

The Land is The Icon: Disappearing Architecture through Natural Forces

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Abstract

This paper reimagines architectural landmarks within the hills of Labuan Bajo, proposing an approach where architecture seamlessly integrates with the landscape rather than asserting dominance. The study examines how design strategies can amplify rather than overshadow the natural environment, positioning nature as the true landmark through ephemeral architecture. Using Plowright's force-based framework within an architectural competition, the research employs a research-by-design methodology to iteratively refine solutions that dissolve built interventions into the terrain. By integrating Labuan Bajo's topographical and visual characteristics, the design leverages adaptive modularity and sustainable strategies to ensure perceptual fluidity within the site's ecological and cultural context. This approach contributes to landmark design by demonstrating how architecture can function as a dynamic extension of the landscape, fostering harmony rather than visual competition.

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INTRODUCTION

This paper reimagines the concept of architectural landmarks within the unique panorama of Labuan Bajo's hills, advocating for an approach where architecture dissolves into the landscape rather than asserts itself as a dominant presence. The primary objective is to explore how architectural design can amplify instead of overshadowing the intrinsic beauty of the environment, positioning nature as the true landmark through the lens of disappearing architecture. Labuan Bajo, renowned for its breathtaking coastal topography and undulating hills, has emerged as a significant tourism destination in Indonesia. Characterized by a harmonious blend of terrestrial and marine ecosystems, its landscape plays a pivotal role in shaping the region's identity and attracting visitors from across the globe (Ardhyanto & Dewancker, 2019). As a gateway to Komodo National Park, Labuan Bajo has witnessed rapid tourism development, prompting discussions on sustainable architectural interventions that resonate with its unique environmental conditions (Koswara, 2025). However, conventional approaches to landmark design often impose architectural forms onto the terrain without fully embracing the intrinsic qualities of the landscape. This disconnect between architecture and nature raises critical concerns regarding contextual integration, environmental sustainability, and the preservation of place identity (Ampur, 2023).

Traditional landmark design in urban and rural settings frequently prioritizes visual prominence, emphasizing singular structures that dominate their surroundings. While such an approach can serve as a focal point for orientation and identity, it often overlooks the nuanced interplay between built environments and natural landscapes (Laksono, 2022). Labuan Bajo presents a compelling case where architectural interventions should operate as extensions of the existing terrain as the opposed of isolated insertions. The rigid distinction between nature and architecture risks diminishing the immersive experience of the site, reducing landmarks to standalone monuments instead of integrated spatial compositions. In this context, vernacular strategies offer valuable insights, as they inherently align design principles with environmental and cultural narratives (Ardhyanto et al., 2022). By reconsidering landmark architecture as a fluid, adaptive entity, designers can foster deeper connections between built forms and the locality ecological dynamics that define Labuan Bajo's sense of place (Yatmo & Atmodiwirjo, 2021).

This paper reimagines architectural landmarks within the distinctive panorama of Labuan Bajo's hills, refining design strategies through an iterative design competition process. It advocates for an approach in which architecture

seamlessly integrates with the landscape, rather than asserting itself as a dominant presence. By positioning architectural design as an extension of the terrain, this research seeks to redefine landmark typologies to foster ecological sensitivity and spatial cohesion. The exploration of landscape-driven design principles contributes to sustainable architectural discourse, offering alternative methodologies for integrating landmark structures within natural environments. The study underscores the potential for architecture to act as an organic extension of its setting, fostering a harmonious dialogue between human-made interventions and the intrinsic qualities of Labuan Bajo's topography.

LITERATURE REVIEW

Landscape-based Design for Sustainability

Landscape-based architecture is an approach that prioritizes the intrinsic characteristics of the natural environment as fundamental elements in the design process. This methodology acknowledges the dynamic relationship between built structures and the surrounding terrain, promoting architectural interventions that integrate seamlessly with the landscape while maintaining spatial harmony (Al-Hammadi & Grchev, 2023). Historically, landscape-driven architectural principles have been rooted in vernacular traditions, where local construction methods adapt to environmental conditions, ensuring sustainability and cultural relevance (Antar, 2013; Roosandriantini, 2018). This perspective aligns with the concept of a "sense of place," which emphasizes the experiential and contextual significance of architecture within a given environment (Ampur, 2023). In Labuan Bajo's case, the region's undulating hills offer a distinctive opportunity to develop architectural strategies that harmonize with the natural topography while preserving its integrity. The existing landscape functions as a guiding force in design, ensuring a symbiotic relationship between human intervention and ecological preservation (Kapoor, 2024).

Modularity and sustainability are essential components of adaptive architectural practices, facilitating flexibility in design while maintaining ecological sensitivity. Modular design emphasizes prefabricated or adaptable structural systems that respond dynamically to environmental conditions, reducing material waste and enhancing efficiency (Wallance, 2021). In particular, the utilization of natural materials—such as bamboo—exemplifies a sustainable approach to architectural design, aligning with the principles of locality and resource conservation (Maikol et al., 2020; Nurdiah, 2016). Bamboo's organic form and familiarity within traditional contexts make it a valuable material for landscape-based architecture, reinforcing a cultural and environmental connection (Nurdiah & Juniwati, 2020). Additionally, landmark architecture carries cultural significance, particularly in urban and rural contexts where spatial identities emerge through built interventions (Alampay, 2023; Chen et al., 2021). In Labuan Bajo, architectural elements that embrace modularity and sustainability can contribute to a renewed understanding of landmark creation, ensuring that the built environment remains adaptable, resilient, and responsive (Sassi, 2006) to local ecological and cultural values.

Nature as The Forces

Plowright's force-based framework provides a methodological foundation for analyzing the dynamics between design interventions and environmental forces. This framework conceptualizes architecture as an active participant within a spatial system, where forces—both tangible and intangible—shape design responses (Plowright, 2014). When applied to landscape-based architecture, this approach facilitates a process of iterative refinement, enabling architects to explore variations in form, materiality, and spatial arrangement to harmonize with the surrounding terrain (Pinassang et al., 2021). In the context of Labuan Bajo, where the landscape serves as both a visual and structural determinant, force-based analysis can guide the development of architectural forms that emerge organically from the hills instead of assert rigid geometries. Moreover, metaphoric architectural expressions—such as symbolic roof structures—can further reinforce the integration between built form and environmental context (Renur et al., 2023). By adopting a force-based perspective, designers can cultivate architectural compositions that remain fluid, adaptive, and deeply rooted in the identity of the site. Figure 1 shows the force-based design framework.

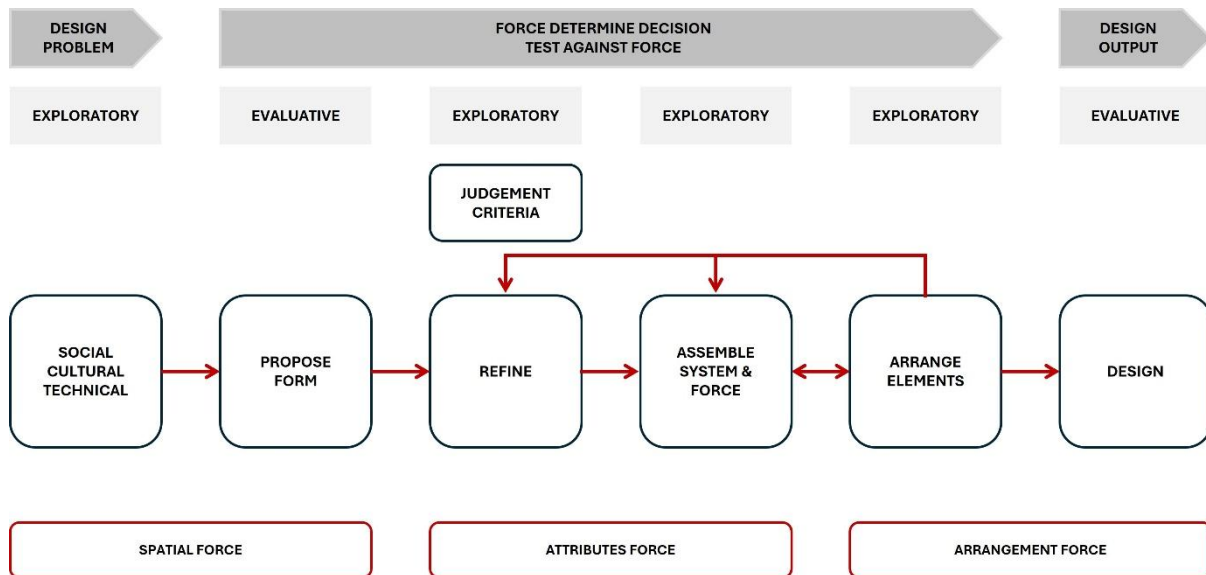


Figure 1. Force-Based Design Framework
(Source: processed from Plowright, 2014)

The concept of architecture dissolving into the landscape challenges conventional notions of landmark design, promoting built forms that emerge as natural extensions of their environment while maintaining contextual harmony (Kapoor, 2024). This perspective aligns with the principles of contextual architecture, wherein physical nature dictates the configuration of spatial interventions (Al-Hammadi & Grchev, 2023). In Labuan Bajo, where the terrain itself serves as an iconic identifier, architectural strategies should emphasize symbiosis with the hills, utilizing the natural contours as guiding elements for spatial organization. The implementation of localized architectural techniques—such as those observed in Mbaru Niang structures—demonstrates the potential for vernacular adaptations that enhance ecological and cultural relevance (Adiyanto, 2022; Pinassang et al., 2021). The concept of architecture dissolving into the landscape redefines landmark design by fostering built forms that seamlessly integrate with their environment while preserving contextual harmony.

While existing literature on landscape-based architecture, modularity, and force-based frameworks provides a foundation for sustainable and adaptive landmark design, there remains a gap in the integration of disappearing architecture within topographical contexts. Current approaches to landmark architecture often emphasize visual prominence instead of ecological harmony, necessitating a reevaluation of design methodologies that align with the dynamic characteristics of natural landscapes (Kapoor, 2024). This study seeks to address this gap by reflecting on iterative design processes, examining how force-based strategies and modularity can refine architectural interventions in Labuan Bajo's hills. Through research-by-design methodologies, knowledge is generated through critical analysis of design phases, positioning architecture as a continuous extension of the terrain. By exploring adaptive and landscape-responsive design solutions, this study contributes to the evolving discourse on sustainable landmark creation, offering a framework for architects to develop interventions that engage with nature as an active design force while avoiding a passive setting or background.

METHODS

This study employs a research-by-design methodology, which integrates theoretical inquiry with practical design experimentation (Groat & Wang, 2013). As a mode of inquiry, research-by-design facilitates the iterative refinement of architectural interventions by merging analytical exploration with creative processes (Verbeke, 2013). The approach is inherently reflective, allowing architects to test hypotheses through design iterations, engage critically with contextual parameters, and adapt solutions based on emerging insights. Unlike traditional research methods that rely solely on textual analysis or quantitative evaluations, research-by-design embodies a dynamic, practice-driven exploration where knowledge generation occurs through the act of designing (Lucas, 2016; Schön, 1983). Within this framework, architecture is not viewed as a static construct but as an evolving entity shaped by environmental, spatial, and perceptual forces. The iterative nature of this approach enables a progressive engagement with site-specific conditions, ensuring that each design iteration refines the relationship between built form and landscape.

Guiding the research process is Plowright's force-based framework, which conceptualizes architectural design as an interaction between environmental and spatial forces. Plowright (2014) introduces a methodology where design is viewed as a negotiation between various influences—including topography, material constraints, cultural narratives, and structural adaptability. By applying this framework, the study examines how architectural interventions can respond fluidly to the contextual forces present in Labuan Bajo's hilly terrain. The force-based framework promotes a departure from rigid formalism, advocating for adaptive, modular strategies that align with the shifting characteristics of the environment. The terrain itself is not seen as a passive backdrop but as an active participant in the design process, shaping spatial configurations and guiding material choices. This methodological orientation ensures that landmark architecture in Labuan Bajo emerges as an organic extension of its surroundings.

The research is conducted within the framework of an architectural design competition, which serves as a structured setting for iterative experimentation. The competition parameters define specific spatial constraints, material considerations, and contextual narratives that influence design decisions. Competitions are instrumental in fostering innovative solutions, as they provide a controlled yet exploratory environment where designers engage critically with site challenges. In the case of Labuan Bajo, the competition framework encourages proposals that address energy limitations, conservation imperatives, and the visual openness of the terrain. The 360-degree views of the site become a pivotal design consideration, ensuring that architectural elements remain unobtrusive while enhancing experiential qualities. By situating the research within this competitive context, the study benefits from a rigorous design discourse, enabling reflections on adaptability, landscape integration, and environmental sensitivity. Figure 2 shows the context of the site with views of the surrounding, hill-based and natural landscape.

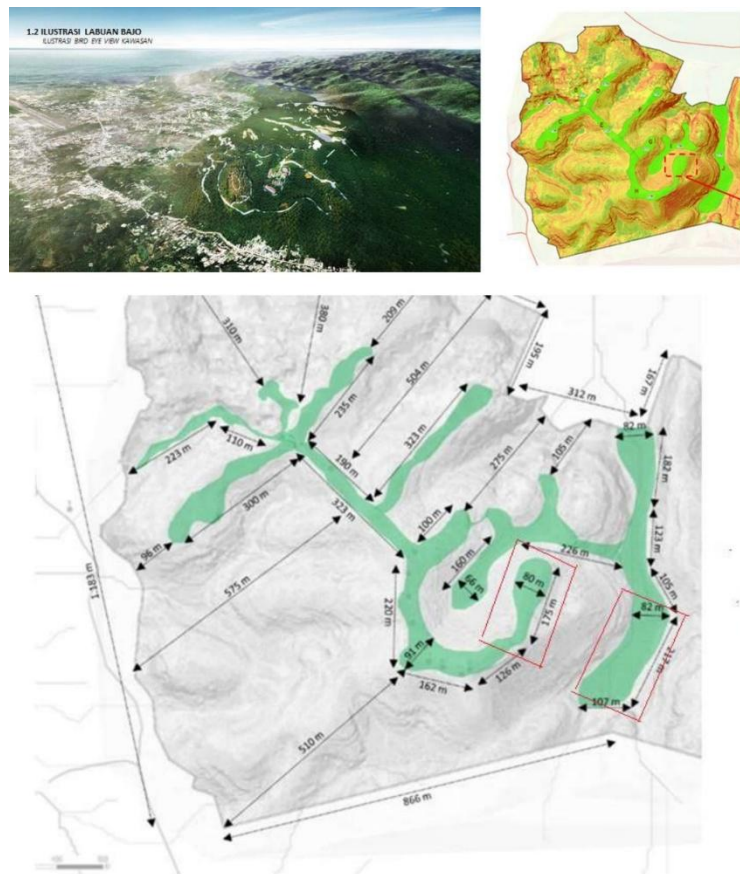


Figure 2. Context of the Design Site
(Source: IAI-The Labuan Bajo Cultural Center Competition)

Data collection involves multiple sources, including design iterations, spatial analyses, and site studies. The iterative design process forms the core of knowledge generation, with each phase of development serving as an empirical test for refining architectural interventions. Design iterations document the evolution of spatial configurations, material applications, and environmental responsiveness, providing insights into how architecture can seamlessly integrate with the landscape and avoid imposing visual dominance. Spatial analyses examine the morphological characteristics of the terrain, evaluating how natural contours influence spatial compositions and modular strategies. Site studies encompass on-location assessments, including visual documentation, ecological

mapping, and contextual integration evaluations. Additionally, the study considers the environmental limitations of the site—such as energy constraints and conservation priorities—as critical factors shaping design responses. By synthesizing these various sources, the research articulates an approach that balances theoretical inquiry with empirical validation, ensuring that architectural interventions resonate with the ecological and cultural identity of Labuan Bajo's hills.

RESULTS AND DISCUSSION

Designing within Forces

Architectural design is inherently shaped by a complex interplay of forces—spatial, environmental, social, and cognitive—that dictate how structures respond to their surroundings. In landscape-driven design approaches, these forces serve as guiding principles, ensuring that architecture does not impose itself onto nature but rather integrates harmoniously within its context. Plowright's force-based framework offers a methodological perspective that underscores the fluidity of architectural decisions, moving beyond rigid geometries to embrace the inherent qualities of space, material, and environmental dynamics. This approach highlights spatial attributes, qualities, and arrangements as active participants in the design process, creating adaptable and contextually responsive interventions.

Environmental forces play a pivotal role in shaping architectural responses to natural landscapes. In the case of Labuan Bajo, where topographical elements such as hills and coastal views define the spatial experience, architecture must engage with the terrain. The force-based methodology acknowledges landscape as a dynamic system that influences material choices, structural configurations, and spatial orientations. The site's unique 360-degree views necessitate a design approach that embraces openness, ensuring that built interventions contribute to visual continuity and maintain an unobstructed connection with the surrounding landscape. Additionally, social forces contribute to the architectural narrative by addressing human interaction, cultural traditions, and communal activities within designed spaces. Architecture, therefore, must function as an adaptive framework that accommodates evolving societal needs while preserving historical and ecological integrity. Figure 3 shows the idea of questioning the role of landmarks in their integration with nature as the main idea.

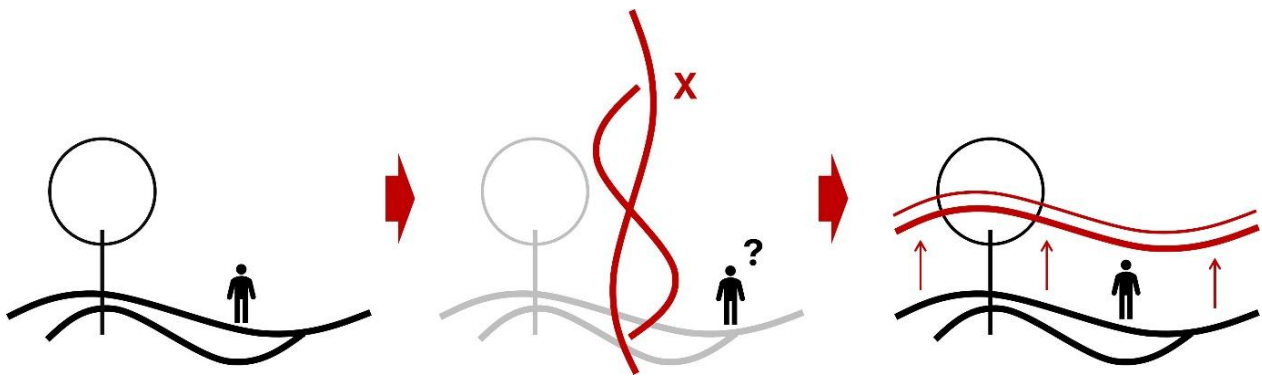


Figure 3. Possibility of Other Forms of Nature-Based Landmarks

Cognitive structures shape architectural decisions by focusing on underlying design methods rooted in forces and patterns, moving beyond representational distinctions. This perspective encourages architects to prioritize adaptability and contextual sensitivity in design, moving beyond static forms to create responsive and integrated architectural solutions. The methodology traces historical continuity by connecting 19th-century rationalist design principles to contemporary practices, reinforcing an iterative design approach that continuously evolves. In Labuan Bajo's case, the integration of force-based principles ensures that architecture remains perceptually ephemeral—responding dynamically to landscape features, cultural identity, and digital augmentation without disrupting the ecological balance. Figure 4 shows the main points that force the design.

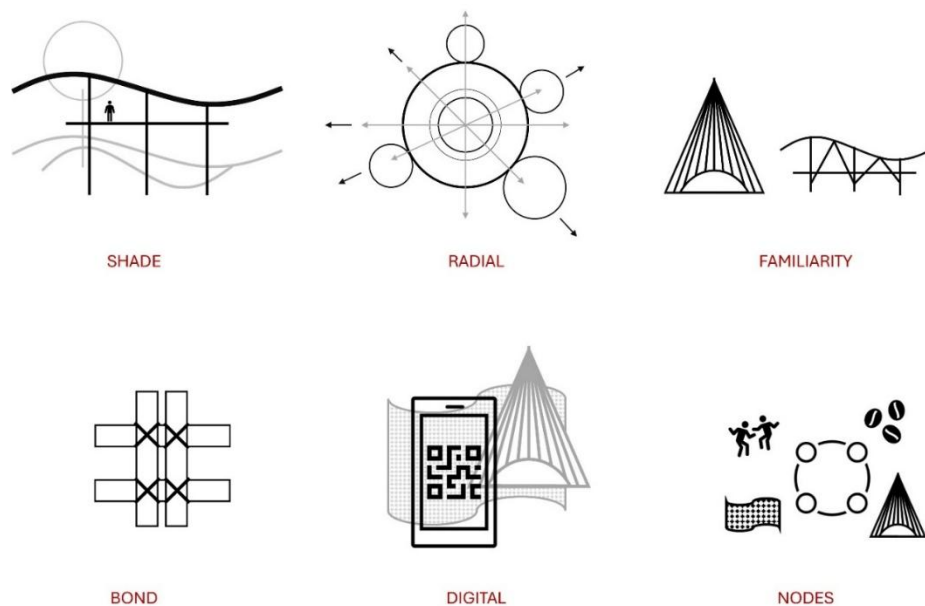


Figure 4. Force of Nature and Locality

The design process for landmark architecture in Labuan Bajo incorporates the concept of seeing near, seeing far, and seeing beyond, capturing the multilayered interaction between built spaces and environmental forces. Seeing near refers to the immediate landscape—the terrain, vegetation, and topographical features that define spatial arrangements. Design strategies must align with the natural contours, ensuring that built interventions integrate harmoniously with the terrain and preserve its continuity. Seeing far incorporates the expansive sea views that characterize Labuan Bajo, positioning architecture as a mediating element that frames and accentuates the distant horizon. Finally, seeing beyond introduces cultural augmentation through digital and interactive elements, employing QR-based information and augmented reality to connect visitors with historical and ecological narratives embedded in the site. Figure 5 shows the potential of viewing nature in 3 main layers, including proximity, distant landscape, and depth of digitally-based information.

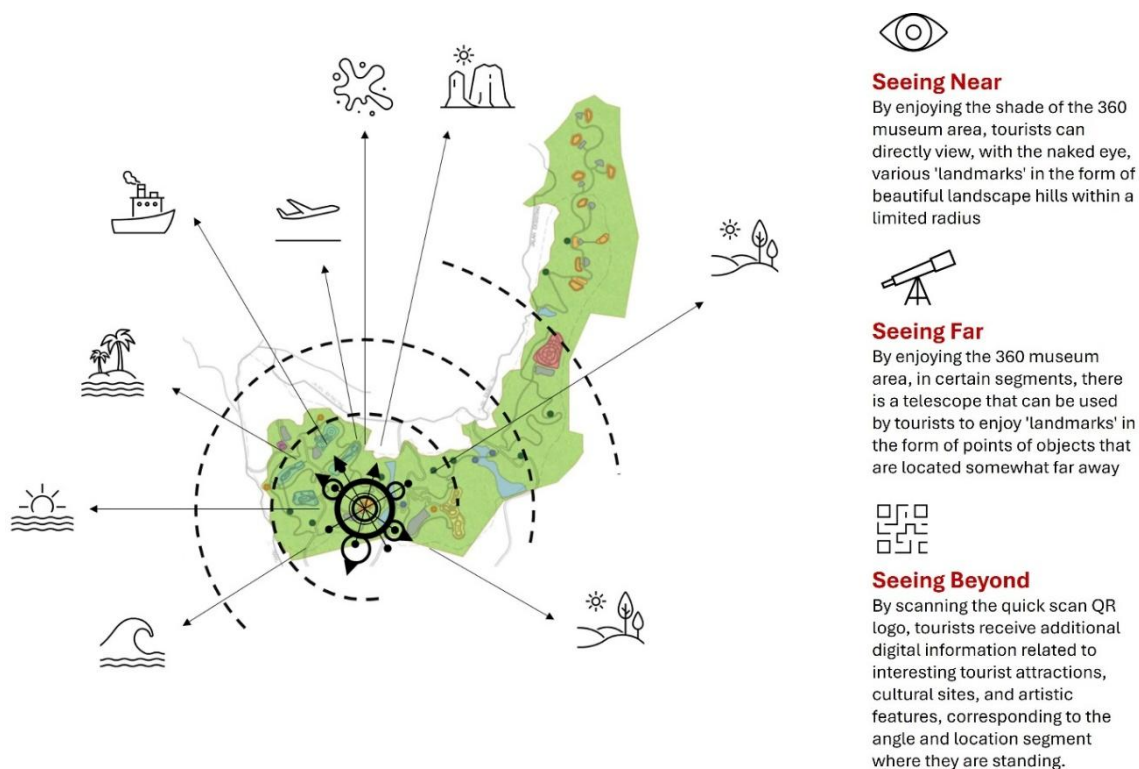


Figure 5. Mapping the Potential of Nature-Based Experiences

The proposed architectural intervention follows the principle of shade, opting for a minimal built form—a roof structure without enclosing walls—to maintain openness and environmental integration. Given the site's panoramic qualities, the design adopts a radial configuration, reinforcing spatial continuity in response to 360-degree visual accessibility. This approach ensures unobstructed sightlines while emphasizing organic spatial transitions that align with the terrain. Additionally, the materiality of the structure is deeply rooted in local traditions, utilizing bamboo-based design to achieve sustainability and cultural resonance. Bamboo serves as both a functional and symbolic element, reflecting vernacular construction techniques while enabling lightweight and flexible spatial compositions.

To further enhance adaptability, the design incorporates void spaces that allow for flexible event programming, cultural exhibitions, and temporary installations. By preserving spatial openness, the intervention remains responsive to diverse communal activities while reinforcing the immersive qualities of Labuan Bajo's natural setting. The project bridges traditional and contemporary architectural perspectives, integrating digital augmentation as an informative and interactive component that enhances cultural engagement without physically altering the landscape. Figure 6 shows the thought process in the preparation of nature-based architectural designs.

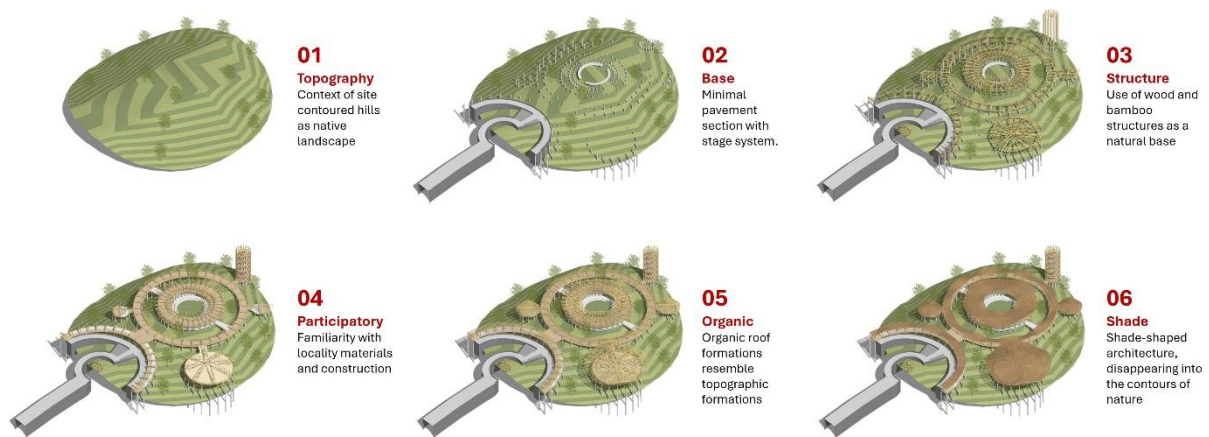


Figure 6. Design Process Diagram

The force-based approach ensures that landmark architecture in Labuan Bajo emerges as an extension of its surroundings avoiding an imposed construct. The project highlights the synthesis of landscape, sustainability, and digital connectivity, fostering an architectural identity that resonates with both environmental and cultural narratives. Through adaptable configurations and site-sensitive design strategies, the intervention proposes a new paradigm for landmark architecture—where built forms harmonize with the forces that shape them. Figure 7 shows the idea of programming in design.



Figure 7. Design Programming Diagram

Nature First Design Reflection

Blurring the Boundaries: Architecture as an Extension of the Landscape

Architectural interventions in natural landscapes often struggle with the tension between built structures and the environment. Traditional landmark designs frequently impose rigid, isolated forms onto terrain, disrupting the organic continuity of the space. Landscape-based architecture offers an alternative approach that conceives built forms as extensions of their surroundings, fostering seamless integration with the environment. This paradigm

emphasizes architectural dissolution into the land, enhancing the existing topographical and ecological features instead of creating visual competition.

In regions such as Labuan Bajo, where hills and coastal vistas define the visual and experiential identity of the site, architecture must respond dynamically to its setting. Recognizing the landscape as an active force allows designers to create interventions that enhance spatial harmony. Instead of overpowering the terrain, architectural compositions should follow its contours, using materiality and form to reinforce the natural flow of space and maintain spatial coherence. Such an approach creates structures that appear organic, emerging naturally from their environment instead of being externally imposed. Figure 8 illustrates the formations shaped by the natural topography.

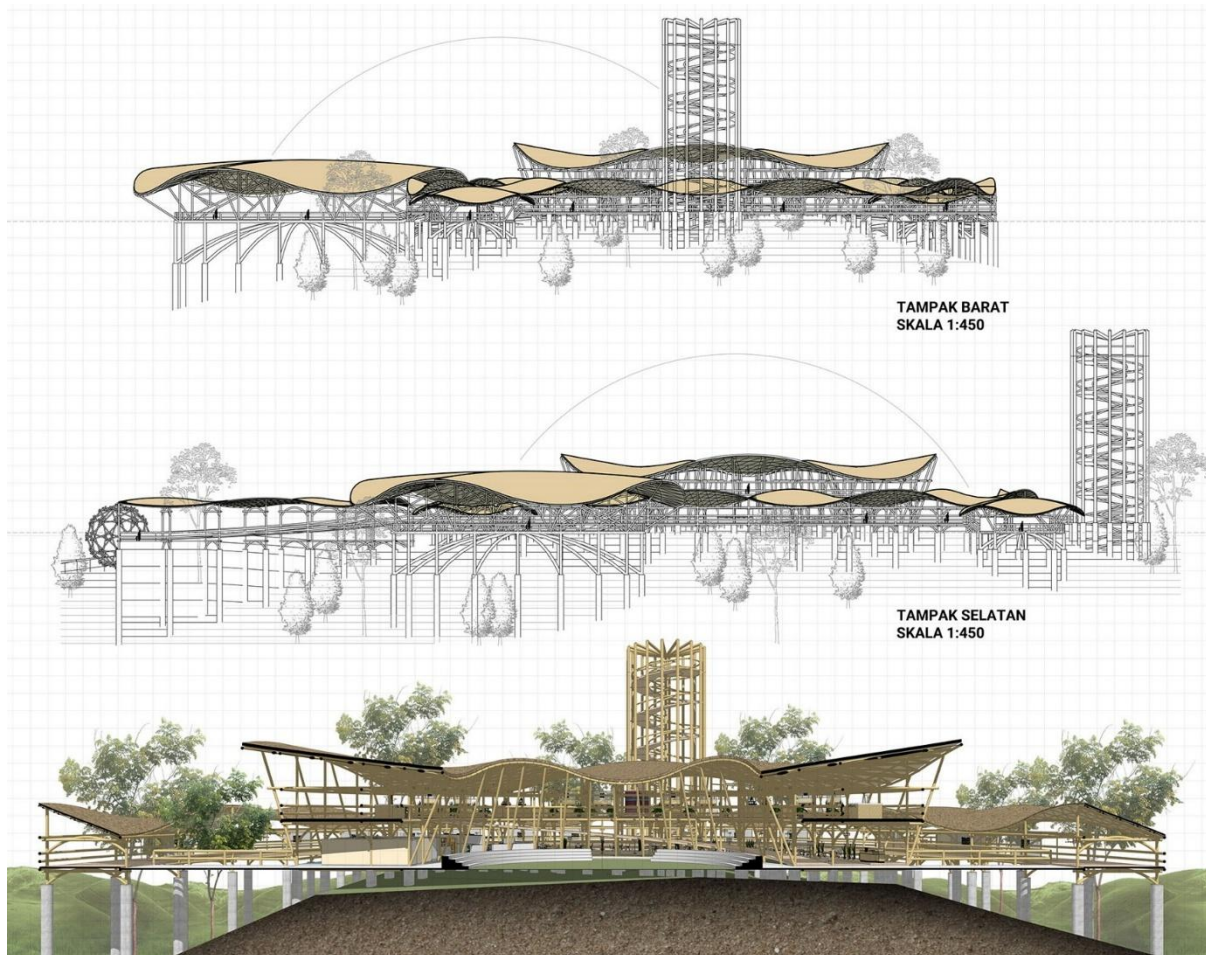


Figure 8. Organic Design Blends with Natural Topography

This perspective aligns with the concept of contextual responsiveness, where architecture evolves as a reflection of its surroundings. By allowing the land to dictate the framework of design, architects ensure that their interventions remain environmentally sensitive and culturally relevant. The physical attributes of the terrain guide spatial configurations, ensuring that built structures remain adaptable and immersive avoiding static and detached. Ultimately, this approach fosters a stronger relationship between architecture and nature, blurring the boundaries between what is constructed and what naturally exists.

Forces in Process: Insights from Design Framework

Plowright's force-based framework provides a structured methodology for analyzing the dynamic interactions between design and environmental, social, and spatial forces. Instead of focusing solely on material composition or aesthetic appearance, this approach emphasizes the underlying cognitive structures that shape architectural interventions. In this model, architecture is understood as a response to multiple forces—each influencing spatial organization, adaptability, and user experience.

Environmental forces remain a central component of this framework, influencing how materials, structural systems, and spatial arrangements respond to ecological conditions. In sites such as Labuan Bajo, where coastal

breezes, topographical gradients, and energy constraints shape architectural decisions, designers must adopt strategies that align with these contextual forces. Plowright's framework shifts the perspective on nature, framing environmental elements as guiding principles that shape architectural adaptability and integration. This approach ensures that built forms respond dynamically to their surroundings, avoiding intrusive interventions. Figure 9 illustrates the application of force-based thinking in design.

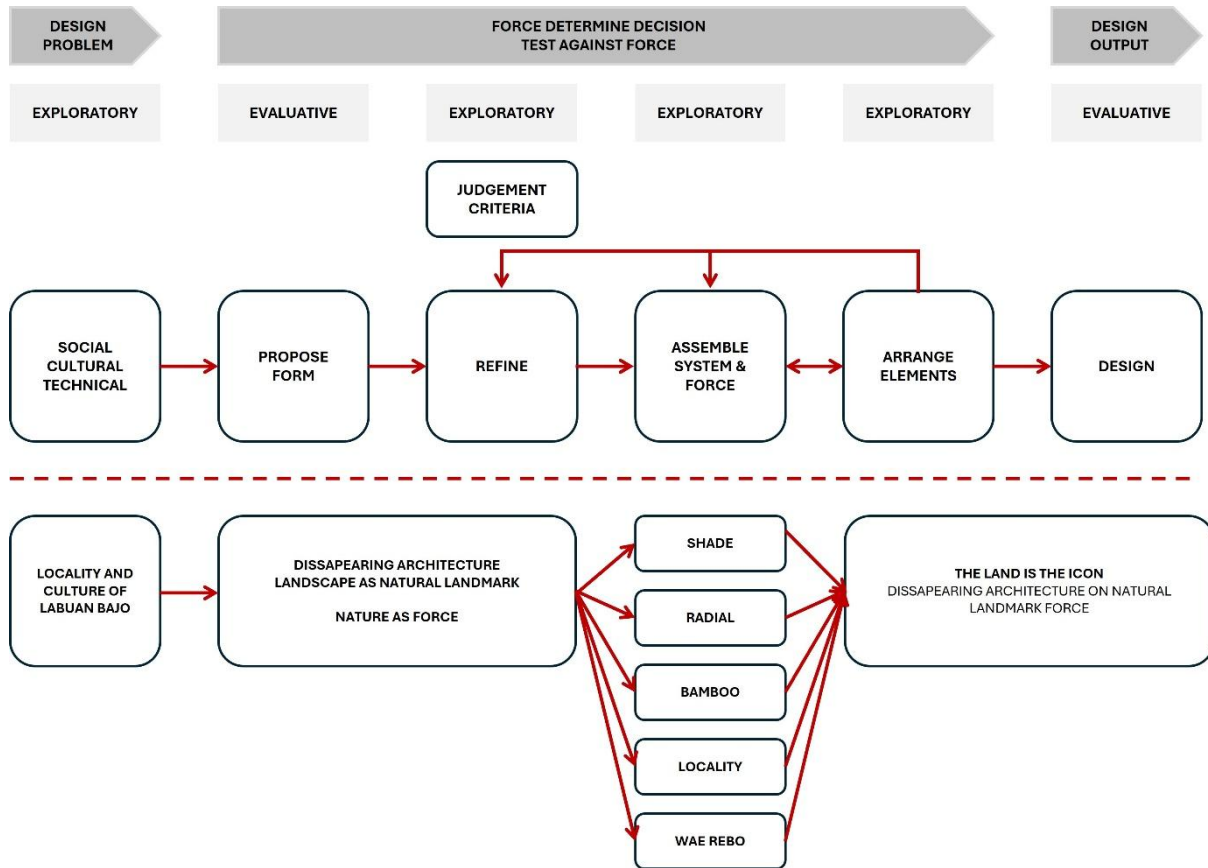


Figure 9. Design Framework Based on Force from Nature and Locality

Beyond environmental considerations, social forces also shape the architectural narrative. Spaces must accommodate communal activities, cultural interactions, and evolving societal needs. In Labuan Bajo, where tourism and local traditions converge, architecture must maintain flexibility while fostering cultural engagement. Digital augmentation—such as QR-based interactions and augmented reality—provides an opportunity to bridge the physical and conceptual realms, allowing visitors to engage with the landscape through both spatial and informational experiences. By integrating these elements within the force-based approach, architecture becomes more than a static structure—it evolves into an interactive, responsive entity.

Building with Purpose: Modular Design for Adaptability and Sustainability

Modular design offers a compelling strategy for achieving adaptability and sustainability within architectural interventions. By utilizing prefabricated, flexible components, modular design enables buildings to adjust to environmental conditions and functional requirements. This approach reduces material waste, enhances efficiency, and aligns with sustainability principles—particularly in regions such as Labuan Bajo, where ecological preservation is paramount. Figure 10 shows the idea of modularization in the form of segment circles.

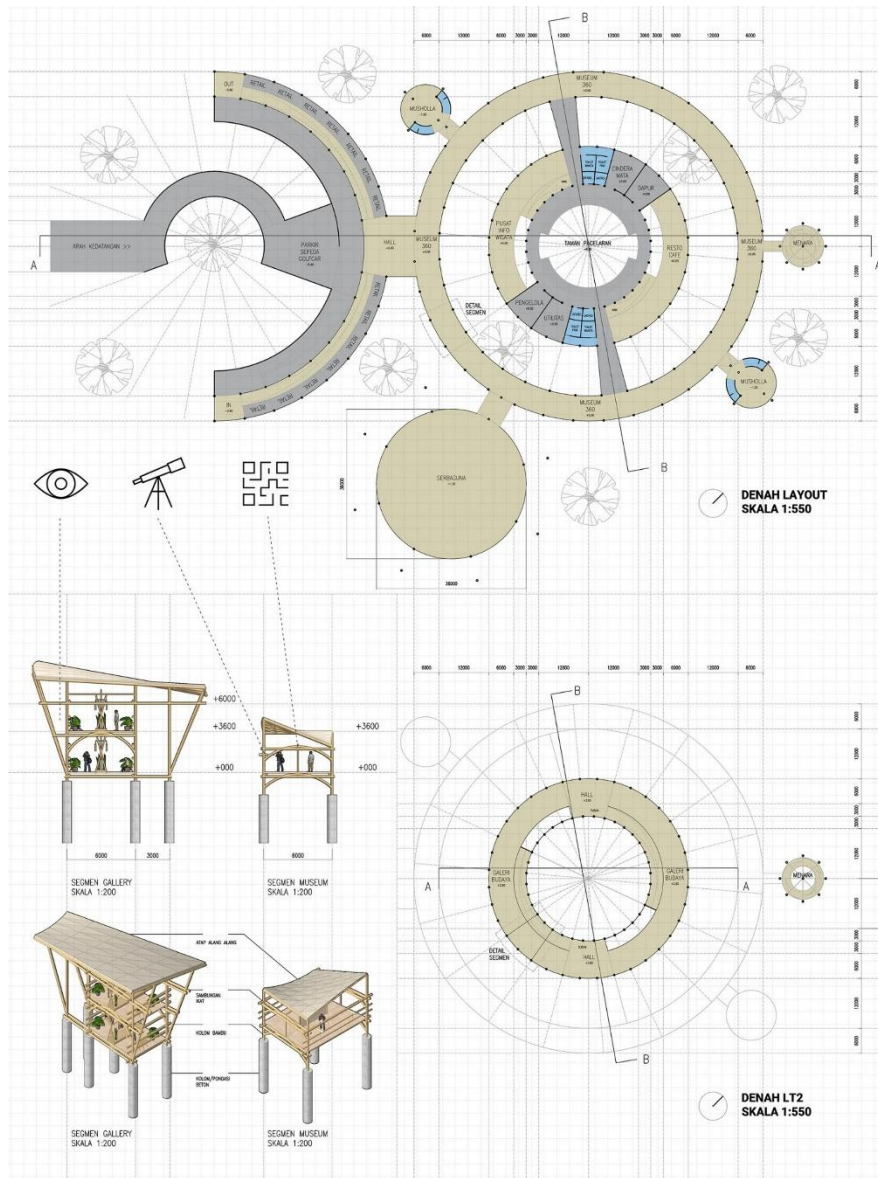


Figure 10. Circle Segments as an Attempt at Modularity

The conceptual design for a landscape-integrated landmark in Labuan Bajo embraces modularity through a roof-only structure, prioritizing shade and openness over enclosure. Given the site's panoramic 360-degree views, the spatial arrangement follows a radial configuration, reinforcing the immersive relationship between the built environment and its surroundings. This allows for uninterrupted sightlines while creating flexible zones for cultural s, communal activities, and temporary installations. Additionally, the use of locally sourced bamboo strengthens ecological integration, ensuring that material choices reflect vernacular construction techniques while maintaining sustainability.

Adaptability remains central to the proposed intervention, ensuring that the space evolves in response to shifting environmental and social needs. By incorporating void spaces, the design fosters an open, multi-use environment that accommodates seasonal events and spontaneous cultural interactions. This reinforces the principle that architectural interventions should remain responsive instead of rigid, adjusting naturally to the forces that shape their existence. Ultimately, the integration of modular, adaptive strategies ensures that architecture within Labuan Bajo is not an imposition upon the land—but rather an extension of it. Figure 11 shows the overall design of nature-like formations, natural materials and construction, open spaces and based on locality culture.



Figure 11. Design Results

Sustainability as Potential Force

The iterative design process has been instrumental in refining the architectural intervention within Labuan Bajo's hills, ensuring that each cycle deepens the connection between built form and environmental forces. By employing a research-by-design methodology, the project has evolved through continuous reflection, responding dynamically to landscape characteristics, modular adaptability, and cultural integration. Early design iterations explored various spatial configurations, assessing how the intervention could dissolve into the terrain without imposing rigid geometries. The force-based framework has provided valuable insights into how architecture interacts with spatial attributes, emphasizing material adaptability and contextual sensitivity. Through each refinement, the project has progressed towards a balanced approach—one that merges local construction techniques with forward-thinking modular strategies.

The integration of architecture with the Labuan Bajo landscape has emphasized the necessity of treating natural elements as foundational forces rather than passive components. The 360-degree panoramic views shaped the radial spatial arrangement, ensuring an immersive experience that does not obstruct visual or environmental continuity. The organic form of the intervention follows the undulating topography, reinforcing a sense of place while allowing for flexibility in spatial use. Additionally, the concept of seeing near, seeing far, and seeing beyond has anchored design decisions, enhancing both physical and digital engagement. This approach recognizes the dual role of architecture: as a tactile, material entity and as an augmented interface that bridges cultural narratives. The integration of bamboo-based construction further aligns with ecological sustainability, demonstrating how vernacular materiality enhances architectural resilience while preserving local identity.

CONCLUSION

This research redefines landmark architecture by positioning it as an extension of the natural landscape, ensuring that built forms integrate seamlessly rather than impose dominance. Through the application of Plowright's force-based framework, the study demonstrates how environmental, spatial, and social forces inform architectural responses, shaping interventions that remain adaptive and contextually responsive. The research-by-design methodology has been instrumental in translating these principles into concrete architectural strategies, refining modular configurations, material selections, and spatial hierarchies that dissolve into the terrain while enhancing ecological and cultural coherence.

The iterative design process played a crucial role in testing and refining solutions that emphasize perceptual fluidity within Labuan Bajo's distinct topography. Modular adaptability and vernacular material integration were explored to create interventions that evolve with environmental dynamics, reinforcing the concept of seeing near, seeing far, and seeing beyond. Digital augmentation further supported this approach, offering visualization tools that enrich spatial narratives without physical alterations.

Beyond Labuan Bajo, this methodology provides a framework for designing in ecologically sensitive landscapes worldwide. Hillside developments, coastal landmarks, and remote rural sites can benefit from force-based design strategies that treat nature as an active design force, shaping interventions that enhance rather than disrupt their surroundings. The study also underscores the role of digital augmentation in fostering deeper visitor engagement, broadening opportunities for cultural storytelling and interactive site interpretation. By shifting the paradigm of landmark architecture toward integration and adaptability, this research proposes a design philosophy rooted in

ecological sensitivity and contextual harmony. Moving away from monumental structures that visually compete with their settings, it advocates for built forms that emerge from their environments, enriching spatial experience and reinforcing connections between architecture, nature, and cultural identity.

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