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THE IMPACT OF LOCATION ON THRESHOLD SPACE ARCHITECTURAL CHARACTER: STUDY OF EGODA UYANA, SRI LANKA

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ABSTRACT

The Street-front threshold spaces constitute a critical architectural interface between private domestic interiors and public streets in lower–middle-income suburban settlements. While existing research frequently emphasizes their social and behavioural implications, limited attention has been given to their measurable physical configuration as architectural systems. This study examines the impact of location on threshold space architectural character in Egoda Uyana, Sri Lanka, with the aim of identifying design parameters that are applicable to tropical suburban settlement contexts. Using systematic field documentation, measured drawings, sectional analysis, typological classification, and spatial coding, the research identifies key location- identified parameters including accessibility and connectivity, functionality, territoriality, and threshold character- identified parameters including roof projection, material and edge treatment, permeability, and plinth level differentiation. The findings demonstrate that threshold character varies significantly according to spatial location within the street network. Linear street segments typically sustain modest semi-open transitional spaces that reinforce frontage continuity, whereas intersection nodes generate more articulated threshold configurations due to increased connectivity and multidirectional visibility. Progressive enclosure through high boundary walls and solid materials transforms transitional interfaces into defensive edges, disrupting spatial layering and environmental responsiveness. By studying the relationship between the location of the house threshold in a settlement and the threshold character, the study contributes design-based guidelines that reposition threshold spaces as measurable architectural infrastructures rather than residual margins. The design parameters offer design implications for housing design guidelines and incremental development strategies in lower–middle-income suburban settlements within tropical regions.

Keywords: *Architectural elements; Incremental housing; Morphology; Street-front interface; Threshold space; Tropical settlements*

1. INTRODUCTION

The suburban settlements in many South Asian cities are shaped by plot-based ownership structures, and gradual architectural transformation. In these environments, the street-facing frontage becomes a crucial spatial mediator between domestic life and public

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circulation. The phrase ‘threshold’ refers to the ambiguity between opening and closure. ‘Space’ refers to architectural dimensions as determined by the physical experience of a person in motion and perception. So, the threshold spaces act as an in-between space between the private and public realm and balance the interrelationship between these two realms. So, threshold spaces mainly provide three functions such as separation, connection and communication (Gunathillaka & Coorey, 2014). This threshold space has different ‘space-light’ values, and the extended threshold space represents both internal and external qualities, gradually shifting from one to another (Tzortzi & Saxena, 2024). According to the definition adopted for this research, the threshold space not only acts as a transitional space but also as a territorial demarcation. The street-front threshold space manifested through verandas, semi-open porches, recessed entries, front yards, or boundary transitions such as forms an intermediate zone that negotiates privacy, visibility, and environmental buffering. Within Sri Lanka’s lower–middle-income suburban neighbourhoods, threshold spaces historically functioned as climatically responsive and socially adaptable interfaces. However, contemporary pressures including densification, security concerns, commercialization, and lifestyle shifts have increasingly altered these transitional spaces, often compressing or enclosing them. Despite their importance in shaping the morphological continuity of the street, threshold spaces are frequently treated as secondary architectural elements rather than primary spatial infrastructures. Theoretical discourse in architecture and urban design has long recognized the importance of transitional spaces. Alexander et al. (1977) emphasized the necessity of articulated entrances and spatial gradation between realms. Ashihara (1983) discussed the aesthetic continuity of urban townscape through semi-public interfaces. Hillier and Hanson (1984) demonstrated how spatial configuration affects movement and visibility systems, suggesting that interface conditions significantly influence spatial integration. Boettger (2014) further conceptualized thresholds as structured transitional sequences that shape perception and experience. However, while such scholarship provides conceptual grounding, there remains limited systematic evaluation of threshold spaces as physically measurable architectural systems, particularly within lower–middle-income suburban contexts. Much of the literature prioritizes social performance, leaving morphological and architectural element-based parameters underexplored. The aim of this research is to investigate the impact of location on threshold space architectural character in a suburban settlement context. The study observes different locations of threshold spaces and how they gradually change the architectural character of each place. To reach this aim, the research sets the following objectives: identify threshold types based on the location and architectural characteristics of threshold spaces in a suburban neighbourhood context, and develop a design framework that offers practical implications for housing upgrading policies in a suburban context. The study primarily addresses the identification of the architectural characteristics that make certain thresholds more conducive to an everyday neighbourhood lifestyle. This study is geographically limited to the Egoda Uyana settlements in Moratuwa, focusing on lower-middle-income residential neighbourhoods situated near the New Galle Road and coastal edge. These areas represent a typical suburban residential context in Sri Lanka. The riverfront areas of Egoda Uyana are excluded from the study due to their differing spatial and environmental characteristics. It is characterized by moderate population density, and mixed housing morphologies within an evolving suburban fabric. This focus allows an in-depth study through on-site observation, mapping, and photographic study to understand the lived experience of threshold spaces in each location. The study is

applicable to the Sri Lankan context and may also be applicable to similar contexts in South Asia. However, the findings are not intended to be generalized to the global context.

2. LITERATURE REVIEW: RELATIONSHIP BETWEEN SETTLEMENT LOCATION AND THRESHOLD CHARACTER

2.1 THEORIES BETWEEN SETTLEMENT LOCATION AND THRESHOLD CHARACTER

The concept of the threshold occupies a significant position in architectural theory as a mediator between interior and exterior realms. Alexander et al. (1977) describe transitional spaces as essential components in establishing spatial hierarchy and experiential progression. Rather than abrupt separation, successful architecture incorporates gradation and layering between domains. So, the threshold space has two basic qualities as ambiguity and permeability (Prasetiyo & Fuad 2021). The configuration, openness, and functionality of thresholds are often influenced by the location of houses within the settlement structure, such as intersections, linear streets, or inner clusters. Understanding the relationship between settlement location and threshold character therefore provides an important theoretical basis for interpreting how architectural forms emerge from spatial context. Urban morphological studies suggest that the physical organization of settlements which includes street hierarchy, node positions, and block structures directly influences the form and usage of building frontages (Hillier & Hanson, 1984; Lynch, 1960). Houses located at prominent nodes or intersections typically develop more permeable and socially active thresholds, whereas dwellings located along linear or inward-facing streets tend to exhibit more controlled and privatized threshold configurations. This indicates that the architectural character of thresholds cannot be understood in isolation from the spatial structure of the settlement. The settlement location also influences the functional adaptation of building frontages. Alexander et al. (1977) argue that buildings located along active streets or intersections tend to incorporate semi-public transitional spaces that mediate between private interiors and the public domain. These spaces create opportunities for everyday encounters and contribute to the vitality of neighbourhoods. In contrast, houses positioned along quiet inner streets often prioritize enclosure and domestic privacy, resulting in more rigid boundary treatments such as high walls or fenced edges. From this literature review, it gives a set of parameters like Accessibility and connectivity, functionality, and territoriality to identify certain threshold locations in a settlement.

Table 1: Location Identified parameters

Parameter	Sub parameters	Design parameters	Author
Accessibility and connectivity	Pedestrian linkage Movement patterns Spatial connectivity	Circulation flows, pedestrian networks, street linkages	Gehl (2010); Lefebvre (1991); von Meiss (1990)
Functionality	Daily usage patterns Multipurpose use Work-home interface	Sitting edges, activity spill over zones, flexible frontage use	Gehl (2010); Boettger (2014); Bourdieu (1977)

Parameter	Sub parameters	Design parameters	Author
Territoriality	Personal boundaries Collective boundaries	Plant, furniture placement of frontage	Boettger (2014); Bourdieu (1977)

2.2 THEORETICAL REFERENCES ON THRESHOLD CHARACTER OF HOUSES

Ashihara (1983) extends this argument to the urban scale, suggesting that townscape continuity depends on the articulation of edges and the treatment of semi-public interfaces. The street façade is not merely a vertical boundary but a layered surface that defines the character of urban space. According to Ashihara, the visual continuity of street fronts is often defined by how buildings articulate their edges through verandas, porches, steps, and other transitional elements. These features create a gradual transition between private interiors and public streets, enhancing both spatial coherence and human engagement with the urban environment. Similarly, Rapoport (1982) emphasizes that built environments communicate cultural values through their spatial configuration, particularly at transitional zones. Within configurational theory, Hillier and Hanson (1984) propose that spatial structure influences movement patterns and visibility fields. The interface between dwelling and street becomes critical in determining degrees of spatial integration. Later developments in space syntax theory reinforce the importance of visibility and permeability in shaping spatial systems (Hillier, 1996). In residential contexts, Newman's (1972) defensible space theory suggests that boundary articulation affects territorial control and environmental perception. Although primarily focused on crime prevention, the theory highlights how physical edge conditions shape spatial behaviour. According to Altman and Chemers (1980), territorial behaviour in residential environments is often expressed through physical elements such as fences, steps, and transitional platforms that signal ownership. Gehl (1987) similarly underscores the role of façade articulation and edge activation in sustaining public life. Climate also significantly influences the design and character of threshold spaces. In tropical environments, verandas, shaded platforms, and covered entrances provide protection from sun and rain while simultaneously creating comfortable spaces for outdoor activities. In South Asian housing contexts, Turner (1976) and Bhatt (1994) demonstrate that incremental housing growth frequently modifies street-front conditions. As dwellings expand and with increasing motorization, thresholds are enclosed, extended, or redefined, altering the morphological continuity of the street edge, growing preferences in inward-oriented life, privatized houses reduce visibility and casual contact (Gulati, 2020). Through this literature review, it identifies a set of parameters like climate modifiers, human scale, material and edge treatment, and permeability to identify threshold character in settlements.

Table 2: Threshold determine parameters

Parameter	Sub parameters	Design parameters	Author
Climatic modifiers	Canopies Verandas Overhangs	Shaded edges, transitional comfort zones	Gehl (2010); Boettger (2014)
Human scale	Body-based proportions Eye-level feature	Comfortable distance, micro-scale frontage proportions	Gehl (2010); Von Meiss (1990)

Parameter	Sub parameters	Design parameters	Author
	Street width to height ratio		
Material and edge treatment	Wall height, Gate height Plinths and steps	Porous boundaries, semi-transparent edges, tactile material	Von Meiss (1990); Boettger (2014)
Permeability	Visual permeability Physical access points	Transparent edges, gate openness, through-movement paths	Gehl (2010); Boettger (2014); Bourdieu (1977)

As in Table 1 and 2, these set of parameters align with Tables 3 and 4 of methodology and Table 5 of case study analysis.

3. METHODOLOGY

3.1 IDENTIFICATION AND CLASSIFICATION OF LOCATION IDENTIFIED PARAMETERS

This study adopts a qualitative–quantitative architectural documentation approach to analyse street-front threshold spaces in Egoda Uyana. Field surveys were conducted to document spatial dimensions, boundary treatments, enclosure types, material articulation, and climatic modifiers. Measured drawings, sectional sketches, and photographic mapping were used to ensure accurate spatial recording. The analytical framework categorizes parameters into two primary groups: location identified parameters and threshold determined parameters. Location identified parameters include accessibility and connectivity, functionality, territoriality. These parameters define the spatial structure of the threshold as a volumetric entity. Threshold determine parameters include climatic modifiers, human scale, material and edge treatment, and permeability. These elements determine the permeability and environmental performance of the threshold. Each documented threshold was coded according to these parameters and grouped into typological categories reflecting degrees of openness and enclosure. Comparative analysis across cases enabled the identification of recurring patterns and transformation trends. By isolating physical variables from social and behavioural data, the methodology ensures analytical clarity and strengthens the architectural focus of the study.

Table 3: Methodology for location identified parameters data collection and data analysis

Parameter	Data collection method	Data analysis method	Intended result
Accessibility and connectivity	Mapping, sketching, photographic study	Comparative analysis throughout the day	Find frequently active spaces and the connectivity pattern
Functionality	Activity mapping, lime-lapse photography	Time-activity mapping	Determine the primary functions of the threshold spaces
Territoriality	Observing shared zones, territorial signs	Territorial pattern mapping	Identify collective ownership of the place

Table 4: Methodology for Threshold determine parameters data collection and data analysis

Parameter	Data collection method	Data analysis method	Intended result
Climatic modifiers	Sun-path observation	Microclimate performance	Understand how shading support outdoor use
Human scale	Measuring street-building proportions, sketching	Human scale analysis	Evaluate comfort and engagement potential
Material and edge treatment	Closed-up photography, measured drawings	Edge typology analysis	Identify threshold character and openness
Permeability	Boundary documentation, photographic study for visibility	Permeability mapping and edge treatment	Identify visually opened and closed frontage

Through morphological study, it selected different locations within the settlement and study how the location of threshold can affect the architectural character of that space.

3.2 CASE STUDY SELECTION AND JUSTIFICATION

Egoda Uyana represents a typical lower–middle-income suburban settlement characterized by plot-based housing, gradual extensions, and adaptive façade modifications, and the grid patterns of the road network create various nodes and linear spatial arrangements within the neighbourhood. The original housing units at the coastal edge typically included modest setbacks that generated semi-open transitional areas between the dwelling and the street and the common plot sizes such as 10, 12, 15, 18 perches. Over time, several transformation processes have reshaped these street-facing fronts. Roof extensions have been added to provide climatic protection from heavy monsoon rainfall and tropical sun exposure. Boundary walls have been raised to enhance privacy and security. Metal grills and gates have been installed to regulate permeability while maintaining visibility. In certain cases, threshold spaces have been fully absorbed into enclosed interior rooms. These transformations produce a morphological spectrum ranging from open veranda-based thresholds to fully enclosed street façades. The progressive enclosure of thresholds reflects broader socio-economic and urbanization dynamics. To capture these dynamics, the Egoda Uyana coastal edge old settlement area was selected. According to street hierarchy, for the case studies only suburban residential streets with the width of 20’ were selected for the study. No major or large streets containing commercial or mixed-use characters were observed.

4. CASE STUDY ANALYSIS OF IMPACT OF LOCATION ON THRESHOLD CHARACTER

4.1 LOCATION IDENTIFICATION ANALYSIS

The location identification analysis of street-front threshold spaces in Egoda Uyana reveals a dynamic spectrum of spatial configurations shaped by incremental transformation and plot-based development logic. Threshold morphology is primarily defined by accessibility and connectivity, functionality, frontage continuity, alignment, and volumetric layering between the street edge and interior living spaces.

Figure 1: Selection of nodes

Accessibility and connectivity emerged as defining morphological variables. Documented thresholds ranged from minimal recessed steps of approximately 0.5 meters to extended semi-open verandas exceeding 3 meters in depth. Increased depth created perceptible spatial gradation between the street and interior, reinforcing the transitional logic emphasized in architectural theory (Alexander et al., 1977). Shallow thresholds, by contrast, produced abrupt spatial transitions, compressing the interface into a thin boundary rather than a layered zone. Width-to-depth proportions also influenced spatial perception. Thresholds with balanced proportions generated usable transitional areas capable of accommodating movement, pause, and climatic buffering. Narrow yet deep thresholds tended to function as linear corridors, while wide but shallow thresholds operated as open platforms directly exposed to the street. These morphological distinctions significantly affected the continuity of the street edge. Frontage continuity was another critical morphological attribute. Where adjacent dwellings maintained similar setback distances and semi-open interfaces, a coherent street rhythm emerged. This continuity aligns with Ashihara's (1983) notion of townscape unity, where façade alignment contributes to spatial harmony. However, where enclosure heights and setbacks varied significantly, the street edge became fragmented, disrupting visual rhythm and volumetric cohesion. The behaviour of threshold morphology can be changed according to the location of the threshold, and it affects the architectural character of that certain space, such as a house in a linear street arrangement, a node at a two-road intersection, and a node at a four-road intersection. Alignment patterns further influenced morphological performance. Linear alignment along the street strengthened configurational integration, whereas staggered or irregular building lines produced discontinuity. Within configurational theory, such variations influence spatial connectivity and visual fields (Hillier, 1996; Hillier & Hanson, 1984). Although this study

isolates physical parameters, the morphological variations observed suggest implications for spatial integration and continuity at the settlement scale.

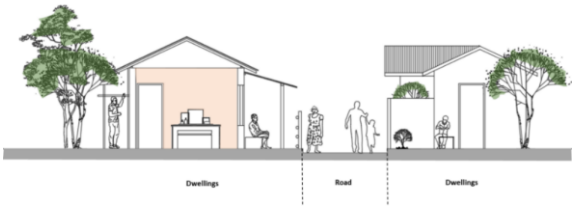

Figure 2: Section of linear arrangement

Table 5: Relation of architecture character and the location of the threshold

Location determine parameter	Spatial location of threshold	Architectural character
Accessibility and connectivity	Linear street arrangement	Maintain direct access to the street with minimal transition depth. The architectural character tends to be open or semi-open, emphasizing continuity between domestic frontage and pedestrian movement along the street
	Node at two-road intersection	Increased connectivity encourages more articulated thresholds with wider openings and greater spatial visibility. Architectural character becomes more interactive and visually permeable due to multidirectional movement.
	Node at four-road intersection	Architectural character tends to incorporate extended verandas, wider entrances, or semi-public edge conditions responding to higher movement intensity.
Functionality	Linear street arrangement	Support domestic transitional functions such as entry, sitting, and climatic buffering. The architectural character remains modest and functionally oriented toward household activities.
	Node at two-road intersection	Support informal social interaction or small household-based activities. Architectural character becomes more active and outward-oriented.
	Node at four-road intersection	Accommodate extended activities such as informal commerce or gathering due to greater exposure. Architectural character becomes spatially expanded and multifunctional.
Frontage continuity	Linear street arrangement	Consistent building setbacks and semi-open thresholds generate rhythmic frontage continuity, producing a coherent street edge.
	Node at two-road intersection	Slight variations in setbacks and façade articulation occur to respond to corner visibility, producing a more dynamic frontage condition.
	Node at four-road intersection	Frontage continuity becomes visually fragmented due to corner articulation and multidirectional exposure, creating a more prominent architectural expression.

Location determine parameter	Spatial location of threshold	Architectural character
Alignment	Linear street arrangement	Buildings tend to follow a uniform street alignment, reinforcing spatial order and continuous threshold rhythm along the street edge.
	Node at two-road intersection	Corner plots frequently introduce angled or dual alignments responding to intersecting street directions, producing more complex façade compositions.
	Node at four-road intersection	Alignment variations become more pronounced as buildings orient toward multiple directions, resulting in highly articulated threshold configurations.

Collectively, these morphological findings demonstrate that threshold spaces are not incidental architectural leftovers but structured volumetric entities whose dimensional properties significantly shape street character according to their specific locations.

4.2 THRESHOLD CHARACTER IDENTIFICATION ANALYSIS

Beyond volumetric morphology, the architectural elements composing threshold spaces determine degrees of permeability, enclosure, environmental performance, and material articulation.

4.2.1 Boundary Articulation and Permeability

Boundary treatment emerged as a central determinant of physical threshold character. Open thresholds lacked vertical barriers, enabling uninterrupted visual and physical continuity between dwelling and street. Semi-open thresholds incorporated low parapet walls, columns, railings, reused steel mesh, or timber slats that defined territory while preserving partial visibility. Enclosed thresholds utilized high masonry walls or solid gates that fully obstructed visual permeability. Low boundary heights, typically between 0.6 and 1.0 meters, maintained spatial dialogue with the street while subtly demarcating private territory. This condition reflects Newman's (1972) concept of territorial definition without complete exclusion. Conversely, boundary heights exceeding 1.5 meters created rigid separation and disrupted transitional layering. Material permeability further refined these conditions. Metal grills, perforated concrete blocks, and timber slats allowed filtered visibility, maintaining connection while providing enclosure. Solid masonry walls eliminated visual exchange entirely, converting the threshold into a defensive barrier rather than a mediating interface. These findings reinforce the theoretical argument that physical permeability is architecturally constructed rather than socially incidental. The degree of openness or enclosure is materially determined through edge articulation.

4.2.2 Roof Projection and Climatic Modulation

In tropical contexts such as Sri Lanka, roof projection functions as a critical climatic modifier. Extended overhangs exceeding 1.2 meters provided shading from intense solar radiation and protection from monsoon rainfall. This climatic buffering reinforced the threshold's role as an intermediate environmental zone. Where roof projections were minimal or absent, threshold usability was reduced due to exposure. This demonstrates that climatic performance is intrinsically tied to architectural configuration. Traditional tropical verandas historically integrated shading as a fundamental design principle (Rapoport, 1982). However, contemporary modifications often reduce roof projection in favour of vertical enclosure. The analysis indicates that climatic adaptability remains a

defining physical attribute of functional thresholds. Architectural interventions that neglect shading compromise the environmental logic of transitional space.

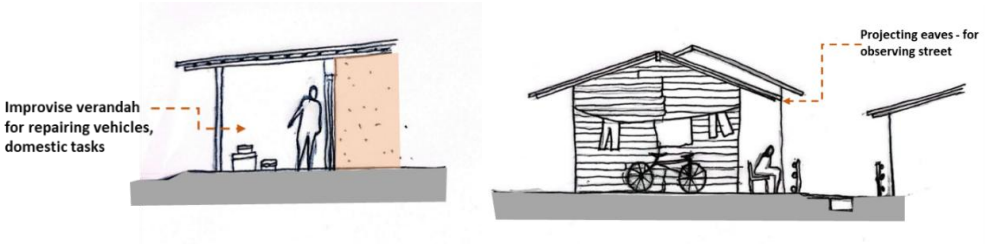

Figure 3: Sections of different roof projections

4.2.3 Plinth height and Level Differentiation

Level differences between the street and threshold space introduce subtle territorial demarcation without eliminating visibility. Raised plinths between 0.3 and 0.6 meters created a spatial cue indicating semi-private status while maintaining visual openness. Excessive elevation, however, increased separation and reduced accessibility. This vertical articulation contributes to the layered hierarchy of transitional space. Rather than forming abrupt vertical barriers, modest level differentiation reinforces gradation between realms.

4.2.4 Material Expression and Surface Treatment

Material selection significantly influenced the perceptual quality of thresholds. Lightweight and permeable materials such as grills and timber slats, maintained openness, whereas reinforced concrete block walls emphasized solidity and permanence. Incremental housing transformations often replaced temporary or semi-permeable elements with permanent masonry structures, signalling a shift toward rigid enclosure. Bhatt (1994) notes that incremental housing frequently moves toward material consolidation over time. The Egoda Uyana case confirms this trajectory, as early semi-open conditions are progressively replaced by permanent enclosures.

5. FINDINGS OF IMPACT OF LOCATION ON THRESHOLD CHARACTER

5.1 TYPOLOGICAL SYNTHESIS OF THRESHOLD CONFIGURATION

Based on the combined location identified analysis and threshold character analysis, four primary threshold typologies were identified: open, semi-open, semi-enclosed, and enclosed. Open thresholds maintain direct spatial continuity with the street, characterized by minimal vertical boundaries and extended roof projection. Semi-open thresholds introduce partial enclosure through low walls or columns while preserving permeability. Semi-enclosed thresholds incorporate grills or screens that regulate visibility. Enclosed thresholds utilize solid walls and gates that eliminate transitional layering. These typologies represent a gradient rather than fixed categories. Incremental transformation frequently shifts thresholds along this continuum. The typological synthesis reveals that enclosure is not binary but progressive. This gradient supports Boettger's (2014) assertion that thresholds operate as transitional sequences rather than static boundaries. The transformation from open to enclose reflects changing priorities in privacy, security, and spatial control.

5.2 TRANSFORMATION LOGIC AND URBANIZATION DYNAMICS

The progressive enclosure observed in Egoda Uyana reflects broader socio-spatial transformations associated with suburban densification. Increased vehicular ownership, economic activities at the household level, and heightened security concerns encourage rigid boundary construction. Turner (1976) argues that design guidelines evolve according to resident priorities and resource availability. In Egoda Uyana, these priorities increasingly favour privacy and territorial control over permeability. However, this transformation alters the morphological continuity of the street. While enclosure enhances individual control, it diminishes spatial layering and frontage rhythm. The street shifts from a sequence of transitional interfaces to a corridor lined with defensive walls. This morphological shift redefines the architectural character of the settlement. Importantly, the study demonstrates that such transformations are often incremental and reversible. Small design decisions such as boundary height adjustment or grill replacement can significantly recalibrate permeability without requiring structural demolition.

5.3 IMPLICATIONS FOR HOUSING UPGRADING AND SUBURBAN DESIGN

The physical parameter framework developed in this study offers practical implications for better house threshold designs in tropical suburban contexts. Rather than eliminating threshold spaces during densification, planners and architects can preserve transitional depth through minimum setback guidelines and semi-permeable boundary standards. Encouraging partial openness, moderate plinth height, and adequate roof projection can maintain climatic buffering while accommodating privacy needs. Urban design regulations that limit excessive boundary height may preserve frontage continuity and townscape coherence. By repositioning threshold spaces as measurable architectural infrastructures, housing interventions can balance security and spatial integration. The framework provides an analytical basis for evaluating existing conditions and guiding incremental modifications.

Table 6: Performance indicators vs. incremental design modifications

Performance indicator	Diagnosed physical limitations	Design response strategy
Accessibility and connectivity	Disconnection from the street due to excessive setbacks, high boundary walls, and misaligned entrances	Maintain direct street linkage, orient entrances toward pedestrian flow; strengthen thresholds near nodes and junctions
Functionality	Insufficient spatial depth or enclosure reducing transitional usability	Provide minimum usable depth; retain semi-open platforms; avoid full enclosure of transitional zones
Territoriality	Rigid solid boundaries creating defensive edges and spatial segregation	Introduce layered edges; replace opaque walls with low or semi-permeable boundaries; use plinth differentiation instead of vertical barriers
Climatic modulation	Inadequate shading and rain protection limiting threshold usability in tropical conditions	Ensure adequate roof overhang; integrate passive shading devices; maintain cross-ventilated semi-open conditions

Performance indicator	Diagnosed physical limitations	Design response strategy
Human scale proportion	Over scaled façade and boundary heights reducing pedestrian comfort	Maintain eye-level boundary articulation; design proportionate frontage elements; avoid monolithic street walls
Material and edge treatment	Heavy masonry enclosure replacing permeable materials	Employ perforated blocks, grills, and layered materials; articulate edges through columns and framed transitions
Permeability	Full-height opaque gates reducing visibility and passive surveillance	Preserve eye-level visual continuity; apply layered transparency; limit fully opaque enclosures

6. CONCLUSIONS

This study establishes a structured location identification and threshold character identification framework for analysing street-front threshold spaces in lower–middle-income suburban settlements. By isolating physical parameters from social variables, the research demonstrates that threshold spaces function as measurable architectural systems defined by accessibility and connectivity, functionality, territoriality, permeability, climatic modulation, and material expression. The present study findings reveal that open and semi-open thresholds sustain transitional layering and environmental buffering at linear housing arrangement and nodes of two roads intersections, while progressive enclosure transforms thresholds into rigid defensive edges that disrupt frontage continuity. In contrast, dwellings located at node of four roads intersections often develop more articulated threshold forms that respond to increased connectivity and multidirectional visibility. These locations tend to generate deeper transitional zones, wider entrances, and more expressive architectural elements. Threshold typologies are not static forms but dynamic configurations capable of incremental transformation. These transformations reveal that small-scale architectural modifications such as boundary height adjustments, material replacement, and shading extension significantly recalibrate the physical performance of the threshold without requiring comprehensive redevelopment. The structured framework of threshold performance indicators translates empirical findings into applicable design strategies. By synthesizing observed limitations and corresponding design responses within a compact analytical model, the study bridges descriptive morphological analysis in each location and operational architectural guidance. The table of proposed design decisions demonstrates that maintaining minimum transitional depth, ensuring eye-level permeability, articulating layered edges, and integrating climate-responsive shading are critical to preserving threshold functionality in house fronts, nodes or junctions in suburban upgrading contexts. Importantly, the framework does not advocate uniform design prescriptions but establishes adaptable principles grounded in measurable spatial parameters. From a theoretical standpoint, the research contributes to architectural discourse by repositioning threshold spaces as measurable morphological infrastructures rather than purely symbolic or social constructs. Classical architectural theory emphasizes transition, gradation, and spatial layering between domains (Alexander et al., 1977; Ashihara, 1983). Through field-based morphological analysis, this study found that these theoretical principles become increasingly vulnerable within rapidly urbanizing lower-middle-income

settlements and that can be systematically evaluated across different settlement locations. The findings also reinforce configurational perspectives that emphasize the relationship between spatial structure and architectural articulation (Hillier, 1996; Hillier & Hanson, 1984), demonstrating that the location of a dwelling within the street network significantly influences the physical expression of its threshold interface. From a practical perspective, the research offers implications for housing upgrading policies in rapidly urbanizing suburban environments. In lower–middle-income settlements where incremental enclosure is common, preserving threshold depth, moderating boundary height, and encouraging semi-permeable edge treatments can sustain morphological continuity while accommodating contemporary needs for privacy and security. The performance-based framework provides planners and architects with a tool for evaluating existing conditions and guiding small-scale interventions without disrupting the broader street morphology. Although the study is grounded in a specific Sri Lankan suburban context, the methodological framework is transferable to comparable tropical settlements experiencing incremental housing transformation. Future research may extend this analysis by integrating socio-behavioural data, longitudinal transformation studies, or comparative cross-settlement investigations to further validate and refine the threshold performance model. In conclusion, this research redefines street-front threshold spaces as critical architectural infrastructures within suburban morphology. By establishing a measurable, performance-based evaluation system and linking it to design decision strategies, the study contributes both conceptual clarity and applied relevance to the international discourse on transitional architecture in incremental housing environments.

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