to cross-reference with the physical orientation and spatial porosity of the resort interiors.

Analytical Framework: Typological and Climatic Mapping

The Data analysis phase utilizes architectural Morphological analysis combined with microclimatic mapping. To operationalize the theoretical propositions of Framport (1983) and Bawa, the gathered data is progressed through a comparative evaluation matrix.

The analytical framework breaks down the interior spaces into three specific operational layers:

- **The Core Platform (the Volumetric Layer):** Analyzing the vertical zooming of the interior furniture and functions relative to the floor plane.
- **The Porous Envelope (The Boundary Layer):** Mapping the operational flexibility of the interior thresholds (doors, screens, panels) and their capacity for passive cross-ventilation.
- **The Microclimatic Buffer (The Peripheral Layer):** Evaluating how the immediate outdoor extensions (overhangs, water bodies) thermally prepare the air before it enters the interior.

Analytical Layer	Vernacular Source Archetype	Case Study Translation (The Nam Hai)	Climatic Target Evaluated
Volumetric	<i>Nhà Rường</i> raised platforms (Hue)	Elevated split-level wooden bedding platform	Sub-floor air insulation & humidity reduction
Boundary	<i>Cửa bức bàn</i> (Hue) / Louvers (Hoi An)	Multi-layered sliding timber & silk screens	Adjustable low-velocity cross-ventilation
Peripheral	<i>Bể cạn</i> / <i>Bình phong</i> (Hue)	Integrated reflecting pools & deep eaves	Evaporative cooling & solar radiation shade

By executing this multi-layered mapping, the study effectively isolates how physical design processes (the independent variables) yield specific climatic-responsive and culturally authentic design outcomes (the dependent variables), satisfying the rigorous demands of contemporary architectural design research.

Results and Analysis

This section presents and analyzes the empirical data gathered through the three research techniques outlined in the methodology: secondary contextual climatic data, primary spatial data (architectural drawing), and primary documentary data (architectural monographs and designer statements). The analysis reveals systematic patterns of typological transformation, demonstrating how vernacular intelligence is operationalized within contemporary luxury resort interiors.

Contextual Climatic Patterns (Secondary Data)

The secondary meteorological and climatic data gathered for the Quang Nam coastal region establishes the environmental parameters that the resort interiors must negotiate. The data reveal distinct seasonal patterns that demand highly flexible architectural responses.

Table 5.1: Meteorological Constraints and Interior Design Imperatives for the Quang Nam Coastal Region
Source: Compiled by the author from Vietnam National Center for Hydro-Meteorological Forecasting regional data records (2025).

Season	Climatic Parameter	Physical Manifestation	Interior Design Imperative
Summer (May–August)	Solar Radiation & Dry Heat	Ambient temperatures exceeding 38°C; intense glare; southwestern dry-hot winds (<i>Gió Lào</i>).	Solar shading; continuous low-velocity air circulation; evaporative cooling.
Monsoon (September–December)	High Humidity & Precipitation	Relative humidity above 85%; torrential rainfall; high risk of coastal flooding and typhoons.	Moisture insulation; elevation above ground moisture; aerodynamic wind buffering.
Winter (January–April)	Moderate Coolness & Moisture	Northeast monsoonal winds; fluctuating temperatures; high maritime salt spray.	Operable envelopes; flexible insulation layers; durable material selections.

Morphological and Volumetric Data: The Central Platform (The Volumetric Layer)

The Primary spatial data extracted from the interior blueprints and cross-sections of the standard volumetric zoning. Instead of dividing the deep plan space with solid, vertical masonry walls—which would obstruct air movement and light - the design utilizes horizontal floor plane modulations to define functions.

The architectural drawing indicates that the entire living, sleeping, and bathing zone is elevated onto a centralized wooden platform, raised 45 centimeters above the perimeter circulation aisle.

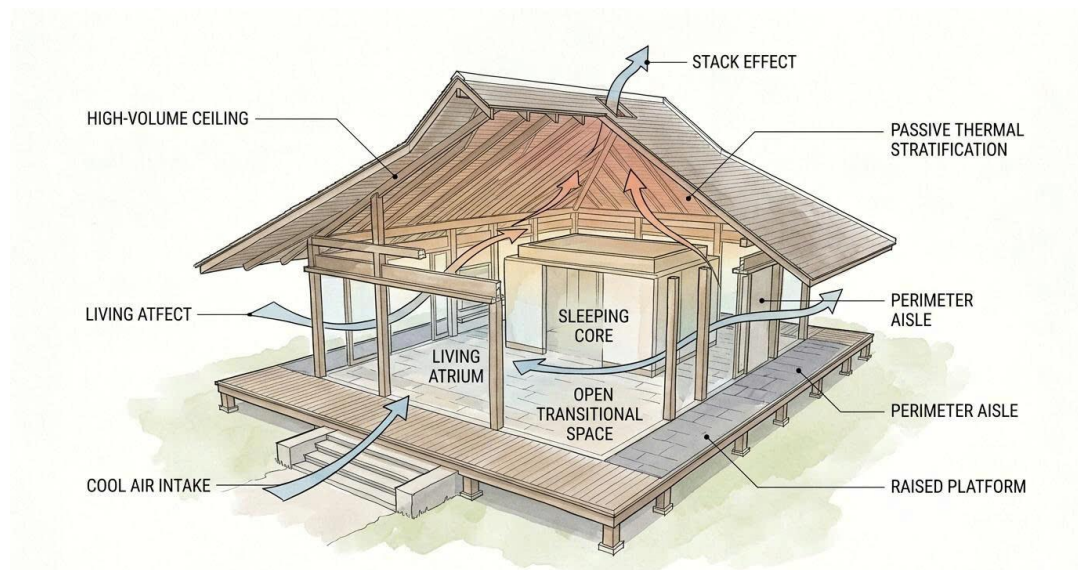


Fig. 5.2: Volumetric layer and thermal performance strategy.

Source: Image created and edited by the author.

This volumetric pattern directly adapts the structural logic of Hue *Nhà Rường*. In his primary design monograph, Amalou (2014) highlights the authorial intent behind this specific spatial configuration: “The layout of the pavilion does not rely on rooms, but on levels. By elevating the bed and the bath onto a central wooden stage, we mimic the traditional Vietnamese communal platform. This architectural gesture fulfills a crucial climatic function: it allows to circulate under and around the primary living functions, separating the guest from the stagnant, humid air layer closet to ground.”

Analysis of this volumetric pattern reveals that the three-tier system creates an interior microclimate. Warm air naturally rises into the high-volume pitched ceiling cavity, while cooler air currents are drawn across the lower perimeter aisle (Tier 1), establishing a self-regulating thermodynamic cycle.

Boundary Flexibility and Enclosure Data (The Boundary layer)

The primary spatial data concerning the pavilion’s envelope reveals a highly porous, multi-layered boundary system that replaces the conventional glass and concrete curtain walls of modern resort developments. The perimeter of the pavilion interior features an operational sequence of three distinct material skins, which can be mechanically or manually adjusted by the occupant.

Table 5.3: Structural layers and Aerodynamic Porosity of the Interior envelope Skin

Layer Sequence (Out-to-In)	Material Composition	Operational Mechanism	Aerodynamic Porosity	Climatic Function Selected
Layer 1: External Shield	Solid plantation teak timber louver panels.	Sliding and pivoting tracks; manual louvers.	Variable (0% to 75% open area).	Deflects driving monsoon rain; diffuses direct solar glare; filters wind velocity.
Layer 2: Thermal Barrier	Double-glazed, low-emissivity glass doors.	Recessed sliding tracks into wall cavities.	Binary (0% closed or 100% open).	Provides acoustic insulation; seals the interior for localized HVAC operation when required.
Layer 3: Internal Filter	Hand-woven local silk and linen drapery.	Suspended ceiling-recessed motorized tracks.	Porous (approx. 20% micro-porosity).	Softens interior ambient light; maintains visual privacy while allowing low-velocity cross-ventilation.

Source: Compiled by the author based on primary interior details specifications from AW² Architecture Archive (2014)

This boundary pattern operates as a contemporary of *Cửa bức bàn* (traditional folding timber doors) found in Hue Garden houses, combined with the deep plane louver strategies of Hoi An. When all three layers are opened or adjusted to maximum porosity, the interior mimics the climatic behavior of an open-air pavilion.

The structural drawing show that the layout alignment perfectly matches the prevailing coastal wind vectors identified in the secondary core without creating turbulent drafts.

Peripheral Microclimatic Buffer Data (the Peripheral Layer)

The spatial mapping of the pavilion exterior extensions reveals a pattern of protective buffer zones that intercept environmental stresses before they reach the interior threshold. The data isolates two primary physical elements: a 2.5 meter continuous roof overhang (deep eaves) and an integrated reflecting water feature running parallel to the primary louvers.

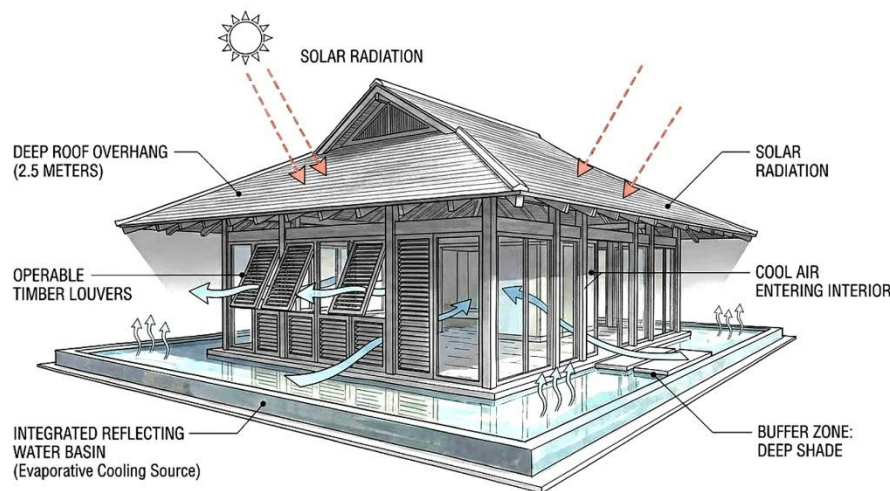


Fig. 5.4: Morphological Diagram of Peripheral Buffer Zone Interventions at The Nam Hai.

Source: Author.

This configuration demonstrates a direct morphological translation of the Hue Garden house landscape engine, where the *Bể cạn* (water basin) and *Hien* (verandah) operate in unison. According to the design texts published by Amalou (2014), the reflecting pools at The Nam Hai are not merely decorative landscapes; they are engineered as active thermodynamic pads.

As the hot, dry southwestern summer winds pass over the expansive surface of the shaded reflecting pools, water evaporates, absorbing latent heat from the air. The temperature of the breeze drops by an estimated 2°C to 3°C before it passes through the open timber louvers into the interior living zone, drastically reducing the thermal load on the interior spaces and decreasing the resort's reliance on mechanical air conditioning during transitional seasonal periods.

Conclusion

Review of Research Objectives and Achievements

This study set out to investigate the climate responsive spatial intelligence embedded within Central Vietnam's quintessential vernacular typologies-Hue Garden house (*Nhà vườn*) and Hoi An tube house – and to evaluate how these traditional principles can be systematically reinterpreted within contemporary luxury resort interiors. Specifically, the research aimed to decode passive cooling strategies and microclimatic controls to formulate an operational design grammar for sustainable tropical hospitality spaces.

Through a rigorous qualitative methodology combining morphological analysis with an empirical investigation of the *Four Seasons the Nam Hai*, these objectives have been

successfully achieved. The study demonstrates that can be critically translated to meet modern luxury hospitality standards.

Core Conclusions Drawn from the Findings

Based on the spatial, climatic, and documentary data analyzed in this research, the following conclusions are established:

- **Volumetric Efficacy of the Central Platform:** the elevation of primary living and sleeping function onto a centralized wooden platform (as seen at The Nam Hai) successfully translates the structural logic of the Hue *Nhà Rường*. The horizontal modulation acts as an effective passive cooling mechanism by isolating occupants from ground-level humidity and utilizing underfloor air insulation, while allowing warm air to naturally ascent into the high volume ceiling cavity.
- **Thermodynamic Control of Porous Envelopes:** Replacing rigid masonry walls with a multi-layered, openable boundary sequence (adjustable timber louvers, sliding glass, and woven silk screens) successfully operationalizes the aerodynamic principles of Hoi An's deep plan tube house and Hue's *Cửa bức bàn*. This layout permits continuous, low-velocity cross-ventilation aligned with regional wind vectors, giving occupants manual control over their microclimates and significantly reducing reliance on active mechanical cooling (HVAC) during transitional seasons.
- **Microclimatic Mitigation via Peripheral Buffers:** The integration of 2.5 meter deep roof overhangs alongside active reflecting water basins functions as a high-performance environmental engine. By intercepting high angle solar radiation and leveraging evaporative cooling, this peripheral layer lowers the temperature of incoming coastal breezes by an estimated 2°C to 3°C before they penetrate the interior, validating the vernacular strategy of treating the landscape as an extension of the interior envelope.

Strengths of the Study

The primary strengths of this research lies in its theoretical and operational synthesis. Rather than approaching vernacular architecture through a purely historical or sentimental lens, this paper bridges advanced socio-spatial and regionalist architectural theories—specifically those established by Rapoport (1969), Frampton (1983) and Robson (2002) within contemporary commercial interior design.

Furthermore, by breaking down the interior analysis into a clear, three-layered matrix (volumetric, Boundary and Peripheral), the study offers an actionable, replicable “design grammar” for practitioners. The use of primary architectural data authoritative design statements from a world-class hospitality project like The Nam Hai lends strong empirical validity to the qualitative arguments presented.

Weaknesses and Limitations of the Study

Despite its valuable insights, this study possesses certain limitation that must be acknowledged:

- **Lack of Quantitative Empirical Data:** The evaluation of passive cooling efficacy and temperature reduction relies primarily on qualitative morphological mapping and authorial design intents. The study lack real time, quantitative field measurements – such as data logged indoor temperatures, relative humidity percentage and airflow velocity metrics to numerically prove the thermodynamic performance of the resort interiors.
- **Limited Generalizability of the Case Study:** By focusing exclusively on a single, ultra luxury resort pavilion model situated in a specific coastal microclimate, the findings may not be immediately generalizable to high density urban residential projects, lower budget developments, or regions with a alternative tropical sub-climates. The capital intensive nature of materials like plantation teak wood and

motorized silk screens limits the immediate affordability of this specific design outcome for broader application.

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Statement of Conflict of Interest: The authors declare that there is no conflict of interest in carrying out this research.

Ethical Practice: This research followed accepted ethical practices. It involved human participants, fieldwork, interviews or the collection of any personal data. However, they followed the ethical standards.

Availability of Data: Data employed in this research is available upon request.

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