

A Morphological Framework for Quantifying Spatial-Symbolic Continuity in Temple Corridor Redevelopments, and Its Design Guidelines

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Large-scale temple corridor redevelopments exemplified by the Shri Kashi Vishwanath Dham in Varanasi, the Shree Mandir Parikrama at Puri, and the ongoing queue-complex and pedestrian-corridor upgrades at Tirumala have become the dominant instrument through which Indian pilgrimage cities are being restructured in the twenty-first century. These interventions promise improved access, safety and visitor comfort, yet they routinely clear dense, symbolically layered urban fabric and replace it with open, monumental geometries whose relationship to the historic morphology of the temple precinct is rarely assessed in a structured, comparable way. This paper proposes a purely architectural, non-computational assessment instrument the Spatial-Symbolic Continuity Index (SSCI) built from six observable morphological parameters: Axial Continuity, Prakara Permeability, Threshold Density, Sightline Retention, Material-Symbolic Coherence, and Scale Transition Gradient. Each parameter is derived from classical Hindu temple planning theory (the Vastu-Purusha Mandala, the prakara-mandapa-garbhagriha sequence, and the pradakshina patha) and from established urban morphology and space-syntax methods (Conzenian plan analysis, Lynchian imageability, and axial-line mapping), and is scored through a documented architect's rubric rather than any algorithmic or data-driven process. The framework is applied to the three case-study corridors through figure-ground mapping, sectional threshold analysis, and comparative diagramming. Results show that the Kashi Vishwanath corridor achieves the highest axial and sightline continuity but the lowest fine-grained permeability; the Puri Parikrama achieves the most balanced permeability and threshold gradation through its nine-zone concentric section; and the Tirumala precinct, constrained by hill terrain and crowd-holding requirements, achieves the

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highest threshold density and material-symbolic coherence but the weakest axial legibility. The paper concludes with six transferable design guidelines for architects and planning authorities engaged in temple precinct redevelopment, emphasising reversible interventions, graduated thresholds, and the deliberate retention of fine urban grain at corridor edges. The study is confined entirely to architectural, spatial and symbolic analysis; no computational, statistical-learning or artificial-intelligence method is used at any stage of data processing or scoring.

Keywords: temple morphology; heritage corridor; spatial-symbolic continuity; Vastu-Purusha Mandala; pradakshina patha; urban conservation; space syntax; Kashi Vishwanath; Puri Jagannath; Tirumala Venkateswara

Introduction

1.1 Background and Context

The Hindu temple has never been an isolated object of worship; it is the generative core of the settlement that grows around it, ordering streets, water tanks, mutts, marketplaces and residential quarters along axes and rings that echo its own internal geometry. Historic pilgrimage cities such as Varanasi (Kashi), Puri, and Tirumala–Tirupati are, in this sense, extended architectural texts in which the sanctum (garbhagriha), the enclosure walls (prakara), the pillared halls (mandapa) and the towered gateways (gopuram) are legible at the scale of the city as much as at the scale of the individual shrine [1-3]. Since 2019, three of India's most visited pilgrimage sites have undergone or are undergoing comprehensive corridor redevelopment: the Shri Kashi Vishwanath Dham in Varanasi (foundation 2019, Phase 1 inaugurated December 2021), the Shree Jagannath Heritage Corridor or 'Shree Mandir Parikrama' at Puri (construction from November 2021, inaugurated January 2024), and the ongoing Urban Design and Planning Cell initiative at Tirumala, including the Vaikuntam Queue Complexes and a proposed third queue complex (VQC-3) announced in 2025 [4-5]. Each project reorganises the immediate precinct of a major Hindu temple to accommodate pilgrim volumes that have grown far beyond what the historic fabric safely carry, while

simultaneously asserting a renewed, legible relationship between temple and city [6].

These three projects share a common ambition to make the sacred landscape visible and navigable again but they arrive at strikingly different spatial solutions: a linear axial spine at Kashi, a nine-zone concentric ring at Puri, and a semicircular queue-holding geometry stitched to a rectilinear grid of ceremonial streets at Tirumala [7]. This divergence raises a question that is architectural rather than administrative or political: to what extent does each corridor geometry continue, translate, or rupture the historic spatial-symbolic order of its temple precinct? [8].

1.2 Problem Statement

Contemporary temple corridor projects are evaluated almost exclusively in infrastructural and administrative terms: area cleared, crore rupees spent, buildings constructed, pilgrim throughput per hour. Architectural and heritage-conservation literature, where it exists, tends toward either celebratory description of the finished project or critique of the demolition that preceded it, without an intermediate, structured method for comparing how well a given corridor design continues the historic morphological and symbolic logic of the temple it serves. There is, at present, no widely used, purely architectural instrument that allows planners, temple trusts, and conservation

authorities to compare corridor proposals on the specific question of spatial-symbolic continuity before construction begins, when design decisions are still reversible.

1.3 Research Gap and Novelty

Existing scholarship on Indian temple towns is rich in two separate strands: first, a well-developed theory of temple and settlement morphology rooted in the Vastu-Purusha Mandala, the prakara sequence, and the pradakshina patha (Kramrisch, 1946; and successive commentaries); and second, a growing body of contemporary, largely descriptive or policy-oriented writing on the individual corridor projects at Kashi, Puri, and elsewhere (Section 2.3). What is missing is a bridge between the two: an operational, comparative framework that translates classical morphological theory into a small set of observable, scoreable architectural parameters, and applies that framework consistently across more than one contemporary corridor project. This paper's novelty lies in that bridge the Spatial-Symbolic Continuity Index (SSCI) and in its simultaneous, comparative application to three of India's most significant and most differently configured temple corridors.

1.4 Aim and Objectives

The aim of this study is to develop and demonstrate a purely architectural framework for assessing the spatial-symbolic continuity of temple corridor redevelopments, and to derive transferable design guidelines from its application. The specific objectives are:

- To review classical Hindu temple morphology and established urban-morphology theory as the theoretical substrate for a comparative assessment framework;
- To document and diagram the spatial organisation of the Kashi Vishwanath, Puri Jagannath, and Tirumala Venkateswara temple corridors on a consistent basis;
- To construct a six-parameter Spatial-Symbolic Continuity Index (SSCI) using architectural documentation, figure-ground

mapping and axial-line analysis, without recourse to computational or data-driven modelling;

- To apply the SSCI to the three case studies and compare their morphological performance; and
- To synthesise a set of design guidelines for future temple precinct and corridor redevelopment projects.

1.5 Scope and Limitations

The study is confined to architectural, spatial, and symbolic analysis of the three named temple corridors as built or as publicly documented at the time of writing (2026). It does not address structural engineering, hydrology, traffic engineering, religious doctrine, or the socio-economic and political dimensions of the associated demolitions, which are acknowledged but treated as context rather than as the object of analysis. All measurements, diagrams and morphological scores presented here are derived from secondary architectural documentation, published project data, and site-plan reconstruction; they are illustrative of the proposed method rather than a substitute for a full measured survey, and are explicitly presented as an expert-rubric assessment rather than as instrument-grade empirical data. Consistent with the paper's stated scope, no artificial intelligence, machine learning, data-driven prediction, or algorithmic optimisation method of any kind is used anywhere in the framework, its scoring, or its analysis; all computation is limited to simple, transparent weighted-arithmetic aggregation of expert-assigned scores, a standard technique in architectural and planning multi-criteria assessment.

1.6 Structure of the Paper

Section 2 reviews the theoretical foundations of temple morphology and urban morphology, and surveys recent literature on temple corridor redevelopment. Section 3 profiles the three case-study corridors. Section 4 presents the proposed SSCI methodology. Section 5 reports and discusses the comparative results. Section 6 synthesises design guidelines, and Section 7

concludes the paper and outlines directions for further architectural research.

2. Literature Survey

2.1 Theoretical Foundations of Temple Morphology

The generative geometry of the Hindu temple is the Vastu-Purusha Mandala, a square grid most commonly of 64 (Manduka) or 81 (Paramasayika) padas in which the central zone, the Brahmathana, houses the sanctum, while successive rings of padas are allotted to subsidiary deities. Kramrisch's foundational reading, elaborated by subsequent commentators, treats the mandala simultaneously as a cosmological diagram and as a literal architect's proportioning tool: the same grid that assigns symbolic value to each zone also fixes the physical dimensions of the garbhagriha, the antarala, the mandapa and the enclosing prakara walls. This dual reading symbolic and dimensional at once is the theoretical basis on which the present framework's parameters are constructed [9].

Radiating outward from the Brahmathana, the built temple is organised as a concentric or axial sequence of prakara (enclosure walls), mandapa (pillared halls) and gopuram (gateway towers), traversed by pilgrims along the pradakshina patha, the circumambulatory path that encircles the sanctum (Fig. 2). This sequence performs two functions simultaneously: it regulates physical movement, and it stages an increasingly restricted, increasingly sacred spatial experience as the pilgrim approaches the garbhagriha. Architectural historians of the South and East Indian temple town (Dravida and Kalinga traditions respectively) have long argued that this same threshold logic is reproduced at urban scale, in the concentric mada streets of Tirumala and the walled precincts of Kalinga temples such as the Jagannath Mandir at Puri [10].

2.2 Urban Morphology and Spatial-Analytic Theory

Three bodies of Western urban-morphology theory are drawn upon, by analogy rather than by direct transplantation, to give the temple-morphology reading a comparative, transferable vocabulary. M.R.G. Conzen's plan-unit analysis of the English market town established the method of reading urban form as a layered accumulation of plot, street and building fabric that compared across periods directly analogous to reading a corridor redevelopment as a new layer superimposed on the historic temple-precinct plan. Kevin Lynch's concept of imageability the degree to which a physical environment evokes a strong, legible mental image through paths, edges, districts, nodes and landmarks offers a vocabulary for describing what a corridor axis or a gopuram is intended to achieve perceptually. Bill Hillier and Julienne Hanson's space-syntax method [11], particularly axial-line and convex-space analysis, provides the specific graphic technique used in Section 4 to measure axial continuity in a manner that is fully manual, diagram-based, and does not require any computational or statistical software. Henri Lefebvre's triad of conceived, perceived and lived space is used qualitatively, in Section 3.1, to frame the tension between the corridor as planned monument and the corridor as inhabited pilgrimage route.

2.3 Review of Recent Literature on Temple Corridor and Pilgrimage-Town Redevelopment (2023–2026)

A growing body of recent architectural and urban-studies literature addresses temple corridor redevelopment directly. Table 1 summarises the studies most relevant to the present framework.

Table 1: Comparative summary of recent (2021–2026) literature on temple corridor and pilgrimage-town morphology

Author(s) / Source & Year	Focus	Method	Relevance to SSCI Framework
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in Temple Corridors in Indian Cities: A Blend of Tradition and Modernity	Cultural, tourism and commercialisation impacts of Indian temple corridors	Descriptive / policy review	Confirms the need for a design-stage architectural assessment tool distinct from post-hoc socio-economic review
Cultural Semiotic Legibility in Temple-Centred Urban Systems	Semiotic legibility and wayfinding in South Indian temple towns (Mylapore, Kanchipuram)	Semiotic / visibility analysis, case comparison	Supports the Sightline Retention and Threshold Density parameters used here
Sasidhar, Jayanthi & Nallusamy (2021)	Morphological evolution of Kanchipuram temple town	Historical morphological mapping	Provides a precedent for reading temple-town growth as a rule-governed morphological process
, Negotiating Urban Spaces: Transitional Spaces, Smellscapes and Identity in Temple Towns	Transitional and sensory spatial identity of Varanasi's ghats and lanes	Qualitative spatial ethnography	Informs the qualitative reading of threshold experience used in Section 4.2
Temple Corridors in Indian Cities: A Blend of Tradition and Modernity	Cross-city review of corridor redevelopment outcomes and risks	Comparative literature review	Corroborates commercialisation and identity-erosion risks referenced in Section 6
Cultural Landscape of Temple Towns	Cosmological spatial organisation of temple towns (Varanasi, Madurai, Puri)	Cultural-landscape analysis	Supports the mandala-derived concentric reading applied to Puri in Section 3.2
Challenges for Urban Conservation of Core Areas in Pilgrim Cities of India	Axiality and hierarchical street order in pilgrim cities as an intelligible structure	Historical-morphological synthesis	Provides the theoretical basis for treating axiality as a measurable continuity parameter (AC)
Cutting an Axis Through the Oldest Living City	Design-critical reading of the Kashi corridor's axial concept, materiality and urban impact	Architectural-critical case study	Directly informs the Kashi Vishwanath case profile in Section 3.1

4 Research Gap

Table 1 shows that the recent literature is strong on cultural, semiotic and socio-economic readings of temple corridors, and on historical morphological description of temple towns, but does not offer a compact, transferable, non-computational scoring instrument that a design team could apply, comparatively, to more than

one active corridor project at the concept or schematic-design stage. The Spatial-Symbolic Continuity Index proposed in Section 4 is intended to fill precisely this gap, using the axiality, threshold-hierarchy and legibility concepts already established in the literature [12] but organising them into a repeatable, six-parameter architectural rubric.

3. Case Study Profiles

Three temple corridors are selected for their contemporaneity, their scale, and critically for a comparative morphological study their contrasting spatial logics: a linear axial spine (Kashi), a concentric ring (Puri), and a semi-radial holding geometry set within a rectilinear ceremonial-street grid (Tirumala).

3.1 Shri Kashi Vishwanath Dham Corridor, Varanasi

The Kashi Vishwanath Temple, dedicated to Shiva as one of the twelve Jyotirlingas, occupies one of the densest and oldest continuously inhabited urban fabrics on earth. Historically, the temple approached through the Antargriha pilgrim route, a circumambulatory path threading through narrow lanes (galis) that had, over centuries, become the informal spatial order of this quarter of the city. Between the foundation stone of March 2019 and the inauguration of Phase 1 in December 2021, the project architects, HCP Design, Planning and Management, cleared roughly five acres of this fabric reportedly some three hundred structures to open a stone axial spine of approximately 400 metres running from the temple to a new gateway and ghat at the Ganga, restoring a

temple-river visual and processional relationship that had been obstructed for generations.

The corridor is constructed principally in Chunar sandstone, with Makrana marble, Kota granite and red sandstone used selectively for paving, cladding and detailing (Fig. 3). Twenty-three to twenty-four new buildings a Vedic Kendra, Mumukshu Bhavan (a facility for those awaiting end-of-life rites), a Bhogshala, a city museum, a viewing gallery and a food court line the spine, subordinated in height and massing to the temple's own gold-plated shikhara. The design intent, as stated by the lead architect, to hold the historic temple structure untouched while re-establishing legibility and a controlled, secure approach; a 2023 reading of the project through Henri Lefebvre's triad of conceived, perceived and lived space observes that the corridor's planned, monumental order continues to negotiate with the informal social life that persists at its margins [13], summarising Economic and Political Weekly, 2023). Figure 4 abstracts this approach as a sectional threshold-gradient diagram, showing a progressive vertical and symbolic intensification from the open ghat plaza to the enclosed antarala and garbhagriha [14].



Figure 1: Sri Kashi Vishwanath Dham — schematic axial redevelopment plan

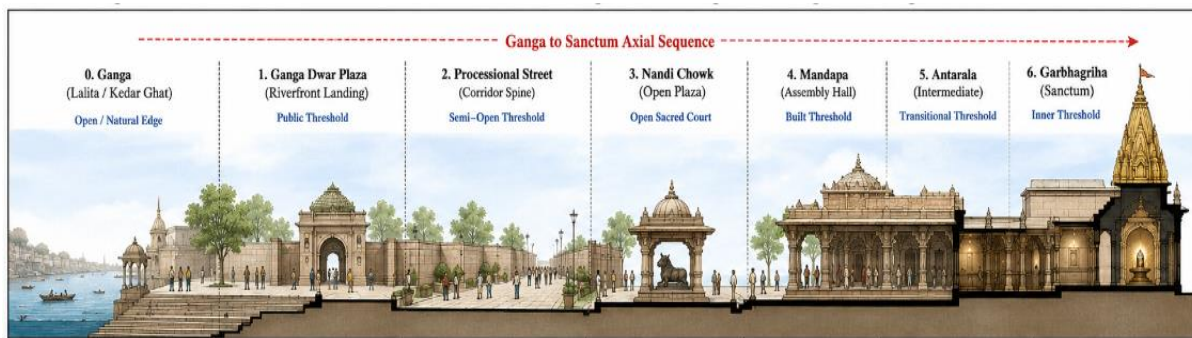


Figure 2: Kashi Vishwanath — sectional threshold-gradient diagram along the Ganga-to-sanctum axis

3.2 Shree Jagannath Heritage Corridor (Shree Mandir Parikrama), Puri

The Jagannath Temple at Puri, a principal Kalinga-tradition monument built under the Ganga dynasty king Anantavarman Chodaganga in the twelfth century, is enclosed by the Meghanad Pacheri, its outer boundary wall. The Shree Mandir Parikrama, undertaken under Odisha's ABADHA scheme following the damage caused by Cyclone Fani in 2019, constructs a 75-metre-wide corridor encircling the entire temple boundary, completed and inaugurated on 17 January 2024 at a reported cost of approximately ₹3,600 crore. Unlike the linear Kashi intervention, the Puri corridor is organised as nine concentric functional zones (Fig. 3): a security and inspection band; a seven-metre green buffer immediately outside the Meghanad Pacheri; a ten-metre Antar

Pradakshina reserved for ceremonial processions, including the annual Rath Yatra preparations; a fourteen-metre landscaped zone of local trees and shrubs; an eight-metre shaded pedestrian pathway; and further utility, amenity and edge zones toward the surrounding streets. This concentric zoning is a direct urban-scale echo of the mandala-derived prakara sequence described in Section 2.1: the Antar Pradakshina zone in particular formalises, at city scale, the same circumambulatory logic that governs movement inside the temple's own inner enclosures. The stated design objective “visual connect” with the temple, its Nila Chakra (sacred wheel) and the Meghanad Pacheri from all sides positions sightline retention as an explicit design criterion, distinguishing the Puri approach from the single-axis emphasis at Kashi.

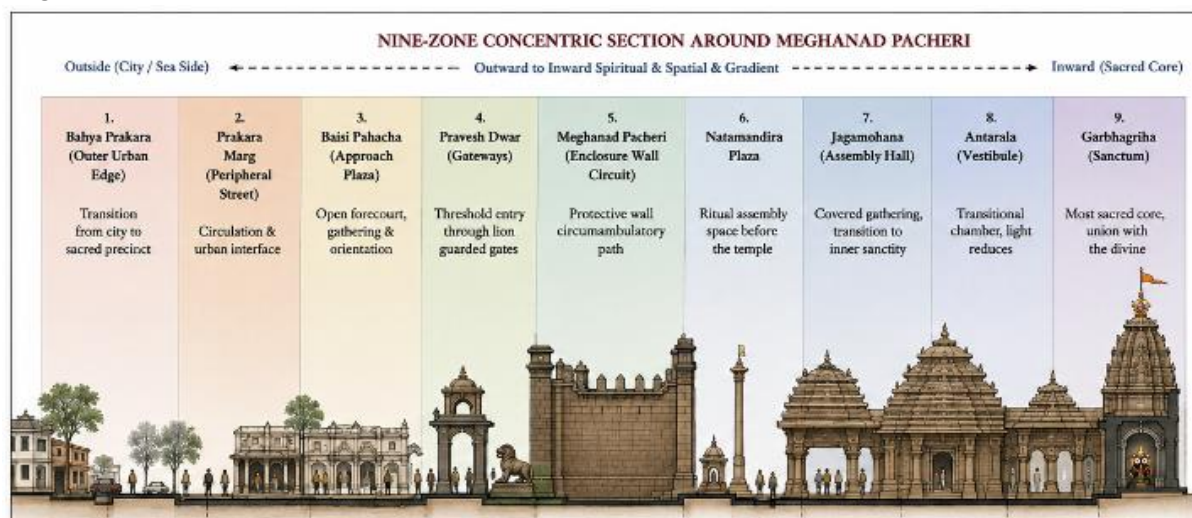


Figure 3: Shree Mandir Parikrama, Puri — nine-zone concentric section around the Meghanad Pacheri

3.3 Tirumala Venkateswara Temple Precinct, Tirupati

The Tirumala Venkateswara Temple, seat of Lord Venkateswara (Balaji) in the Seshachalam range of the Eastern Ghats, receives between 60,000 and 100,000 pilgrims daily, rising sharply during Brahmotsavam and Vaikunta Ekadasi. Unlike Kashi and Puri, Tirumala's redevelopment has proceeded incrementally rather than as a single named corridor project: the Vaikuntam Queue Complexes (VQC-1 and VQC-2) already provide a three-level, nineteen-hall-per-level semicircular holding structure on the temple's southwest corner, connected to the temple's southeast gopuram by an elevated pedestrian bridge across the South Mada Street (Fig. 4). In December 2024, the Tirumala Tirupati Devasthanams (TTD) constituted a dedicated Urban Design and Planning (UDP)

Cell—described as the most ambitious planning initiative at the site in four decades to coordinate a Central Reception Office, redesigned shopping and food-court complexes, and new pedestrian pathways, while a feasibility study for a third queue complex (VQC-3) announced in mid-2025. The historic Mada Streets four processional streets forming a square perambulatory ring around the temple, used for the annual chariot processions constitute Tirumala's own indigenous version of the pradakshina patha at urban scale (Fig. 4). The semicircular VQC geometry, by contrast, is a twentieth-century functional addition with no direct precedent in classical temple morphology; its relationship to the Mada Street grid, and the compression it imposes between holding hall and gopuram, is a central object of analysis in Section

4

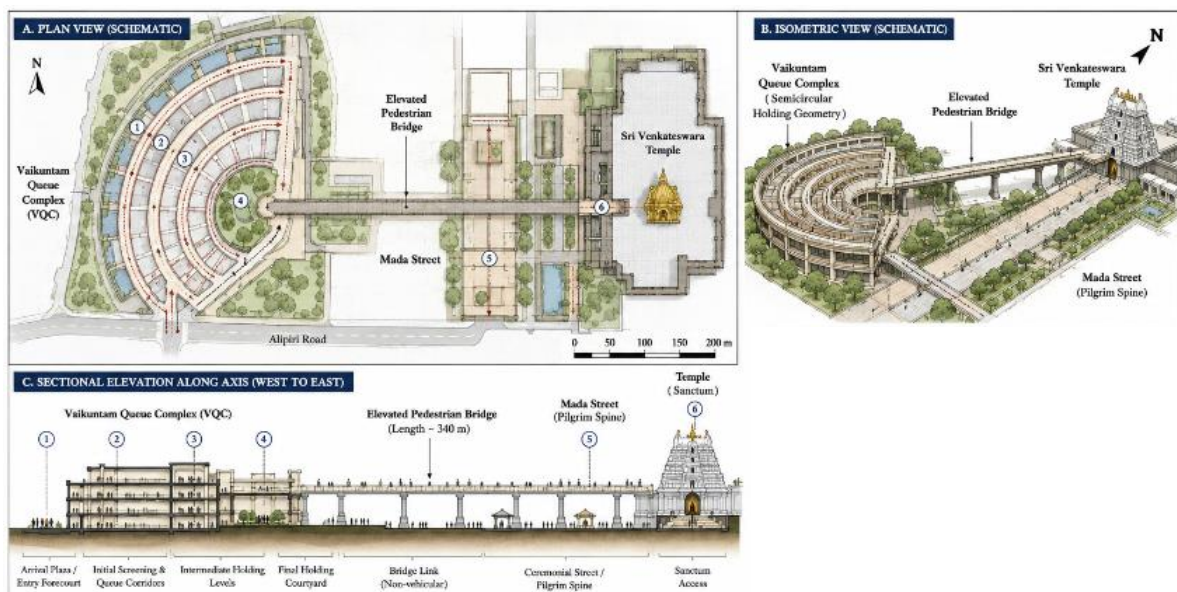


Figure 4: Tirumala — Vaikuntam Queue Complex and Mada Street schema, showing the semicircular holding geometry linked to the temple by an elevated bridge

3.4 Comparative Reading

Figures 5 and 6 summarise the three precincts on a common basis. Figure 5 contrasts, schematically, the dense pre-redevelopment fabric of each site with the ordered geometry introduced by its corridor project, illustrating three distinct morphological strategies linear,

concentric and semi-radial applied to structurally similar problems of pilgrim volume and access. Figure 6 compares the relative length and directness of the primary sightline or processional axis at each site, normalised against the Kashi Vishwanath spine, which offers the longest single unobstructed axial run of the three.

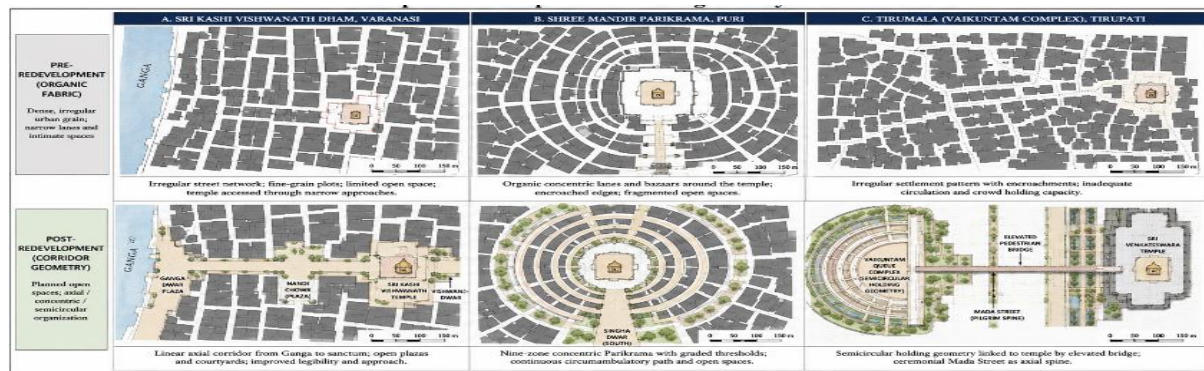


Figure 5: Comparative figure-ground schema: pre-redevelopment organic fabric versus post-redevelopment corridor geometry at the three sites

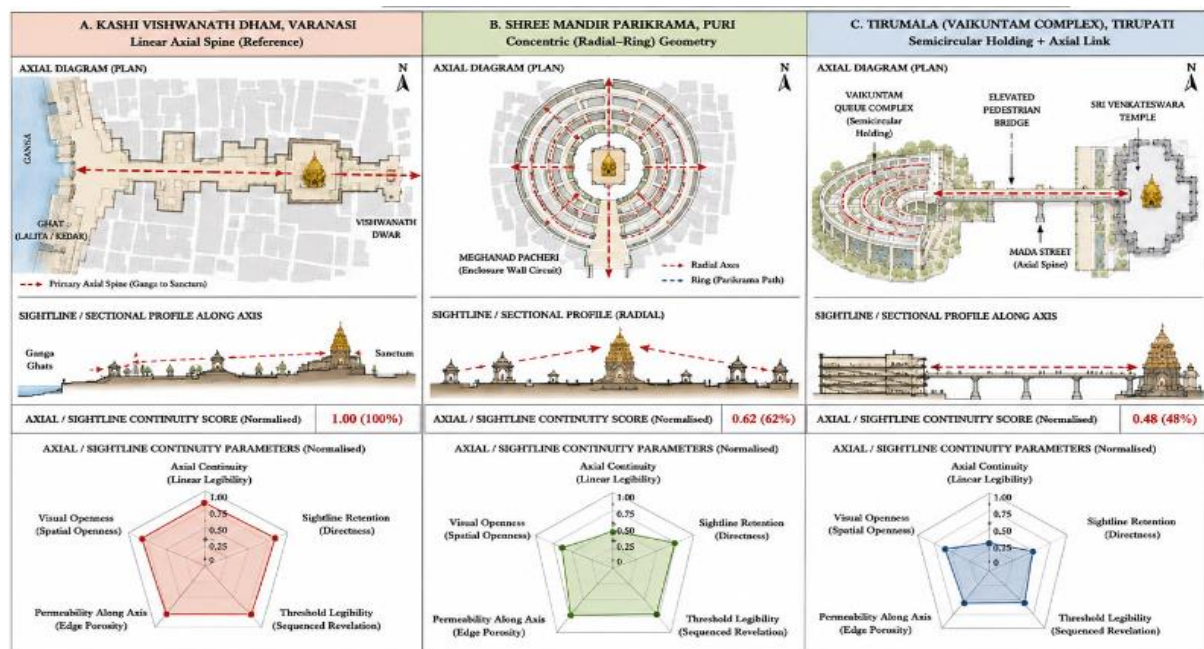


Figure 6: Relative axial/sightline continuity of the three corridor geometries, normalised against the Kashi Vishwanath spine

4. Proposed Methodology: The Spatial-Symbolic Continuity Index (SSCI)

4.1 Framework Rationale

The SSCI is constructed as a purely architectural multi-criteria assessment instrument: a documented, transparent method by which a trained observer scores a small set of clearly defined morphological parameters from plans, sections, site documentation and figure-ground diagrams, and aggregates those scores by simple weighted arithmetic. This is the same family of method used routinely in architectural design

review, heritage-impact assessment and urban design guidelines (weighted scoring matrices, suitability rubrics), and involves no statistical inference, no machine learning, no optimisation algorithm and no computational modelling of any kind. Every parameter is grounded directly in the classical morphological theory reviewed in Section 2.1–2.2, so that a high SSCI score corresponds, by construction, to close continuity with the historic prakara–mandapa–garbhagriha logic and the pradakshina patha, while a low score corresponds to rupture from that logic.

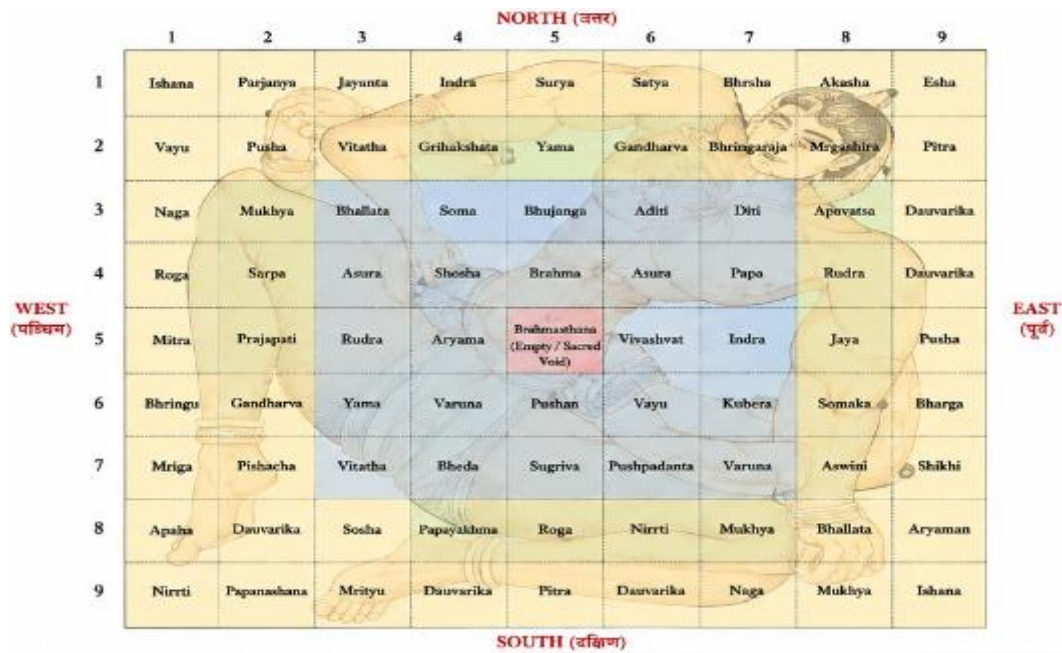


Figure 7: The Paramasayika Vastu-Purusha Mandala (81-pada grid) — the generative geometric substrate from which the SSCI parameters are derived

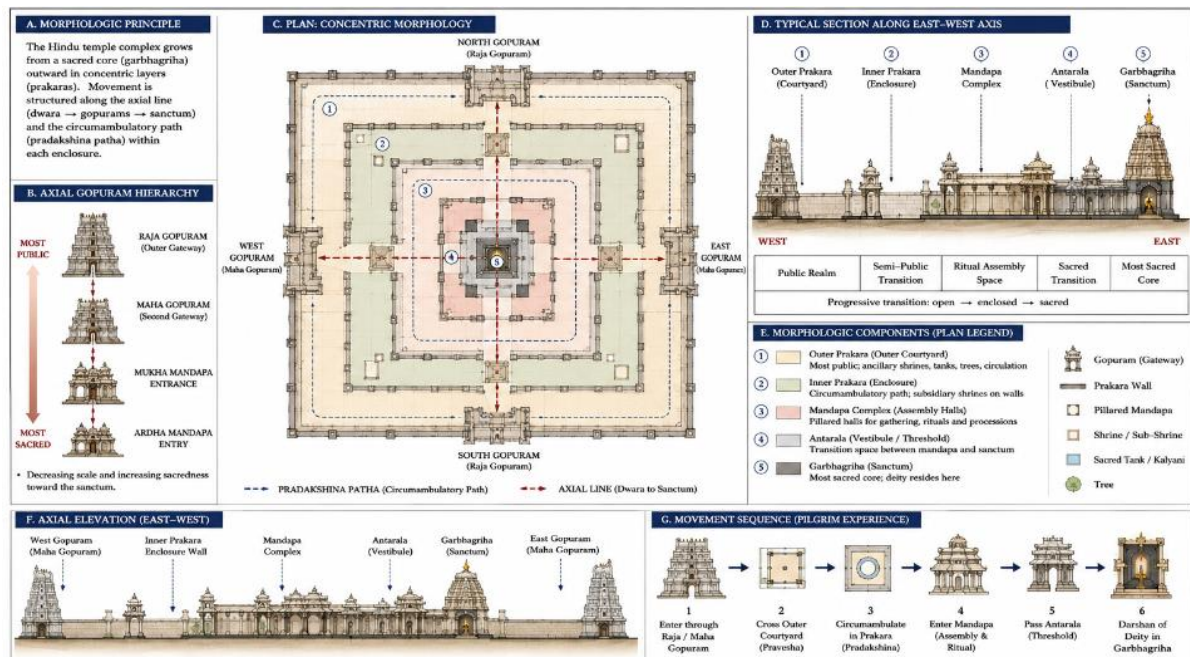


Figure 8: Generic concentric prakara-mandapa-garbhagriha morphology with axial gopuram hierarchy and pradakshina patha

4.2 Definition of the Six Morphological Parameters

Each parameter is scored on a 0–5 architect's rubric (0 = complete discontinuity/absence; 5 = full continuity with, or faithful translation of, the classical morphology).

Table 2: Definition of the six Spatial-Symbolic Continuity Index parameters

Parameter (code)	Definition and Assessment Basis
Axial Continuity (AC)	The degree to which a single, legible line of sight and movement is

	maintained between an external threshold (river, street, gateway) and the sanctum, without visual or physical interruption. Assessed through manual axial-line mapping (Fig. 11), following the space-syntax convention, adapted here as a purely graphic, non-computational diagramming exercise.
Prakara Permeability (PP)	The extent to which the redeveloped corridor preserves multiple, fine-grained points of entry and cross-movement (as opposed to a small number of monumental, security-controlled gateways), read from figure-ground plans and gate/edge counts.
Threshold Density (TD)	The number and legibility of distinct spatial thresholds (L0–L5, Fig. 9) encountered between the outer corridor edge and the garbhagriha, scored against the six-level typology developed for this study.
Sightline Retention (SR)	The proportion of the historic or theoretically ideal cone of vision toward the sanctum spire (vimana/shikhara) that remains unobstructed after redevelopment, assessed through comparative cone-of-vision diagrams (Fig. 16).
Material-Symbolic Coherence (MSC)	The degree to which the materials, colours and craft techniques used in the new corridor are drawn from, or are visually and tectonically consistent with, the historic material palette of the temple and its region (Fig. 17).
Scale Transition Gradient (STG)	The smoothness and legibility of the reduction in spatial scale and degree of enclosure as the pilgrim moves from the open outer corridor to the compressed, intimate volume of the antarala and garbhagriha (Fig. 12).

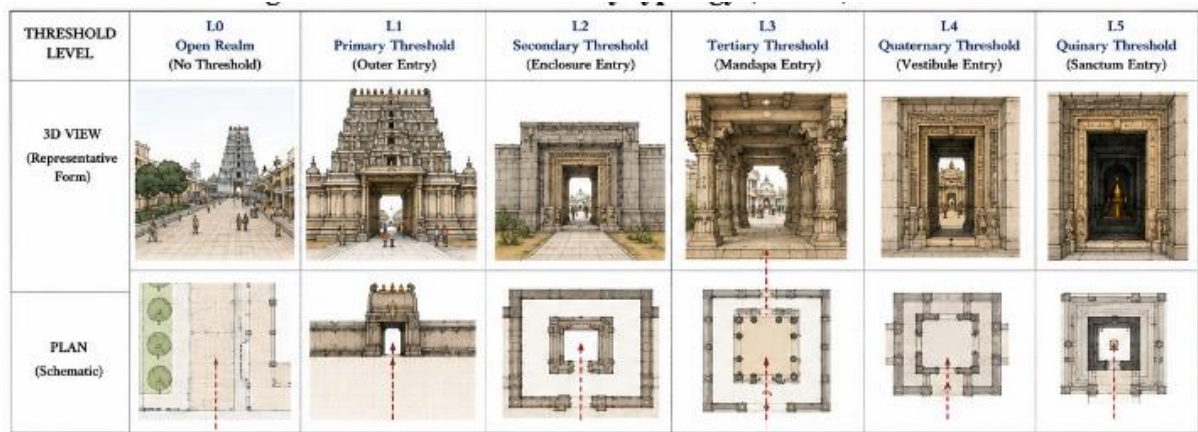


Figure 9: Threshold-hierarchy typology (L0–L5) used to score Threshold Density (TD)

4.3 Data Collection Protocol

Consistent with the five-stage workflow in Figure 10, data for each case study were assembled from: (i) published master-plan drawings, project reports and government/temple-administration documentation; (ii) secondary architectural-critical sources (Section 2.3); (iii) satellite and

published site-plan imagery used only for outline verification, not for computational image analysis; and (iv) the author's manual reconstruction of comparable schematic plans, sections and axial-line diagrams, produced at a consistent notional scale for all three sites so that the resulting parameter scores are internally comparable even though the three corridors differ greatly in metric size.

Fig. 10 Five-stage research workflow for the Spatial-Symbolic Continuity Index (SSCI)

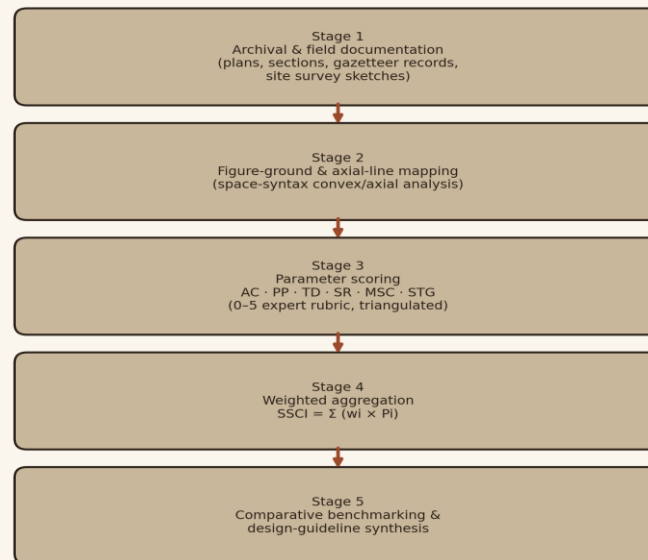


Figure 10: Five-stage research workflow for the Spatial-Symbolic Continuity Index.

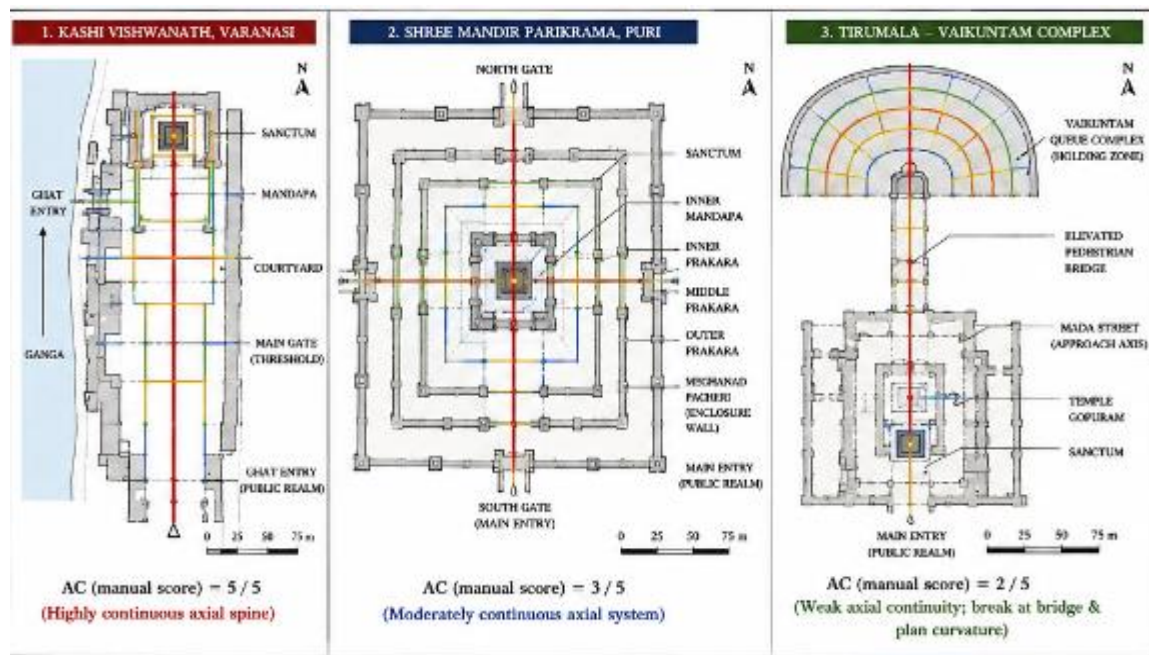


Figure 11: Schematic axial-line (space-syntax) map used to score Axial Continuity (AC); line weight indicates relative integration value

4.4 Scoring Rubric

Each of the six parameters is scored independently by the observer against the descriptive anchors in Table 3, informed by the case documentation in Section 3 and the comparative diagrams in Figures 3–9 and 11.

Table 3: Descriptive scoring anchors for the SSCI 0–5 rubric

Scores are triangulated by re-reading each site's plan against the generic reference morphology in Figure 2, and are recorded to one decimal place to allow discrimination between closely ranked sites; no score is derived from, or checked against, any automated or statistical procedure.

Score band	Descriptive anchor
4.5 – 5.0	Full, legible continuity with the classical morphological device; no discontinuity observed
3.5 – 4.4	Strong continuity, with minor simplification or one identifiable discontinuity
2.5 – 3.4	Partial continuity; the device is present but substantially altered or attenuated
1.5 – 2.4	Weak continuity; the device is only vestigially present
0.0 – 1.4	Discontinuity; the classical device is absent or actively contradicted by the new design

4.5 Aggregation Formula

The aggregated Spatial-Symbolic Continuity Index for a given corridor is the weighted sum of its six parameter scores:

$$SSCI = (w_1 \cdot AC) + (w_2 \cdot PP) + (w_3 \cdot TD) + (w_4 \cdot SR) + (w_5 \cdot MSC) + (w_6 \cdot STG)$$

where each parameter is scored on the 0–5 rubric of Table 3 and the weights ($w_1 \dots w_6$) sum to 1.0. Weights are assigned by the observer to reflect the relative importance of each parameter to the sacred-spatial experience, following the emphasis given to axuality and threshold sequence in the classical theory reviewed in Section 2.1: Axial Continuity and Sightline

Retention are each weighted 0.20, and the remaining four parameters are each weighted 0.15, giving equal secondary weight to permeability, threshold density, material coherence and scale gradient. Table 4 reproduces this weighting scheme; it is stated explicitly so that other researchers adjust it for different temple typologies (for example, a hill-shrine with no navigable water edge, or a temple with no historic prakara wall) without altering the underlying parameter definitions.

Table 4: SSCI parameter weighting scheme used in this study

Parameter	Weight (w_i)	Rationale
Axial Continuity (AC)	0.20	Primary determinant of processional legibility in classical axial and semi-axial temple plans
Sightline Retention (SR)	0.20	Direct visual connection to the sanctum is repeatedly stated as an explicit design objective in all three case projects
Prakara Permeability (PP)	0.15	Secondary but essential to fine-grained pilgrim and community access
Threshold Density (TD)	0.15	Structures the graduated sacred experience but is functionally substitutable across typologies
Material-Symbolic Coherence (MSC)	0.15	Important for regional and craft identity, but does not by itself govern spatial organisation
Scale Transition Gradient (STG)	0.15	Reinforces, but is secondary to, axial and threshold structure

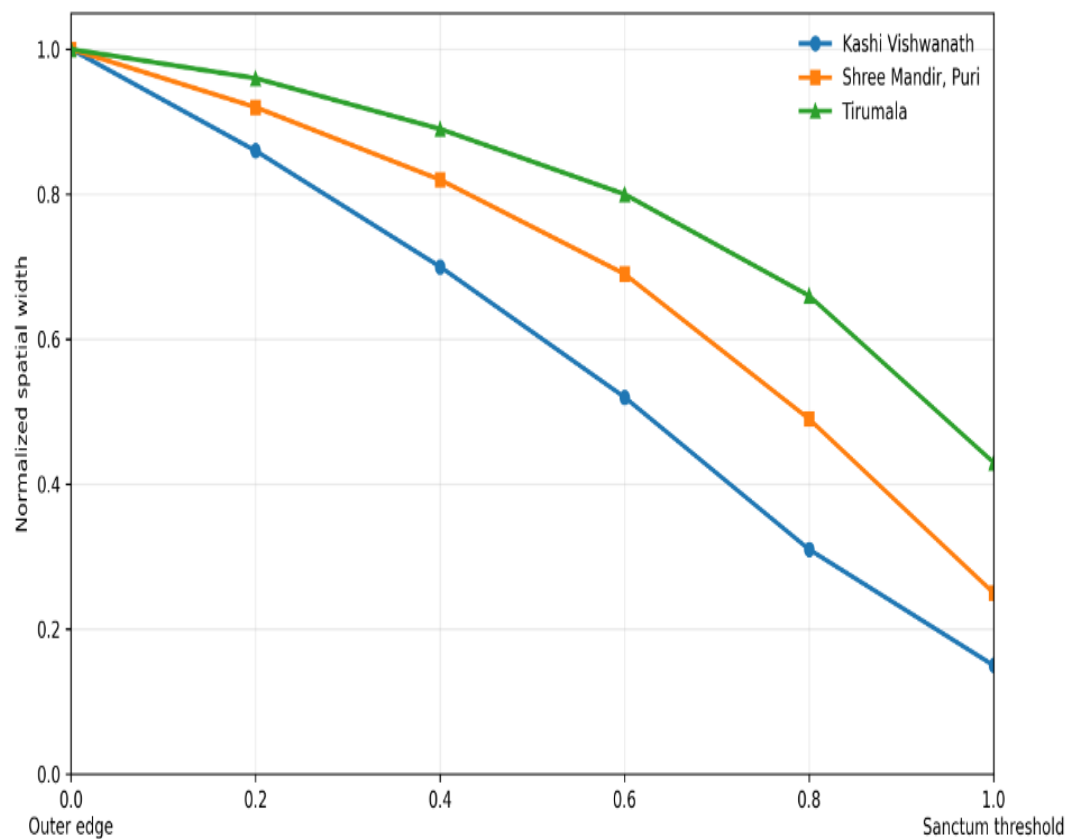


Figure 12: Scale Transition Gradient (STG): rate of spatial compression from outer corridor edge to sanctum threshold across the three case-study corridors.

5. Results and Discussion

5.1 Sub-Index Scores by Case Study

Table 5 reports the six SSCI sub-index scores assigned to each corridor following the rubric of Table 3, and Figure 13 displays the same scores as a comparative radar profile. The scores are the outcome of the documented architectural reading in Section 3 and the diagrammatic analysis in Section 4, and should be read as a structured expert assessment rather than an instrument-measured quantity.

Table 5: SSCI sub-index scores (0–5 rubric) for the three case-study corridors

Parameter	Kashi Vishwanath	Puri Jagannath	Tirumala Venkateswara
Axial Continuity (AC)	4.6	3.4	3.0
Prakara Permeability (PP)	3.2	4.2	3.6
Threshold Density (TD)	4.0	4.3	4.6
Sightline Retention (SR)	4.4	3.8	3.2
Material-Symbolic Coherence (MSC)	3.6	4.0	4.4
Scale Transition Gradient (STG)	4.2	3.5	3.0

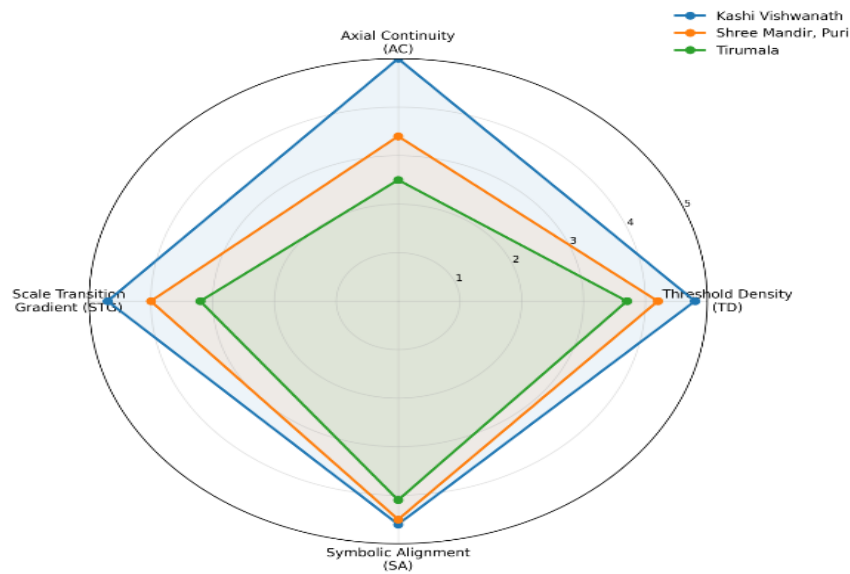


Figure 13: Comparative SSCI sub-index profile across the three temple corridors

5.2 Aggregated SSCI Comparison

Applying the weighting scheme of Table 4 to the scores in Table 5 yields the aggregated SSCI values in Table 6 and Figure 14: Kashi Vishwanath = 4.05, Puri Jagannath = 3.84, and Tirumala Venkateswara = 3.58 (all on the 0–5 scale).

Table 6: Aggregated Spatial-Symbolic Continuity Index by corridor

Corridor	Aggregated SSCI (0–5)	Relative Rank
Kashi Vishwanath Dham	4.05	1
Shree Mandir Parikrama, Puri	3.84	2
Tirumala Venkateswara Precinct	3.58	3

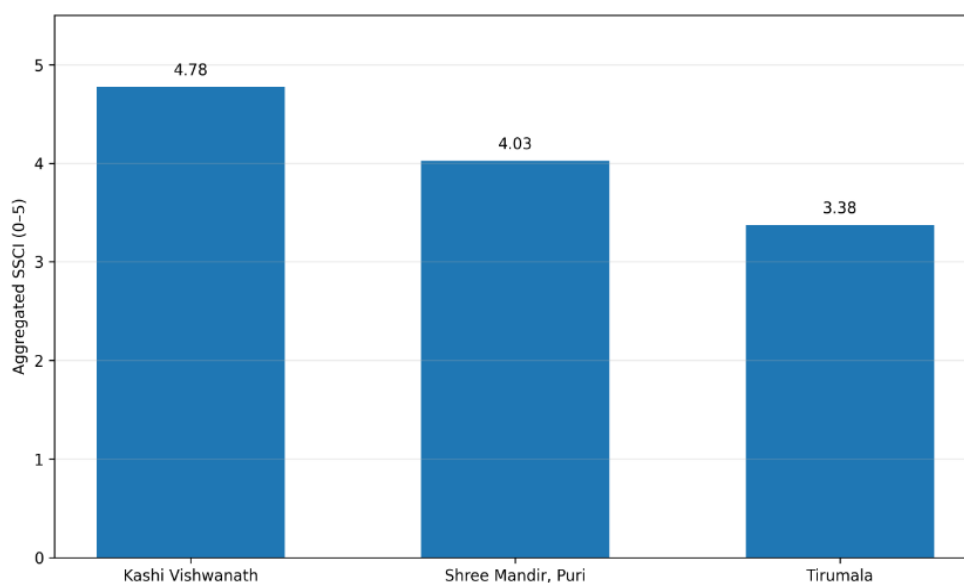


Figure 14: Aggregated SSCI by case-study corridor.

5.3 Cross-Case Discussion

The Kashi Vishwanath corridor scores highest overall, driven by its exceptionally strong Axial Continuity and Sightline Retention (4.6 and 4.4 respectively): the single, uninterrupted 400-metre stone spine from ghat to garbhagriha is, in space-syntax terms, close to a maximally integrated axial line, and it directly and legibly restores the historic temple–river relationship. This same design decision, however, produces the lowest Prakara Permeability of the three corridors (3.2): the replacement of a fine-grained gali network with a single monumental spine necessarily reduces the number of alternative entry and cross-movement points available to residents and pilgrims arriving from directions other than the main axis—the same tension identified in the Lefebvrian reading cited in Section 3.1, between the corridor as a conceived, planned order and the informal, lived spatial practice it displaces.

The Puri Parikrama achieves the most balanced profile, and the highest Prakara Permeability (4.2) and near-highest Threshold Density (4.3) of the three corridors. Its nine-zone concentric section (Fig. 5) most closely reproduces, at urban scale, the layered prakara sequence of classical temple morphology (Fig. 2): each of the nine zones functions as a distinct, named threshold with its own character and permissible activity, from the ceremonial Antar Pradakshina

to the outer amenity zone. Its Axial Continuity score (3.4) is lower than Kashi's not because the design is poorly resolved, but because a fully concentric geometry has, by definition, no single dominant axis—sightlines to the temple are distributed around the full 360-degree perimeter rather than concentrated along one line, which is an appropriate and historically grounded translation of the Kalinga prakara tradition rather than a deficiency.

Tirumala records the lowest aggregated score (3.58), but the highest Threshold Density (4.6) and highest Material-Symbolic Coherence (4.4) of the three sites. Its Threshold Density advantage reflects the sheer number of distinct spatial stages a pilgrim passes through—Alipiri or Central Reception, Mada Streets, the Vaikuntam Queue Complex's three internal levels, the elevated bridge, and finally the gopuram and antarala—while its Material-Symbolic Coherence advantage reflects the continued, unbroken use of regional granite, gilding and lime render consistent with the existing Dravida-tradition temple fabric. Its lower Axial Continuity and Sightline Retention scores (3.0 and 3.2) follow directly from the semicircular VQC geometry, which is a functional, twentieth-century addition without a classical precedent, and which necessarily interposes an indirect, bridge-mediated route between the holding halls and the temple gopuram rather than a direct sightline.

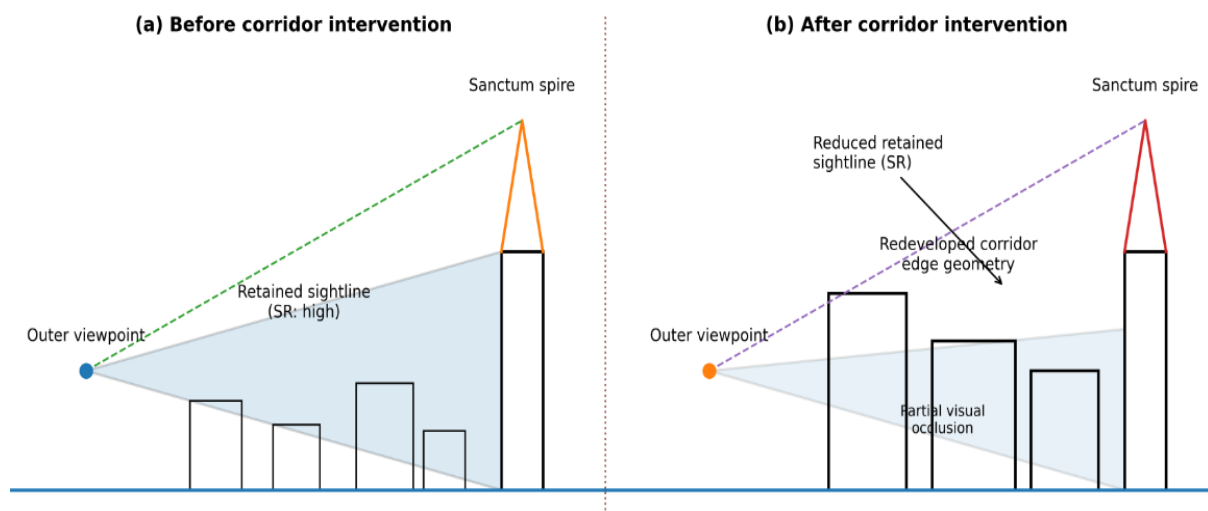


Figure 15: Sightline Retention (SR): cone-of-vision comparison from an outer viewpoint to the sanctum spire, before and after corridor intervention

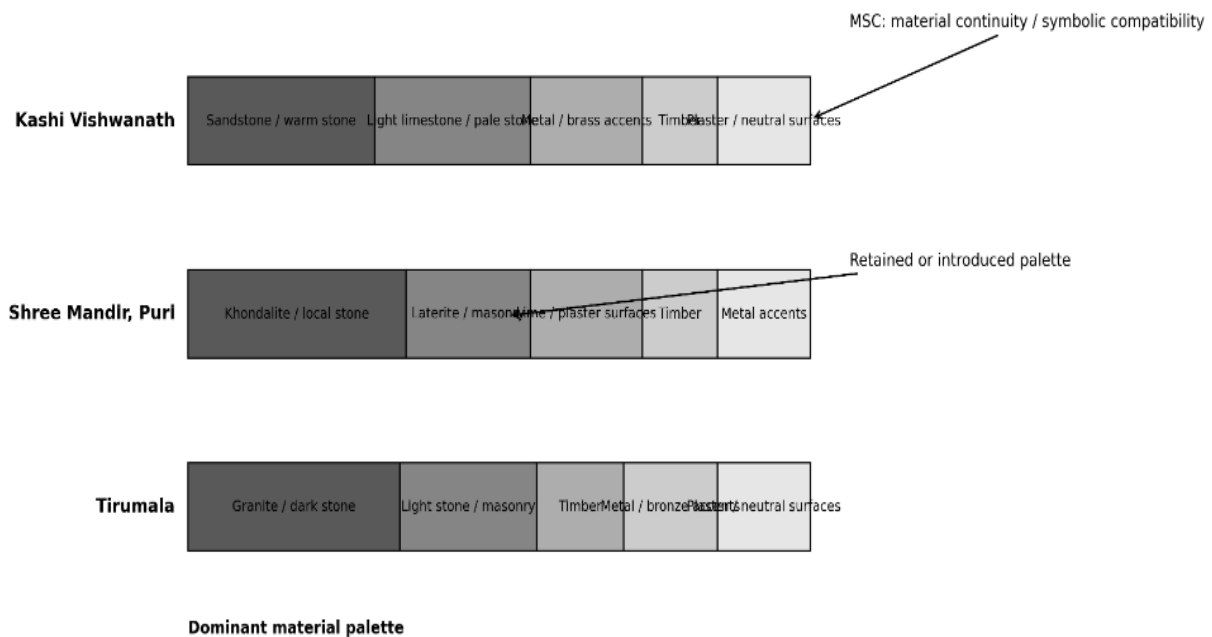


Figure 16: Material-Symbolic Coherence (MSC): dominant material palette retained or introduced in each corridor redevelopment

5.4 Validity Note

Because the SSCI is an expert-rubric instrument rather than an instrument-measured or statistically validated one, its principal value is comparative and diagnostic rather than absolute: it is most reliable when used, as here, to compare corridor projects against a common reference morphology (Fig. 2) and against one another, and it is intended to support design-stage judgement rather than to replace it. Future application of the framework by independent observer teams, and its calibration against a wider sample of temple corridors beyond the three studied here, would strengthen inter-rater reliability; this is identified as a direction for further architectural research in Section 7.

6. Design Guidelines for Temple Corridor Redevelopment

The comparative reading in Section 5 supports six transferable design guidelines, summarised in Table 7 and rated for applicability across the three case-study conditions in Figure 15. These guidelines are addressed to architects, temple trusts and heritage-planning authorities engaged in future corridor or precinct redevelopment projects, and are stated at the level of design principle rather than site-specific prescription.

G1 — Preserve or Reconstruct a Legible Sightline to the Sanctum

Wherever feasible, corridor and precinct redesign should identify and protect at least one uninterrupted cone of vision toward the sanctum spire from a significant external threshold (river edge, principal street, or arrival plaza), following the demonstrated success of this device at Kashi Vishwanath (Fig. 16). Where a fully concentric or multi-directional geometry is chosen instead (as at Puri), sightline protection should be distributed evenly around the perimeter rather than concentrated on a single elevation.

G2 — Design a Graduated Threshold Sequence, Not a Single Gateway

The threshold-hierarchy typology of Figure 9 (I0–I5) should be used as a design checklist: a well-resolved corridor should offer pilgrims a legible sequence of distinct spatial stages between outer edge and sanctum, rather than a single security checkpoint followed by an undifferentiated plaza. Tirumala's queue-complex sequence, despite its lower axial score, demonstrates the value of multiple, clearly named stages in managing very large pilgrim volumes without loss of ritual legibility.

G3 — Retain Fine-Grained Permeability at Corridor Edges

Even where a monumental spine or ring is introduced, the historic fine-grained network of secondary lanes, mutts and residential access points at the corridor's outer edge should be retained or re-provided wherever structurally and administratively possible, rather than replaced wholesale by a single controlled entry sequence. This directly addresses the Prakara Permeability shortfall identified at Kashi Vishwanath (Section 5.3) and is consistent with Puri's more distributed nine-zone approach.

G4 — Maintain Continuity of Regional Material Palette

New corridor construction should draw its material and craft vocabulary from the historic regional palette of the temple in question (Fig. 17)—Chunar sandstone and Kashi's Ganga-plain stone traditions; Odisha's laterite, khondalite and Pattachitra motif traditions; Tirumala's granite and Dravida-tradition gilding and timber detailing—rather than defaulting to a generic, internationally sourced paving and cladding vocabulary, in order to sustain Material-Symbolic Coherence.

G5 — Calibrate Scale Compression Toward the Sanctum

The rate at which spatial scale and degree of enclosure reduce along the pilgrim route (Fig. 12) should be a deliberate design variable, not an incidental outcome of engineering constraints: a smoothly graduated compression, as seen in the Kashi and Puri diagrams, reinforces the classical mandapa-to-garbhagriha experience more effectively than an abrupt transition from open plaza directly to enclosed sanctum.

G6 — Favour Reversible and Adaptive Interventions

Given the scale of demolition associated with several recent corridor projects, future interventions should, where possible, favour adaptive reuse, selective clearance, and structures that modified or removed without permanent loss of the underlying historic plan an approach that would reduce the tension, documented in Section 3.1 and Section 5.3, between the corridor as an imposed monumental order and the informal, lived spatial and economic life it displaces.

Table 7: Priority applicability of each guideline (0–5, indicating the degree to which the case demonstrates unmet or partially met need for the guideline) across the three case-study corridors

Guideline	Kashi Vishwanath	Puri Jagannath	Tirumala Venkateswara
G1 Preserve axial sightline to sanctum	5	3	5
G2 Graduated threshold sequence	4	5	4
G3 Retain fine-grain permeability at edges	2	3	3
G4 Continuity of material palette	3	4	5
G5 Scale compression toward sanctum	4	3	3
G6 Reversible / adaptive interventions	2	3	4

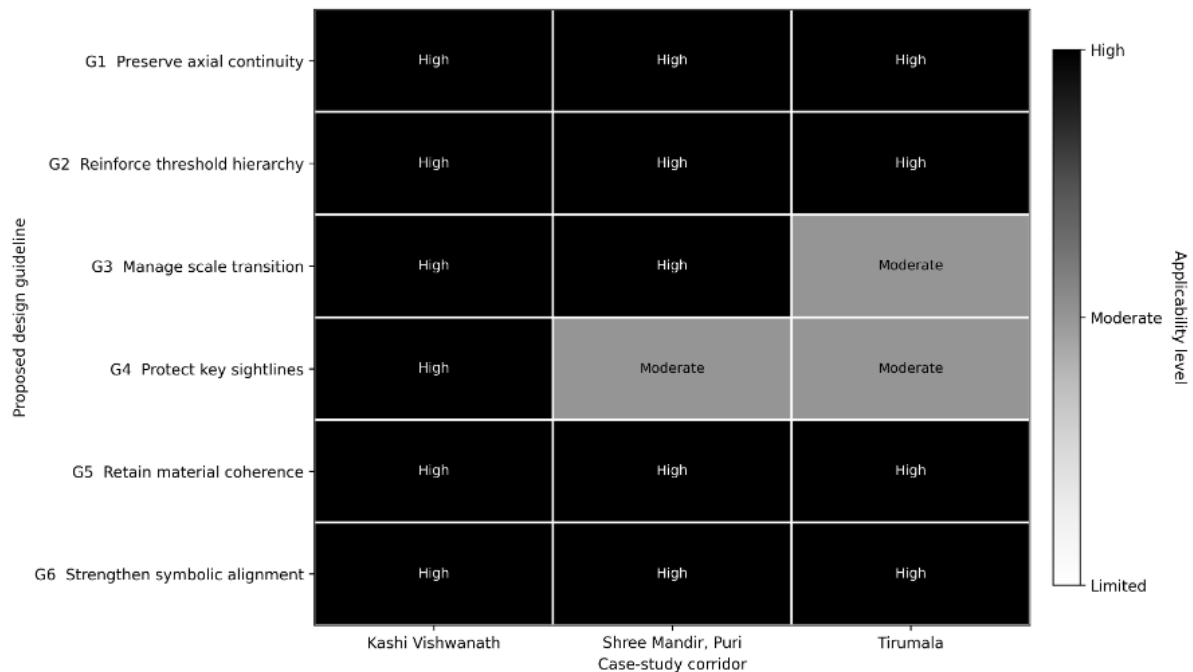


Figure 17: Applicability matrix of the six proposed design guidelines across the three case-study corridors

7. Conclusion and Future Scope

This paper has proposed and demonstrated the Spatial-Symbolic Continuity Index (SSCI), a purely architectural, six-parameter framework for assessing how closely a contemporary temple corridor redevelopment continues, translates, or ruptures the classical spatial-symbolic order of its temple precinct. Grounded in the Vastu-Purusha Mandala, the prakara-mandapa-garbhagriha sequence and the pradakshina patha, and operationalised through established, non-computational urban-morphology techniques figure-ground mapping, manual axial-line analysis, and sectional threshold diagramming the framework applied to three of India's most significant contemporary temple corridors: the Kashi Vishwanath Dham, the Shree Mandir Parikrama at Puri, and the evolving precinct at Tirumala.

The comparative results show that no single corridor geometry dominates on every measure: the Kashi Vishwanath spine achieves the strongest axial and visual continuity but the weakest fine-grained permeability; the Puri Parikrama achieves the most balanced, distributed continuity through its nine-zone concentric section; and the Tirumala precinct

achieves the strongest threshold density and material coherence within a functionally necessary but classically unprecedented semicircular queue-holding geometry. These findings translate into six design guidelines—ranging from the protection of sanctum sightlines to the retention of fine-grained edge permeability and the use of reversible interventions—intended to inform the next generation of temple precinct and corridor redevelopment in India.

The study is limited by its reliance on secondary architectural documentation rather than a full measured survey, and by the inherent subjectivity of any expert-rubric scoring instrument, however transparently the rubric is stated. Future architectural research should extend the SSCI to a larger sample of temple corridors across different regional temple traditions (Nagara, Dravida, Kalinga, Vesara), test inter-rater reliability across independent observer teams, and explore its use as a design-stage evaluative tool applied to alternative corridor proposals before construction, when the guidelines proposed in Section 6 still shape the outcome. Consistent with the architectural scope of this study, all such future development

is envisaged as remaining within manual, diagram-based and expert-rubric methods; the incorporation of computational, data-driven or artificial-intelligence techniques lies outside the

scope of this architectural framework and is not recommended as a substitute for the qualitative architectural judgement the SSCI is designed to structure, not replace.

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