MODULAR FORM AND COLLECTIVE NORM: TEMPORAL STRATEGIES FOR THE KAMPUNG TRANSFORMATION

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ABSTRACT

This paper rethinks shared housing strategies as a response to social, material, and temporal sustainability in architecture, focusing on modularity and temporality within the context of Indonesian kampungs. While existing discourse explores co-living through social and economic lenses, a critical research gap remains in formulating design-led reflections that can strategically bridge technical modularity with the fluid, organic dwelling practices of local settlements. Employing a qualitative Research through Design approach, the study analyses the architectural competition process as a reflective framework for knowledge production, using the theme of babarengan *("togetherness") as a prototype for collective living. The study identifies three key conceptual findings: kampung-based togetherness as the foundation for spatial programming, modularity as a strategy for material and dimensional articulation, and temporality as an approach to spatial limitations that enables the integration of private and public functions. By utilizing a stilt "stage" system and lightweight industrial materials (such as hollow steel and GRC panels), the design rearticulates local values into an adaptive, contemporary prototype that facilitates participatory construction. Despite limitations regarding site-specific social characteristics and local regulations, the findings demonstrate that shared housing provides an operationalized, future-oriented model that addresses resource constraints and social dynamics through a dynamic, rather than static, architectural process.*

Keywords: *Co-living, Collectivity, Kampung, Modularity, Temporality*

INTRODUCTION

Rethinking the Spatial of Cohabitation

This paper rethinks shared housing strategies as a response to social, material, and temporal sustainability in architecture, focusing on modularity and temporality within the context of Indonesian kampungs. As urban centers globally confront the dual pressures of land scarcity and shifting residential lifestyles, co-living has transitioned from a niche social experiment to a fundamental response to

architectural sustainability. This study focuses on social, material, and temporal sustainability within the Indonesian kampung, positioning these settlements as fluid spatial models where boundaries between private and public space are constantly negotiated through everyday dwelling practices. The urgency of this research lies in the failure of static housing models to address the increasingly dynamic residential needs and resource limitations of modern urbanity.

Modularity is redefined here not merely as a spatial arrangement, but as a flexible architectural product—one that can be assembled, dismantled, and adjusted rather than remaining a static monument (Schneider & Till, 2007). In an era of rapid lifestyle changes, such flexibility is the key to answering the challenges of limited land and resources. The strategy of "building without tearing down" (Wallance, 2021) establishes a paradigm for material sustainability, utilizing construction technologies that prioritize efficiency, replication, and adaptation (Redyantanu & Sunaryo, 2024). When applied to the kampung, this modularity intersects with existing participatory living systems, allowing architecture to function as a community-driven process (Perbawanti et al., 2025).

Within this framework, architectural design serves as a medium for contextual reinterpretation rather than just a fixed solution (Plowright, 2014). Cohabitation is understood as a fundamental rearrangement of social relations, requiring the collective negotiation of private and public thresholds (Karadima & Bofylatos, 2019). Notably, these forms of collectivity are often non-homogeneous, occasionally manifesting as "collective individualization" where personal autonomy is preserved within a shared structure (Zhuang, 2024).

Despite significant social and economic discourse on cohabitation, a critical disconnect remains in translating these theories into operational architectural strategies that bridge technical modularity with the organic, fluid rhythms of local contexts. Existing research frequently overlooks how design-led reflection can serve as practical knowledge to integrate modular systems with everyday dwelling practices. This study addresses this void by reflecting on the design process as a direct response to adaptive housing needs. The novelty of this research lies in the formulation of a design-led framework that rearticulates the local value of *babarengan* (togetherness) into a technically efficient and contextually attuned modular system. By positioning architecture as a dynamic process, this research provides an operationalized model for sustainable and participatory development in dense urban settlements.

THEORY

Co-living as a Sustainability-based Spatial Redefinition

The current paradigm in residential architecture shifts toward understanding living space as a dynamic, adaptive, and sustainability-based entity. Co-living has emerged as a primary housing strategy to address the global pressures of urbanization, land scarcity, and evolving lifestyles. Within current scholarship, it is frequently framed as a common living pattern for urban communities seeking efficiency and

togetherness (Ramawangsa et al., 2025), and as a significant trend among the millennial generation who prioritize connectivity and shared experiences (Indah & Wardono, 2021). In the post-pandemic 'new-normal' era, this paradigm has further evolved into environmentally friendly co-housing models for low-income communities (Budiani et al., 2026), necessitating a deeper understanding of the behavioral social dynamics that govern spatial gathering patterns (Khaerunisa, 2025).

However, a critical comparison of these positions reveals a conceptual friction within existing frameworks. On one hand, architectural models often treat sharing as a highly structured mechanism. In contrast, cohabitation is understood as a broader rearrangement of spatial and social relations where boundaries between private and public are negotiated collectively (Karadima & Bofylatos, 2019), frequently positioned as a strategic response to limited resources and social isolation (Corfe, 2019). Yet, the forms of collectivity that emerge are often heterogeneous and paradoxical. For instance, while the digital generation seeks social interaction without sacrificing privacy (Von Zumbusch & Lalicic, 2020), this desire directly intersects with the broader idea that cohabitation is a rearrangement of spatial parameters, leading to a state of "collective individualization" where occupants maintain rigid personal autonomy within a common structure (Karadima & Bofylatos, 2019; Misovic, 2022; Zhuang, 2024).

This dynamic nature of living space is further articulated through the concept of the "growing house," which emphasizes that architecture is a continuous process of transformation rather than a final product (Wainer et al., 2016). In the Indonesian context, this incremental approach successfully integrates social, cultural, and ecological dimensions (Widyarthara et al., 2020), which is highly consistent with recent strategies aimed at adapting traditional Indonesian residential forms to enhance the sustainability and resilience of modern buildings (Sujak & Rofiq, 2026). However, an analytical tension remains between institutional housing design and user realities: while public preference for landed housing remains dominant, there is an increasing demand for spatial flexibility (Ramadhani, 2021). Materially, the house can be reimagined as a set of component layers that can be separated and rearranged over time (Brand, 1995; Darmawan & Lubis, 2023; Duffy, 1990), creating clear opportunities for modular systems that respond to changing resident needs. This technical flexibility finds its natural social counterpart in kampung togetherness, where everyday informal practices transform domestic spaces into active arenas for social interaction and collective production (Musda et al., 2023; Yumnahanin & Rukayah, 2023).

Despite the extensive literature exploring cohabitation through social and economic lenses, a critical research gap remains in translating these descriptive observations into operational architectural strategies. Existing research frequently frames co-living through user behavior or market demand, yet it consistently overlooks how design-led reflection can serve as practical knowledge to bridge technical modularity with the organic temporality of local contexts. Specifically, there is a lack of integrated frameworks demonstrating how technical modular systems can be practically embedded within the fluid, informal dwelling practices of the Indonesian kampung to create truly adaptive and participatory housing.

Consequently, this study seeks to address this disconnection by formulating design reflections that move beyond theoretical abstraction toward applicable, sustainable living models.

Modularity and Temporality as Dimensions of Kampung Sustainability

Sustainability in architecture transcends technical energy metrics, deeply involving the social and temporal dimensions of living space (Sassi, 2006). In the context of the Indonesian kampung, sustainability functions as an adaptive process that facilitates spatial transformation while preserving fundamental collective identity. This necessitates efficient, non-disruptive construction strategies that allow for gradual interventions without destabilizing community life (Silas & Setyawan, 2000; Silva, 2020; Yatmo et al., 2021). Within this framework, modularity serves as the primary material sustainability strategy, enabling the flexible assembly and disassembly of residential units to respond to localized socio-economic conditions (Aldi et al., 2023). Rather than a purely technical fix, modularity reflects a context-specific architectural response, where housing flexibility allows domestic environments to adapt to shifting ecological and social dynamics (Indarti, 2020; Redyantanu, 2023).

The evolution of flexible housing has long addressed the challenges of changing lifestyles and the inherent need for "unstable" or adaptable space (Schneider & Till, 2007). However, such flexibility introduces significant complexities regarding the design, construction, and long-term management of shared communal areas (Özinal et al., 2021). To resolve these tensions, temporality must be employed as a critical analytical lens to reframe co-living as a dynamic, negotiable system rather than a static housing product (Dinardo & Coppola, 2023). Temporality facilitates temporal sustainability by accommodating the life cycles of inhabitants and organic social transformations within the kampung context. In this specific application, modularity transcends its role as a construction strategy to become a social sustainability tool—a participatory medium for building collectively and ensuring that architecture grows alongside its community (Zheng et al., 2020).

While isolated studies have explored modularity as a technical tool and temporality as a social phenomenon, a critical research gap persists in formulating both as an integrated, practical design reflection. Current discourse frequently treats these dimensions as separate entities, failing to provide a cohesive framework that can be operationalized within the kampung in an adaptive and sustainable manner. This study addresses this disconnect by reframing cohabitation not merely as a physical product, but as an organic process of transformation that accommodates seasonal activities and residents' shifting needs (Dinardo & Coppola, 2023). Finally, the synthesis of modular material strategies and temporal operational logic offers a future-oriented model for cohabitation that remains ecologically responsible and socially grounded in existing community solidarity.

RESEARCH METHODS

This research utilizes a reflective, qualitative approach, positioning the design process as a systematic medium for exploration and knowledge production where design serves as a process for a deep understanding of spatial, material, and social ideas (Groat & Wang, 2013). Within this framework, Research through Design (RtD) serves as the methodological foundation, employing visual experimentation and spatial programming carried out through an iterative process open to interpretation (Till, 2012; Verbeke, 2013). This iteration is essential for testing and revising design hypotheses, enabling the emergence of nonlinear, contextually grounded understandings (Lucas, 2016). Theoretical reflection is integral to this method, requiring researcher-designers to actively critique design decisions within the established frameworks of modularity and temporality theories (Schön, 1983). To manage potential bias arising from the author's dual role as both the primary designer and the researcher, a reflexive framework is applied where the design is treated as a testable object of study rather than personal expression.

The 2021 *Sayembara Naung* competition entry serves as the primary research vehicle (APTARI, 2021), chosen because it provides an experimental laboratory context relatively free of commercial constraints, allowing for a radical and reflective exploration of ideas. The selection is justified by the competition's rigorous Term of Reference (TOR), which imposes specific technical and economic parameters for sustainable housing in dense urban kampungs. These constraints include a narrow 4 x 12.5m site in Bandung without a building setback (GSB), a strict budget limit of 50 million rupiahs for the minimum module, and a mandate to accommodate two families consisting of 7–8 people. Furthermore, the TOR requires the use of steel for the primary structure and cement board panels for walls and floors to facilitate a "growing house" (*rumah tumbuh*) concept that can be expanded vertically up to 100m^2 This context forces a design response that is technically precise yet socially responsive to the needs of low-income residents (MBR).

To ensure operational clarity and replicability, the design is analyzed through a structured five-layer dissection—Skin (outer form), Space Plan (settings), Structure (construction), Services (infrastructure), and Site (context)—treating architectural notions as functional components (Brand, 1995; Duffy, 1990). Data is derived directly from design artifacts mandated by the competition, such as scaled floor plans (1:50), principal sections, and isometric exploded structures (1:100). These artifacts are qualitatively analyzed to determine how they respond to space flexibility and the social dynamics of "togetherness" (*babarengan*) within the kampung. The process involves iterative reprogramming of space based on daily rhythms and testing modularity as a constructive strategy. Validity is ensured by cross-referencing design iterations against the competition's sustainability criteria and green building concepts, such as natural lighting and low artificial energy needs. Figure 1 shows the design process as an integration of the research process.

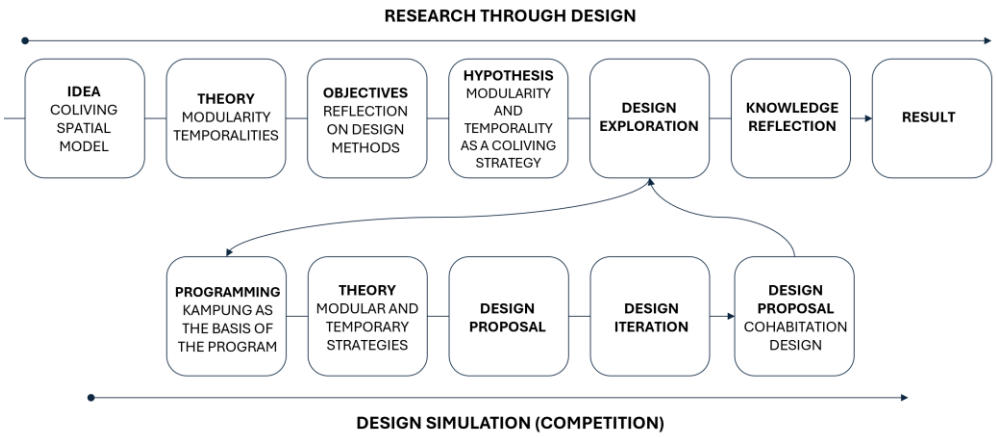


Figure 1. Procedural Framework: Synergizing Research through Design (RtD) with Five-Layer Architectural Dissection for Knowledge Production

To establish a rigorous empirical baseline for the cultural concept of *babarengan* (togetherness), the RtD framework utilizes qualitative empirical inputs derived from digital field documentation and spatial mapping of everyday dwelling practices in dense urban settlements. Rather than treating *babarengan* as an abstract or romanticized design motif, this study treats local spatial habits—specifically "domestic spill-over" behaviors into community alleys—as primary, observable design data. By cross-referencing these empirical field observations with the strict geometric and budgetary constraints of the competition's Terms of Reference (TOR), the iterative design process functions as a method of participatory architectural validation. The design configurations are evaluated based on how effectively the structural grid codifies these documented ethnographic actions into negotiable spatial thresholds, thereby bridging empirical spatial reality with modular design synthesis.

While contemporary residential architecture has increasingly turned into co-living models to solve urban density crises, theoretical polarization persists. On one hand, mainstream co-living discourse frames spatial sharing through commercial efficiency or generational lifestyle preferences, often leading to instances of 'collective individualization' where privacy remains rigidly cordoned off. On the other hand, traditional informal housing studies treat sharing as a purely social, non-technical survival mechanism rooted in community solidarity. This paper bridges this dialectic by positioning architectural modularity not as a static architectural monument, but as a physical framework capable of internalizing the fluid, temporal thresholds of everyday cohabitation.

RESULTS AND DISCUSSION

Collectivity Design Exploration: Design Prototype as Research Artifacts

The physical parameters of the architectural proposal developed for the 2021 Sayembara Naung Competition are bounded by a highly constrained 4x12.5m plot located in Kiaracondong, Bandung. The primary spatial arrangement is organized around an elevated stilt structural matrix. The ground level is configured as an open, column-free communal base that directly integrates the adjacent urban alley into the building footprint. This lowermost zone aggregates shared infrastructure, including communal kitchens, sanitation facilities, laundry stations, and micro-agricultural planting zones. Figure 2 details this spatial distribution, illustrating the consolidation of public and utility functions on the ground floor to maximize communal area within the narrow boundaries.



Figure 2. Spatial Programming: Operationalizing Negotiated Thresholds through a Consolidated Communal Base on a Constrained 4 x 12.5m Plot

The upper residential layer comprises modular, adaptable private volumes constructed entirely from dry industrial materials, specifically hollow steel/IWF sections and lightweight glass fiber reinforced cement (GRC) board panels. The dimensional layout of these enclosures is aligned with standardized factory panel

dimensions, allowing the building envelope to expand incrementally from a baseline footprint of 50m^2 up to a maximum gross floor area of 100m^2. Internal spatial boundaries within this upper zone are flexible, utilizing lightweight sliding and folding partitions to convert open living layouts into private bedrooms as needed. Figure 3 demonstrates the structural separation between the lower concrete foundation piers and the upper skeletal grid, detailing the geometric schema required for independent manual assembly within narrow urban corridors.



Figure 3. Structural Logic: The Stilt "Stage" System as a Core Finding and Catalyst for Social Sustainability and Vertical Expansion Potential

Environmental performance is regulated through the building's material porosity. The outer skin incorporates translucent polycarbonate cladding and perforated steel sheeting to facilitate passive cross-ventilation and maximize daylight penetration. This semi-permeable envelope reduces reliance on mechanical climate control and artificial lighting within high-density conditions. Figure 4 maps the solar and wind pathways through the facade mesh, illustrating the relationship between the interior modular volumes and the immediate microclimate.

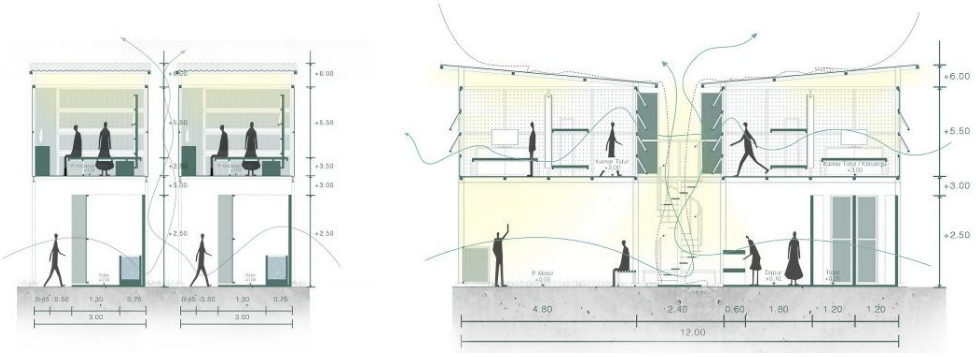


Figure 4. Performance-driven Envelope: Achieving Material Sustainability via Porous Sheaths to Facilitate Natural Ventilation in High-density Contexts

The analysis of these results indicates that rearticulating local values into a technical system requires moving beyond static housing models. The prototype's stilt system serves as a spatial translation of *babarengan* (togetherness), where shared domesticity is not just a social habit but a structural necessity (Perbawanti et al., 2025). By positioning the alley as an active base, the design provides evidence that architecture can strengthen local solidarity by providing "negotiated space" for collective production (Musda et al., 2023). This contrasts with standard Southeast Asian urban housing models that often emphasize rigid boundary walls, which can marginalize communal interaction. Figure 5 projects this configuration at a neighborhood scale, detailing how the repeatable modular chassis can adapt to varying terrain steps and layout shifts characteristic of local dense settlements.

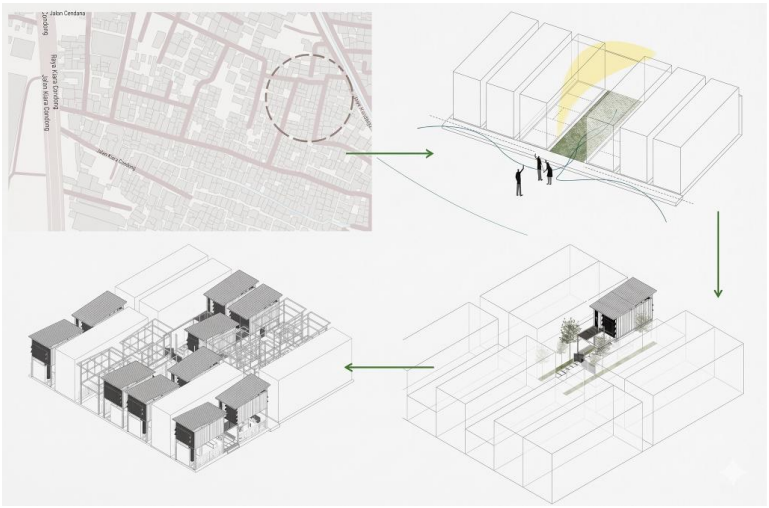


Figure 5. Scalable Prototype: A Modular Framework Demonstrating the Potential for Regional Replicability in Diverse Informal Urban Settlements

Critically, the use of modular "dry" construction addresses the material dimension of sustainability by enabling "building without tearing down" (Wallance, 2021). While conventional construction in kampungs is often hindered by limited resource access, this prototype demonstrates that utilizing lightweight, standard-sized industrial materials allows for participatory and incremental growth (Schneider & Till, 2007). However, a limitation of this modularity is its reliance on the technical capacity of residents to manage steel joints, suggesting that successful implementation requires a simplified technical framework for community-led assembly.

The integration of temporality through flexible furniture and partitions reframes cohabitation as an organic process of transformation rather than a final product (Dinardo and Coppola, 2023). This strategy allows the single 50m^2 footprint to respond to the non-linear life cycles of its inhabitants, such as shifting from a study space to a family room within the same day. This study produces transferable architectural knowledge by showing that sustainable housing in high-density

informal contexts is achieved through a "modular-temporal" nexus, where material efficiency provides the structure and social togetherness dictates the operational logic.

Operationalizing *Babarengan*: Togetherness as a Programming Strategy

The high-density context of Kiaracondong, Bandung, defined by the Sayembara Naung 2021 competition's narrow 4x12.5m plot constraint, serves as a critical laboratory for testing how observed social practices can be systematically translated into functional programming logic. This study identifies that collective domestic habits, such as cooking and gathering in shared alleys, are not merely anecdotal social phenomena but measurable empirical evidence that demands a "negotiated" architectural model. Figure 6 captures this empirical baseline, documenting fluid spatial practices where residents mingle without rigid privacy barriers. By analyzing these documented field observations as spatial parameters, the design configuration moves beyond pure interpretation; it establishes that formalizing "domestic spill-over" through a structural stilt or "stage" system allows architecture to act as a permanent, validated communal forum rather than a static container. This structural codification provides a tangible mechanism for participatory validation, where the physical apparatus of the building directly responds to the verified socio-spatial mechanics of the community.

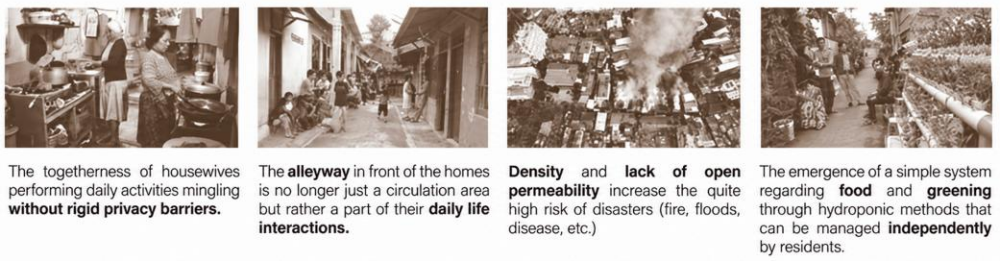


Figure 6. Contextual Baseline: Identification of Fluid Spatial Practices and "Domestic spill-over" as Fundamental Evidence for Adaptive Cohabitation

When positioned against standard Indonesian low-cost housing precedents—specifically the ubiquitous vertical public housing (*Rumah Susun Sederhana Sewa*/Rusunawa) and conventional landed low-income developments (Rumah Swadaya/Landed MBR)—this prototype demonstrates a significant departure from rigid spatial paradigms. Traditional MBR housing precedents typically prioritize highly segmented, fixed private plots bounded by solid masonry walls. While these standard models enforce static spatial security, they inevitably fragment existing community solidarity and lead to the physical marginalization of communal zones within high-density settings like Bandung. In contrast, this proposed prototype operationalizes a ground-floor "communal base" that intentionally removes rigid property thresholds. By treating the urban alley as an active basement floor under an elevated structural stilt matrix, the design successfully provides an alternative model

that treats housing as a flexible socio-spatial process rather than a static container (Wainer et al., 2016). Figure 7 illustrates these comparative spatial principles, demonstrating how the elevated configuration increases shared programmatic areas by up to 50% on a constrained 4x12.5m site while simultaneously improving environmental performance through natural air circulation and water absorption. Rather than replacing local participatory living systems, this model works in tandem with existing community practices—such as collective economy units and hydroponic micro-farming—transforming what would conventionally be a marginalized structural setback into an active ecological and social asset (Perbawanti et al., 2025).

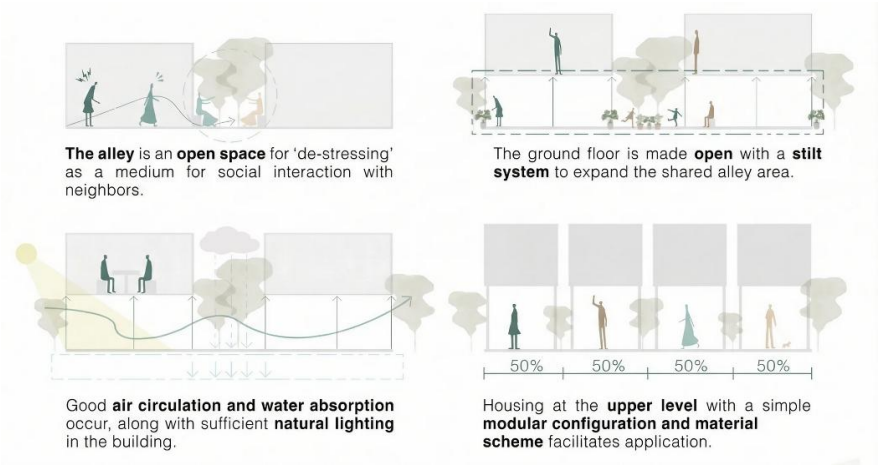


Figure 7. Negotiated Thresholds: Conceptual Spatial Principles for Transforming Marginal Alleys into Active Communal Basement Zones

Modularity as a Spatial and Material Strategy

The discovery regarding modularity in this study transcends simple spatial flexibility, revealing it as a material strategy that operationalizes material sustainability within the restricted 4x12.5m plot of Kiaracondong, Bandung. To satisfy the Sayembara Naung 2021 mandate for a 50-million-rupiah budget, the design action focused on selecting lightweight industrial materials available at local building stores. This design evidence suggests that modularity acts as a social and technological bridge, facilitating participatory development where construction can be managed independently by residents in narrow alleys inaccessible to heavy equipment. The discovered knowledge indicates that treating architecture as an adjustable product rather than a static monument (Schneider & Till, 2007) is essential for high-density informal settlements where resource access is limited. Modular systems in Indonesia have proven highly effective as permanent architectural solutions for localized, efficient construction and post-disaster resilience (Yatmo et al., 2021).

The structural logic is grounded in a "dry" construction system, using Hollow and IWF steel as a primary grid—a requirement specifically dictated by the

competition TOR to ensure vertical extendibility up to 100m^2. These artifacts provide evidence that a flexible spatial framework, assembled via simple bolt or weld systems, provides the necessary backbone for incremental growth without environmental disturbance. Figure 8 illustrates this mapping of materials, detailing how spatial dimensions are strictly defined by the logic of the structural components. This analytical precision is achieved by aligning the design with standard industrial panel sizes, such as GRC (Glass Fiber Reinforced Cement) mandated for floors and partitions. This alignment provides transferable knowledge: by referring to available panel dimensions, the design minimizes material waste and speeds up assembly, operationalizing the urgency of the modular approach as a sustainability method that enables transformation without destructive "tearing down" (Wallance, 2021).



Figure 8. Component-based Materiality: Technical Mapping of Structural Steel Grids Aligned with Standard Industrial Panel Dimensions to Minimize Material Waste

Furthermore, the results demonstrate that the building envelope functions as a performance-driven "porous" facade. The integration of transparent polycarbonate and perforated panels supports natural lighting and cross-ventilation, meeting the TOR's green building criteria for low artificial energy emissions. This material porosity serves as a critical design response to the daily rhythms of the kampung, where the boundaries between private and public are traditionally blurred. Unlike standard rigid housing prototypes in Indonesia, this model discovers that inclusive and replicable construction systems must utilize "ventilative sheaths" to address the specific spatial and ecological challenges of the urban settlement. This synthesis of lightweight steel and modular partitions produces transferable architectural knowledge: sustainable co-living in dense contexts is achieved through a precise relationship between material limitations and spatial articulation.

Temporality as a Response to Private-Public Integration

In the high-density context of Kiaracondong, Bandung, the integration of private and public spaces necessitates a shift from rigid, static boundaries to a functionally negotiable system governed by temporality (Dinardo and Coppola, 2023). The

discovered design knowledge from the Sayembara Naung 2021 entry reveals that treating space as a temporal entity allows architecture to accommodate the non-linear life cycles of its residents. The primary design action involved a vertical division of two distinct layers, providing a structural resolution to the competition's narrow 4x12.5m plot constraint. The discovery here is that a fully public lower layer—hosting communal kitchens and hydroponic areas—functions as a catalyst for social sustainability by formalizing the "domestic spill-over" characteristic of the kampung. This approach addresses critical health and safety challenges, such as air circulation and emergency fire evacuation, by reframing living space as a dynamic, sustainability-based process (Wainer et al., 2016).

The upper layer operates as a semi-public-to-private zone where the design action of replacing permanent walls with lightweight partitions (curtains, folding panels, and sliding shelves) enables high programmatic flexibility. The discovery within this layer is that a single 50m^2 footprint can effectively double its perceived capacity by transitioning functions—shifting from a study space to a family room—based on the time of day. Figure 9 illustrates this temporal thinking, providing evidence of how residential operations adapt through diverse daily activities and social interactions. This research further identifies that furniture plays a crucial analytical role as an operational tool for spatial reconfiguration. Elements such as concealable beds and folding tables allow small footprints to remain functional and airy, representing a highly relevant solution for limited kampung land. By vertically integrating these public and private layers with mobile components, the design offers a residential model that is both technically efficient and emotionally grounded. Figure 10 captures the resulting community atmosphere, where the architecture becomes a living medium for collective togetherness.



Figure 9. Operational Temporality: A Core Finding Illustrating the Shifting Domestic Functions Through Mobile Furniture to Maximize Small-Footprint Capacity



Figure 10. Social Outcome: Atmospheric Rendering of Rearticulated Collective Togetherness (*Babarengan*) within a Responsive Architectural Medium

The core discovery of this study lies in the transformation of Indonesian kampung togetherness from a purely social phenomenon into an operational architectural strategy. By answering the central research question, the prototype demonstrates that a "stage" system combined with temporal spatial programming effectively rearticulates the value of *babarengan* (togetherness) without importing external, rigid housing models. Unlike standard Southeast Asian urban housing that emphasizes fixed boundaries and private plots, this model discovers that sustainability in dense contexts is achieved through continuous negotiation of thresholds through everyday dwelling practices. Practically, this research produces transferable architectural knowledge in the form of a replicable framework for participatory development in resource-constrained environments. The integration of "dry" materials, such as hollow steel and GRC panels, enables residents to directly participate in the construction and adaptation of their own living environments. By utilizing the "alley" as an active communal base, the design offers a tangible, future-oriented model for cohabitation that is technically efficient, ecologically responsible, and socially grounded in existing community solidarity.

When contrasted with standard Indonesian low-cost housing paradigms MBR, which typically utilize rigid property boundary walls that enforce social isolation and marginalize spatial efficiency within confined footprints, this prototype offers an alternative approach. By utilizing the existing urban alley as an active basement floor beneath an elevated stilt matrix, the architectural volume functions as a negotiable resource. However, a notable limitation of this structural translation of *babarengan* is its reliance on the assumption of homogenous community ties; highly fractured or multi-ethnic informal settlements might require finer socio-spatial

negotiations or layout reconfigurations to avoid localized friction regarding shared utility nodes.

CONCLUSIONS

This study addresses the central research question of how design-led reflections can strategically bridge technical modularity with the organic, fluid rhythms of local dwelling practices to create adaptive and participatory housing. By conducting a reflective analysis of the competition: Sayembara Naung 2021 entry, the research demonstrates that a prototype based on a stilt "stage" system, modular material articulation, and temporal spatial programming effectively rearticulates the Indonesian value of *babarengan* (togetherness) into an operational architectural strategy. The findings identify three critical pillars for co-living in dense urban kampungs: utilizing local social norms as the foundation for spatial programming, employing modularity for material efficiency, and utilizing temporality to negotiate the blurred boundaries between private and public functions. At the end, this answer was reached through a systematic five-layer dissection of the design process, proving that shared housing can function as a dynamic process rather than a static product.

Despite the extensive literature exploring cohabitation through social and economic lenses, a critical research gap remains in translating these observations into operational architectural strategies that bridge technical modularity with the organic, fluid rhythms of local dwelling practices. Existing research frequently frames co-living through user behavior or market demand, yet it overlooks how design-led reflection can generate the practical knowledge required to rearticulate cultural values; specifically, the Indonesian concept of *babarengan* (togetherness) into a technically efficient and contextually attuned modular system. Specifically, there is a lack of integrated frameworks demonstrating how a synthesis of social, material, and temporal sustainability can be practically embedded within the informal dwelling practices of the urban kampung to create truly adaptive and participatory housing.

The operational implications of this modular-temporal model suggest a scalable methodology for the deployment of affordable housing frameworks tailored to low-income populations (MBR). By utilizing dry assembly methods and off-the-shelf industrial components, the model establishes an operational blueprint for community-led construction in resource-constrained environments. However, a critical limitation of this framework lies in its dependence on specific socio-cultural dynamics. Translating *babarengan* into a spatial strategy presumes a baseline of organic community consensus and shared domestic labor. In heterogeneous, rapidly shifting, or multi-ethnic urban settlements, these collective spatial thresholds may experience social friction, requiring localized alterations to the open ground-floor program to protect individual security and privacy. Furthermore, local building regularizations and property boundary laws present structural challenges to the implementation of zero-setback, alley-integrated typologies. Consequently, future research must move toward empirical testing of the long-term material durability of

steel-to-GRC joints under humid tropical conditions and mapping user responses to shared utilities over extended cycles. Further iterations should investigate the integration of recycled local materials and simplified digital fabrication templates to expand the adaptability of the prototype across diverse informal landscapes.

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