International Journal of Scientific Research and Engineering Development-– Volume 9 Issue 4, Jul – Aug 2026
Available at www.ijsred.com

RESEARCH ARTICLE OPEN ACCESS

THE SIXTEEN-DIRECTION FALLACY IN CONTEMPORARY VASTU SASTRA

Classical Pada-Vinyāsa versus Modern Circular Zoning: A Textual, Geometrical and Computational Critique

Rahul Thakur (Rudra)

Researcher in Vedic Sciences, Jyotiṣa, Tantra & Vāstu

PhD Candidate, Department of Chemistry, Panjab University DST Fellow, MS (Nanotechnology), National Forensic Sciences University,Gujarat eData Analytics, University of Amsterdam Co-Founder, Vedic Manthan, Chandigarh

Abstract

Contemporary Vāstu practice increasingly employs circular diagrams in which architectural space is divided into sixteen equal directional sectors of 22.5° each. Entrances, kitchens, toilets, bedrooms, staircases and other architectural elements are consequently interpreted primarily according to their angular bearing from a selected centre. Although widely presented as Vāstu Śāstra, the textual and geometrical equivalence of this procedure with classical Indian architectural methodology remains insufficiently demonstrated.

Classical architectural sources instead describe **Vāstu-pada-vinyāsa**, in which the architectural field is systematically subdivided into rectilinear spatial modules (*padas*). Important textual traditions preserve multiple matrices, including 64-pada and 81-pada arrangements, accompanied by deity-fields, Brahmasthāna, Vaṃśa, Marma and other spatial relationships.

The present study investigates whether a sixteen-sector angular model can reasonably be regarded as spatially equivalent to classical Pada-vinyāsa. The study combines textual analysis with computational geometry and information-theoretic statistics. A reproducible simulation of 10,000 uniformly distributed spatial points within a normalized square architectural field was performed. Every point was independently classified according to (i) sixteen equal 22.5° directional sectors and (ii) a 9 × 9, 81-Pada matrix.

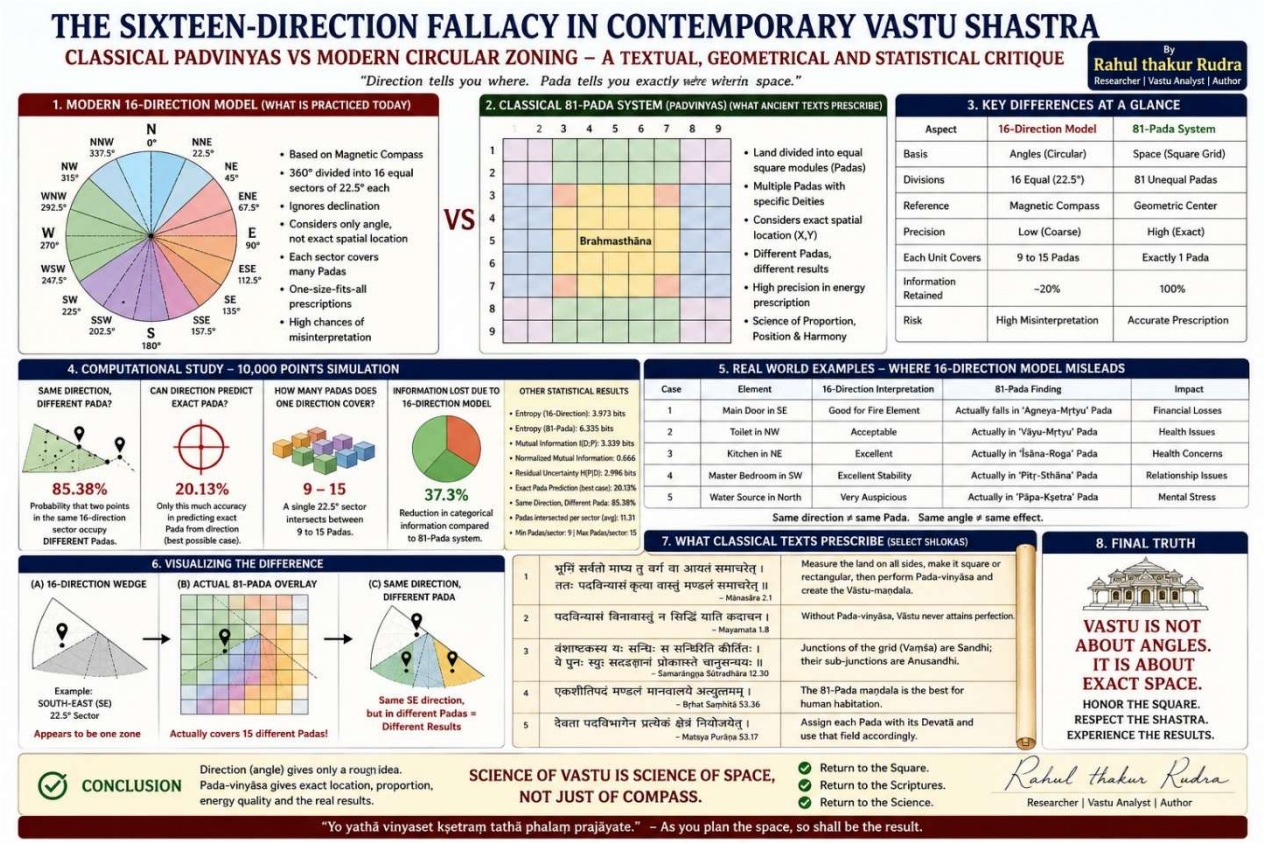
The analysis produced a probability of **85.38% that two points belonging to the same sixteen-direction sector nevertheless occupy different Padas**. Direction alone predicted exact Pada identity with a maximum accuracy of only **20.13%**. Individual directional sectors intersected between **9 and 15 distinct Padas**, with a mean of **11.31 Padas per sector**. Empirical Shannon entropy was 3.973 bits for the sixteen-direction classification and 6.335 bits for the 81-Pada classification. Mutual information between the two systems was 3.339 bits, leaving 2.996 bits of residual uncertainty concerning Pada identity even after direction was known.

The findings do not test metaphysical claims concerning Vāstu outcomes. They demonstrate a narrower but important result: **angular equivalence is not spatial equivalence**. Sixteen-direction zoning retains useful directional information but cannot mathematically reproduce the positional resolution of an 81-Pada spatial matrix.

The paper consequently argues that contemporary sixteen-sector circular zoning should not automatically be represented as a substitute for classical Pada-vinyāsa unless independent textual evidence demonstrates such equivalence.

Keywords: Vāstu Śāstra; Pada-vinyāsa; Vāstu-Puruṣa Maṇḍala; Paramaśāyika; 81-Pada; 64-Pada; sixteen directions; spatial geometry; Shannon entropy; mutual information; architectural planning; Brahmasthāna; Marma.

Graphical Abstract



1. Introduction

Vāstu Śāstra is frequently described in contemporary popular literature as an Indian "science of directions." While direction (*dik*) is unquestionably important within traditional architectural thought, such a definition risks reducing a considerably more elaborate spatial system to compass orientation alone.

Classical architectural literature describes the measurement, regularisation, subdivision and organisation of architectural ground. One of the most important instruments through which this occurs is **Pada-vinyāsa**.

The term combines:

पद — pada: position, step, division, place or spatial module;

and

विन्यास — vinyāsa: arrangement, disposition or systematic placement.

In architectural application, Pada-vinyāsa transforms the building site into a structured geometrical field.

This differs fundamentally from a widespread contemporary procedure in which a centre is selected, a circular or radial diagram is superimposed upon the plan and 360° is divided into sixteen equal angular sectors:

[\frac{360^\circ}{16}=22.5^\circ.]

Architectural functions are then interpreted through categories such as North (N), North-North-East (NNE), North-East (NE), East-North-East (ENE), East (E), and so forth.

The contemporary method is visually simple and computationally convenient.

Its convenience, however, does not establish its equivalence with classical Pada-vinyāsa.

The fundamental research question of this paper is therefore:

Can the contemporary sixteen-direction circular model be demonstrated textually and geometrically to represent the classical spatial methodology of Pada-vinyāsa?

A related question follows:

If two architectural locations belong to the same directional sector, does that imply that they occupy the same classical Pada or possess equivalent spatial identity?

These questions are particularly significant because classical authors devoted considerable attention to 64-, 81- and other multi-Pada arrangements. If sixteen angular sectors were sufficient to reproduce their spatial information, the elaborate Pada system would appear mathematically redundant.

The present study therefore investigates the relationship between **directional classification** and **positional classification**.

---

2. Classical Sources and Scope

The principal textual traditions relevant to this investigation include:

- Varāhamihira's *Bṛhat Saṃhitā*;
- *Mānasāra*;
- *Mayamata*;
- *Samarāṅgaṇa Sūtradhāra*;
- *Matsya Purāṇa*;
- associated Śilpa and Vāstu traditions.

These texts do not necessarily represent one perfectly uniform architectural system. Chronology, terminology, deity distribution and recommended applications may vary.

Such differences are themselves important.

The objective of the present study is therefore not to construct an artificial homogeneous "Vedic Vāstu" system, but to identify recurring geometrical principles documented within classical Vāstu literature.

For textual precision, this paper deliberately distinguishes between **Vedic literature proper** and later Sanskrit architectural/encyclopaedic texts. Pada-vinyāsa should not be attributed indiscriminately to "the Vedas" when the specific architectural prescriptions being cited occur in later Vāstu, Śilpa, Purāṇic or encyclopaedic literature.

---

3. Research Objectives

The study has seven principal objectives:

1. To examine the classical concept of Vāstu-pada-vinyāsa.
2. To identify important traditional varieties of spatial matrices.
3. To examine the architectural significance of Pada, Devatā-pada, Brahmasthāna, Marma and Vaṃśa.
4. To distinguish directional terminology from angular-sector zoning.
5. To investigate whether sixteen equal 22.5° sectors can reproduce the positional information contained within an 81-Pada grid.
6. To quantify information loss associated with angular aggregation.
7. To propose a reproducible methodology for comparing classical and contemporary Vāstu spatial systems.

---

4. Research Hypotheses

H_0 — Spatial Equivalence Hypothesis

The sixteen-direction circular system provides a spatial classification substantially equivalent to an 81-Pada Vāstu matrix.

H_1 — Spatial Non-equivalence Hypothesis

The 81-Pada system contains positional information that cannot be adequately reconstructed from sixteen-direction classification.

A more specific hypothesis is:

H_2

[P(P_A\neq P_B\mid D_A=D_B)>0]

That is, two points belonging to the same sixteen-direction sector may occupy different Padas.

If the probability is large, directional equivalence cannot reasonably be treated as positional equivalence.

---

5. Pada-Vinyāsa as Spatial Geometry

Classical Vāstu planning does not merely ask:

"In which direction is an architectural element?"

It additionally establishes where that element lies within a measured and subdivided architectural field.

If a square field is divided into (n) equal divisions along both axes, the total number of spatial modules becomes:

[N=n^2.]

Thus:

[8\times8=64]

and:

[9\times9=81.]

The distinction can be expressed mathematically.

An angular model principally describes:

[\theta=f(x,y).]

A Pada system preserves two-dimensional position:

[P=(x,y).]

A fuller polar representation would require:

[P=(r,\theta),]

where (r) represents radial distance and (\theta) angular direction.

If a system retains (\theta) while discarding (r), spatially distinct points located along the same ray become categorically identical.

This is the central geometrical problem examined in the present study.

---

6. Direct Classical Evidence for the 81-Pada Matrix

One of the clearest textual statements occurs in Varāhamihira's *Bṛhat Saṃhitā*, Vāstu-vidyā chapter.

Sanskrit

एकाशीतिविभागे दश दश पूर्वोत्तरायता रेखाः ।
अन्तस्त्रयोदश सुरा द्वात्रिंशद्बाह्यकोष्ठस्थाः ॥

Transliteration

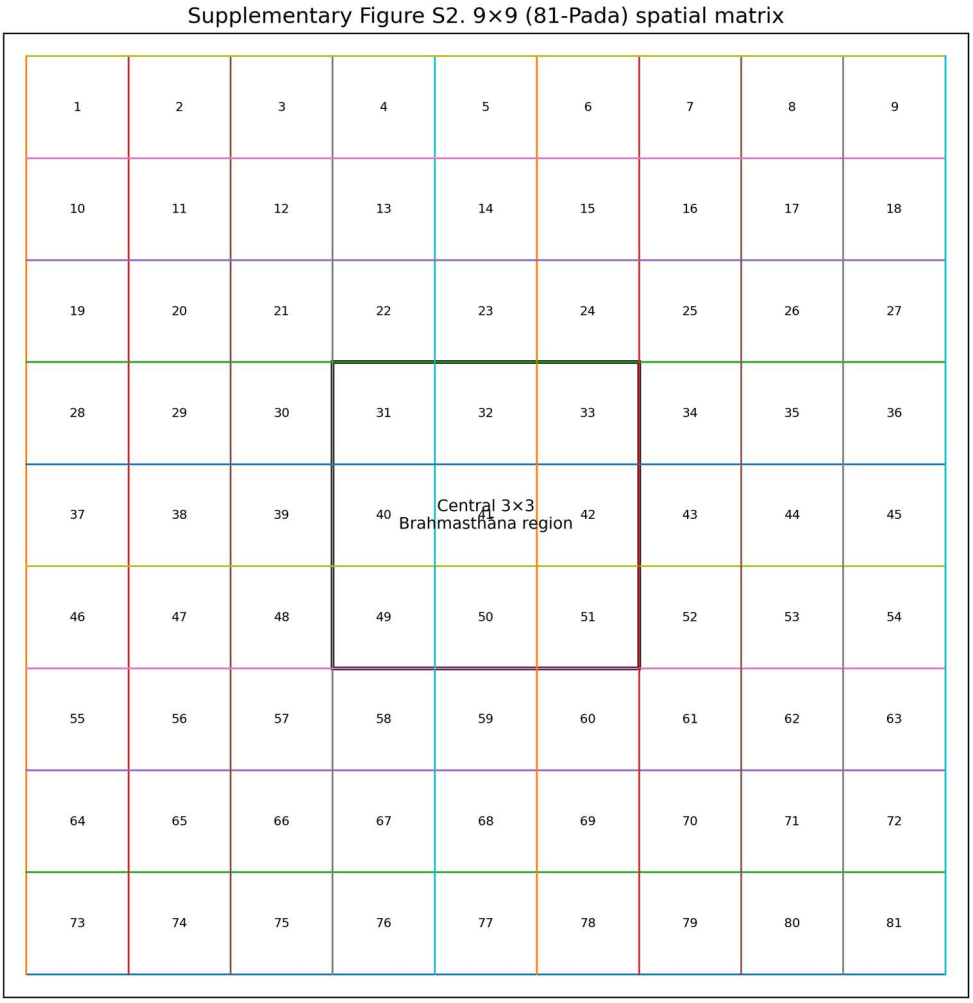


Figure 2. Computational representation of the 9 × 9 (81-Pada) spatial matrix used in the study. The central 3 × 3 region is shown for visual orientation.

ekāśīti-vibhāge daśa daśa pūrvottarāyatā rekhāḥ |
antas trayodaśa surā dvātriṃśad-bāhya-koṣṭha-sthāḥ ||

Interpretation

The ground is divided into **eighty-one parts** by ten lines running in each principal orientation; thirteen deities occupy internal positions and thirty-two occupy external cells.

— *Bṛhat Saṃhitā*, Vāstu-vidyā, v. 42 (chapter numbering varies between editions).

The geometrical implication is unambiguous:

[9\times9=81.]

The text describes a **rectilinear cellular field**, not sixteen radial wedges.

This constitutes strong primary textual evidence that Pada-based spatial subdivision formed part of classical architectural analysis.

7. Pada-Specific Deity Distribution

The verses immediately following the 81-fold division allocate specific deities to individual positions.

This is methodologically important.

The classical model does not merely state:

East is governed by one homogeneous influence.Instead, multiple positions occur along the eastern perimeter.Similarly, the southern, western and northern sides contain sequences of distinct deity-fields.

This means that:

[\text{same cardinal side}\neq
\text{same Pada identity}.]

A direction therefore represents a broader spatial category within which finer subdivisions exist.

This directly anticipates the central argument of the computational experiment.

---

8. The 64-Pada Alternative

The same Vāstu chapter subsequently provides an alternative division into sixty-four equal squares.

Thus:

[8\times8=64.]

The central squares are associated with Brahmā, while other spatial positions are systematically assigned.

The coexistence of 81- and 64-Pada systems demonstrates that classical Vāstu possessed **multiple levels or forms of spatial discretisation**.

The *Mānasāra* tradition develops this principle even further.

Its ground-plan classification describes a sequence of square matrices, traditionally enumerated as thirty-two schemes.

Important examples include:

Matrix	Padas	Traditional designation
1 × 1	1	Sakala
2 × 2	4	Pechaka
3 × 3	9	Pīṭha
4 × 4	16	Mahāpīṭha
5 × 5	25	Upapīṭha
6 × 6	36	Ugrapīṭha

Matrix	Padas	Traditional designation
7 × 7	49	Sthaṇḍila
8 × 8	64	Maṇḍūka/Caṇḍita traditions
9 × 9	81	Paramaśāyika
10 × 10	100	Āsana/Śatapada tradition

Nomenclature varies across textual traditions and editions and should therefore not be universalised without qualification.

Nevertheless, the underlying principle remains clear:

Classical Vāstu architecture employed systematic square-grid subdivision at multiple resolutions.

This resembles what contemporary spatial science would call **multi-resolution spatial modelling**.

---

9. Sixteen Padas Are Not Sixteen Directions

An especially important conceptual error must be avoided.

A 4 × 4 matrix contains:

[4\times4=16]

Padas.

A circular system divided into sixteen directions contains:

[\frac{360^\circ}{16}=22.5^\circ]

per sector.Both contain the number sixteen.

They are nevertheless geometrically different.The former divides:

[\boxed{\text{AREA}}]

whereas the latter divides:

[\boxed{\text{ANGLE}}.]

Therefore:

[\boxed{\text{16 Padas}\neq\text{16 directional sectors}.}]

- **Numerical similarity does not establish geometrical equivalence.**

---

10. Classical Evidence from Entrance Classification

An especially strong argument against treating an entire direction as homogeneous occurs in Varāhamihira's discussion of entrances.

Sanskrit

नवगुणसूत्रविभक्तान्यष्टगुणेनाथवा चतुःषष्टेः ।
द्वाराणि यानि तेषामनलादीनां फलोपनयः ॥

Transliteration

navaguṇa-sūtra-vibhaktāny aṣṭaguṇenāthavā catuḥṣaṣṭeḥ |
dvārāṇi yāni teṣām analādīnāṃ phalopanayaḥ ||

Interpretation

Whether the ground is divided according to the ninefold/81-pada arrangement or the eightfold/64-pada arrangement, the results associated with entrances are considered according to the respective deity positions beginning with Anala/Agni.

— *Bṛhat Saṃhitā*, Vāstu-vidyā, v. 69 in commonly used chapter-53 numbering.

The following verses then provide different results for successive entrance positions along the eastern, southern, western and northern sides.

This has an important methodological consequence:

The classical text itself differentiates locations within the same cardinal side.

"East-facing entrance" is therefore not, by itself, the complete classical classification.

The exact spatial position matters.

---

11. Marma: Evidence That Exact Position Matters

The spatial precision of classical Vāstu becomes even clearer in the discussion of *Marma*.

Varāhamihira states:

मर्माणि तानि विन्द्यान् न तानि परिपीडयेत् प्राज्ञः ॥

marmāṇi tāni vindyān na tāni paripīḍayet prājñaḥ

Broadly:

"The knowledgeable practitioner should recognise these as Marma points and should not injure/obstruct them."

The subsequent verse discusses disturbance by impure objects, pegs, pillars and buried obstructions.

Whether or not one accepts the traditional consequences assigned to such disturbance, the architectural methodology is unmistakable:

specific intersections possess spatial significance.

A compass direction alone cannot identify such an intersection.

---

12. Atimarma and Grid Intersections

The text further describes intersecting lines and their junctions:

तत्सम्पाता नव ये तानि अतिमर्माणि सम्प्रदिष्टानि ।
यश्च पदस्याष्टांशः तत् प्रोक्तं मर्मपरिमाणम् ॥

Transliteration

tat-sampātā nava ye tāni atimarmāṇi sampradiṣṭāni |
yaś ca padasyāṣṭāṃśas tat proktaṃ marma-parimāṇam ||

Interpretation

Nine intersections produced by the relevant lines are designated *Atimarma*, and the text additionally gives a proportional measure associated with the Marma region.

This is particularly significant for the present argument.

A rectilinear/diagonal spatial matrix generates:

- cells;
- boundaries;
- axes;
- intersections;
- centrality;
- relative position.

A sixteen-sector polar model generates:

- radial boundaries;
- angular intervals.

These are topologically different systems.

One cannot therefore assume that one reproduces the other.

---

13. The Modern Sixteen-Direction Model

The contemporary system commonly divides the complete circle as:

Sector	Central bearing
N	0°
NNE	22.5°
NE	45°
ENE	67.5°
E	90°
ESE	112.5°
SE	135°
SSE	157.5°
S	180°
SSW	202.5°
SW	225°
WSW	247.5°
W	270°
WNW	292.5°
NW	315°
NNW	337.5°

Each sector spans 22.5°.

There is nothing mathematically invalid about such a division.

The historical question is different:

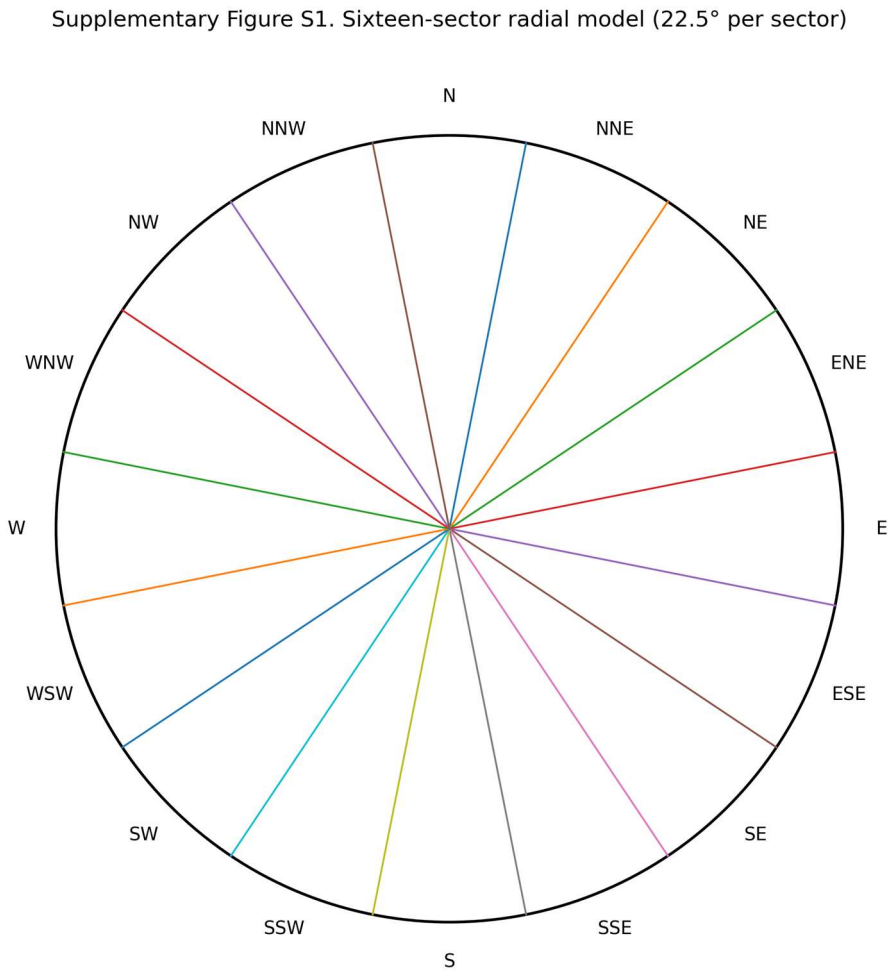


Figure 1. Contemporary sixteen-sector radial model. The complete circle is divided into sixteen equal angular sectors of 22.5° each.

Where does the primary classical architectural literature prescribe these sixteen equal 22.5° sectors as a replacement for Pada-vinyāsa?

Recognition of intermediate directions cannot by itself answer this question.

The existence of a named direction does not automatically establish:

1. equal 22.5° boundaries;
2. a common radial origin at the geometric centre;
3. homogeneous architectural effects throughout the complete wedge;
4. equivalence between the wedge and classical deity-Padas.

These propositions require independent textual evidence.

---

14. Direction Is Not Position

Consider two coordinates:

[A=(1,1)]

and:

[B=(5,5).]

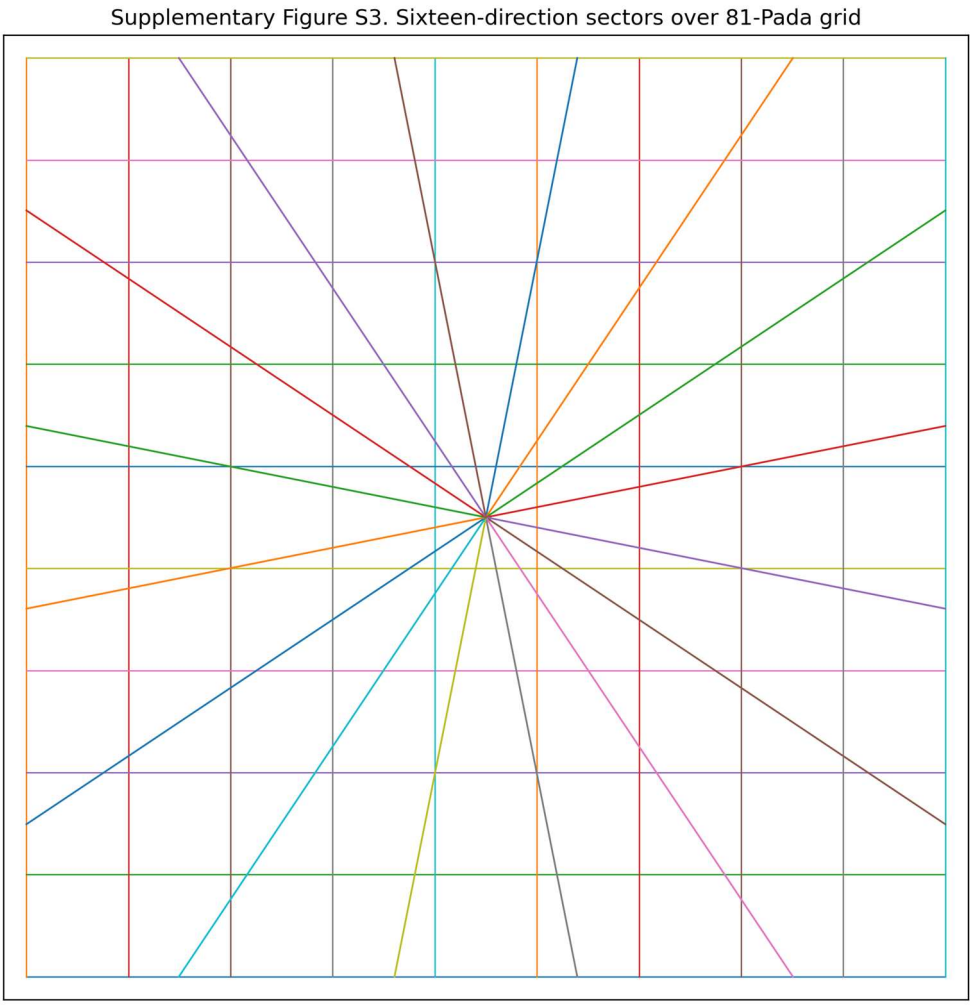


Figure 3. Superimposition of sixteen radial sectors upon the 81-Pada matrix, demonstrating that angular sectors cut across multiple spatial cells.

Their angular bearings are identical:

[\theta_A=\theta_B=45^\circ.]

Their radial distances are:

[r_A=\sqrt{2}]

and:

[r_B=5\sqrt{2}.]

Thus:

[\theta_A=\theta_B]

while:

[r_A\neq r_B.]

A purely angular classifier treats A and B identically.

A spatial matrix does not necessarily do so.

Therefore:

[\boxed{\text{Angular equivalence}\neq\text{spatial equivalence}.}]

---

15. The Centroid Problem

A room is an area, not a mathematical point.

Suppose a toilet, staircase or kitchen spans several spatial modules.

If its direction is assigned using its centroid, the complete room is reduced from a polygon:

[R={(x,y)}]

to one representative coordinate:

[C=(\bar{x},\bar{y}).]

This is a substantial dimensional simplification.

A Pada-based GIS or CAD approach can instead calculate:

[O_i=\frac{A_i}{A_T}\times100,]

where:

- (A_i) = area of the architectural element inside Pada (i);
- (A_T) = total area of the element.

A kitchen might consequently be represented as:

- Pada A: 42%;
- Pada B: 31%;
- Pada C: 19%;
- Pada D: 8%.

This preserves considerably more information than simply:

"Kitchen = SE."

---

16. Computational Methodology

To test the spatial relationship quantitatively, a reproducible computational experiment was performed.

16.1 Study Field

A normalized square architectural field was defined:

[-1\leq x\leq1,]

[-1\leq y\leq1.]

16.2 Sample

A total of:

[\boxed{N=10,000}]

spatial points were sampled uniformly across the field.

A fixed random seed:

[\boxed{42}]

was used for reproducibility.

16.3 Directional Classification

Angular bearing was calculated with:

- North = 0°;
- clockwise positive orientation.

Each point was assigned to one of sixteen 22.5° sectors.

16.4 Pada Classification

The identical square field was independently divided into:

[9\times9=81]

equal cells.

Every simulated coordinate consequently possessed:

[(x,y,\theta,D,P),]

where:

- (x,y) = spatial coordinates;
- (\theta) = azimuth;
- (D) = sixteen-direction class;
- (P) = Pada identity.

---

17. Statistical Measures

Five principal measures were calculated.

17.1 Shannon Entropy

[H(X)=-\sum_i p_i\log_2p_i.]

17.2 Mutual Information

[I(D;P)\sum_{d,p}p(d,p)\log_2\frac{p(d,p)}
{p(d)p(p)}.]

17.3 Normalized Mutual Information

Used to measure shared information between the classifications on a normalized scale.

17.4 Conditional Entropy

[H(P|D)=H(P)-I(P;D).]

This estimates uncertainty regarding Pada after direction is known.

17.5 Exact-Pada Predictability

For each direction, the most frequent Pada was selected as the optimal direction-only prediction.

This produces a best-case estimate of:

[P(P|D).]

---

18. Results

Table 1. Principal computational findings

Measure	Result
Spatial observations	10,000
16-direction entropy	3.9731 bits
81-Pada entropy	6.3347 bits
Mutual information	3.3388 bits

Measure	Result
Normalized mutual information (H(P D))	0.6655
Best exact-Pada prediction from direction	20.13%
Same-direction/different-Pada probability	85.38%
Minimum Padas intersected/sector	9
Maximum Padas intersected/sector	15
Mean Padas intersected/sector	11.31

19. Primary Finding: Same Direction, Different Pada

The most important result was:

[\boxed{P(P_A\neq P_B|D_A=D_B)=0.8538}]

or:

[\boxed{85.38%}.]

Supplementary Figure S4. Same direction, different Pada

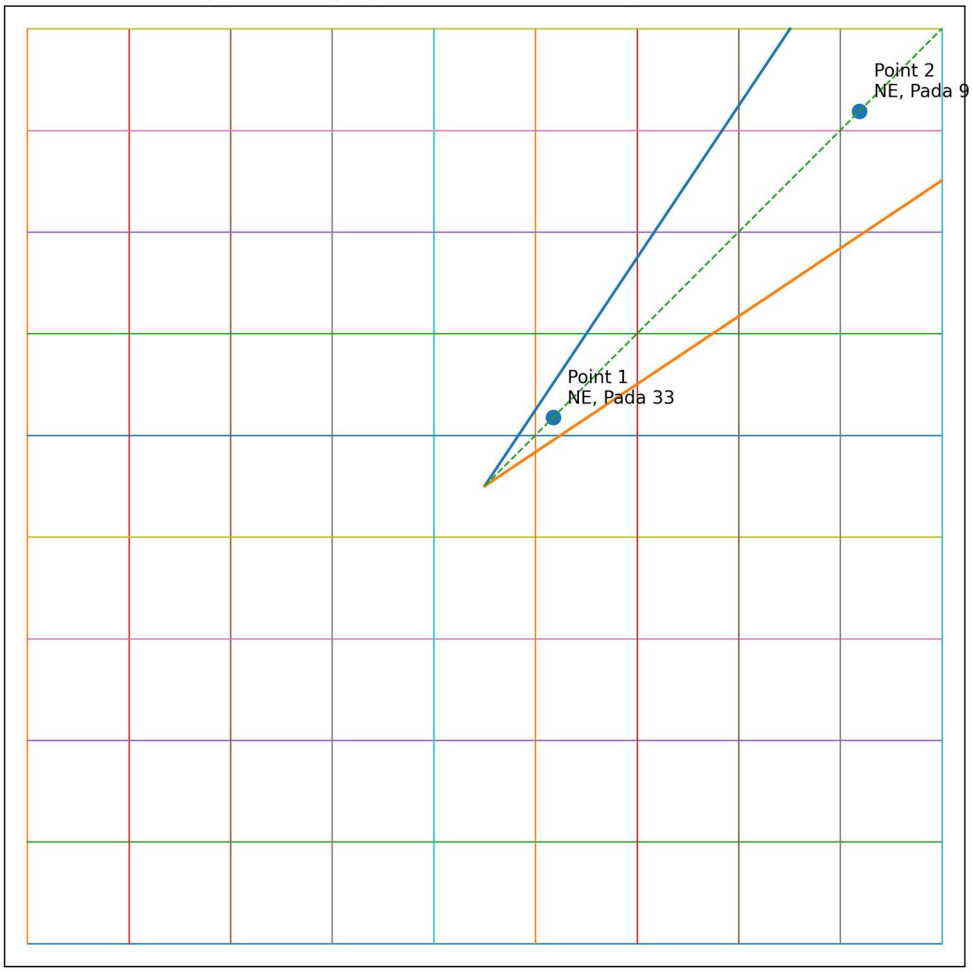


Figure 4. Same direction, different Pada: two points may share the same directional classification while occupying different cells of the 81-Pada matrix.

Thus two randomly selected points belonging to the same sixteen-direction category had an **85.38% probability of occupying different Padas**.

Only approximately:

[14.62%]

of same-direction point pairs shared the same Pada.

This directly demonstrates:

[\boxed{D_A=D_B\not\Rightarrow P_A=P_B.}]

The result provides quantitative support for the distinction between direction and position.

---

20. Can Direction Predict Pada?

Using the most favourable possible prediction rule—assigning each direction to its most frequently associated Pada—the exact Pada could be correctly predicted from direction alone in:

[\boxed{20.13%}]of observations.

The unresolved proportion was:

[100-20.13=79.87%.]

Therefore approximately four out of five exact Pada locations cannot be reconstructed from sixteen-direction identity alone.

---

21. How Many Padas Does One Direction Contain?

The 10,000-point simulation produced:

Direction	Distinct Padas intersected
N	9
NNE	11
NE	14
ENE	10
E	9
ESE	11
SE	15
SSE	11
S	9

Direction	Distinct Padas intersected
SSW	11
SW	15
WSW	11
W	9
WNW	10
NW	15
NNW	11

Mean:

[\boxed{11.31}.]

Therefore a single modern directional label may represent more than ten distinct Pada locations.

Particularly strikingly:

[SE=15\text{ Padas},]

[SW=15\text{ Padas},]

and:

[NW=15\text{ Padas}]

within the experimental geometry.

Consequently:

"South-East" is a directional description, not a unique spatial address.

---

22. Information-Theoretic Results

The observed entropy was:

[H(D)=3.9731\text{ bits}]

and:

[H(P)=6.3347\text{ bits}.]

Difference:

[\Delta H=2.3616\text{ bits}.]

Relative to Pada entropy:

[\frac{2.3616}{6.3347}\times100\approx37.28%.]

Thus the directional classification possesses approximately 37% less maximum observed categorical differentiation in this simulation.

This must **not** be interpreted as "37% of Vāstu energy is lost."

The result concerns **information resolution**, not metaphysical efficacy.

---

23. Mutual Information

The mutual information between direction and Pada was:

[\boxed{I(D;P)=3.3388\text{ bits}}.]

Normalized Mutual Information was:

[\boxed{NMI=0.6655}.]

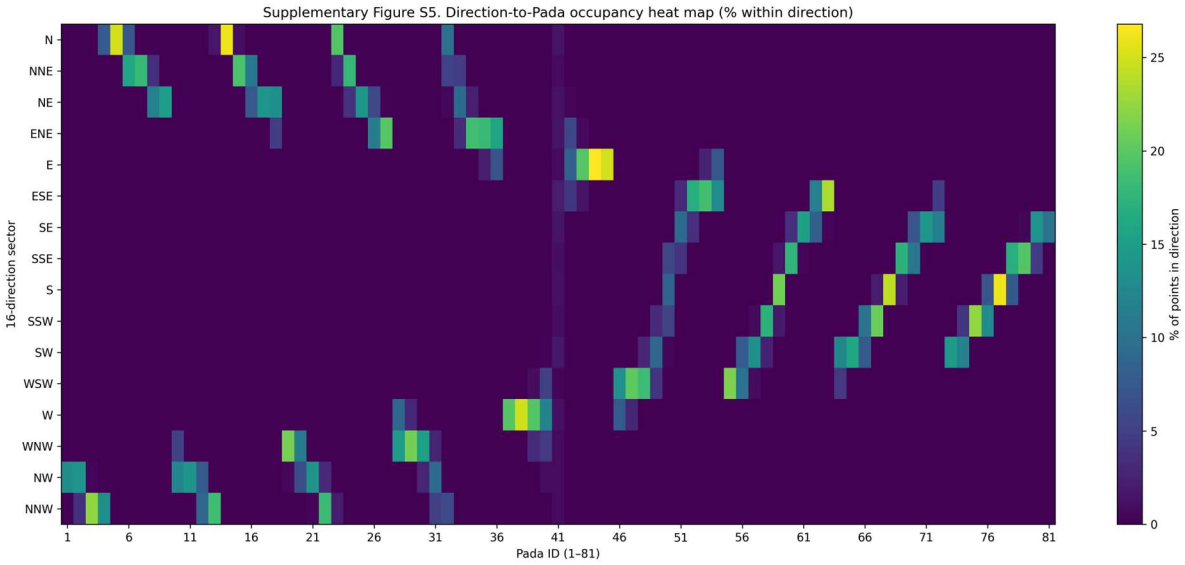


Figure 5. Direction-to-Pada occupancy heat map from the 10,000-point simulation. Each directional category is distributed across multiple Pada identities.

This is an important result because it prevents an exaggerated conclusion.

- Direction and Pada are **not unrelated**.
- Direction contains considerable information about spatial position.

However, they are also not equivalent.

If direction perfectly determined Pada identity, residual uncertainty would approach zero.

Instead:

[H(P|D)=2.9959\text{ bits}.]

This corresponds approximately to:

[2^{2.9959}\approx7.98]effective equiprobable possibilities.

In intuitive terms, even after direction is known, approximately **eight effective Pada possibilities remain unresolved**.

---

24. Five Practical Architectural Cases

24.1 Main Entrance

Two doors may both be classified as "East."

Classical Pada analysis can nevertheless locate them in different eastern deity-fields.

This is particularly significant because *Bṛhat Saṃhitā* itself assigns different results to successive entrance positions along the same side.

Thus:

[\text{East Door A}\neq\text{East Door B}]

within classical spatial analysis.

24.2 Kitchen

Two kitchens may both possess centroids at approximately:

[135^\circ.]

Both are therefore labelled SE.

Kitchen A may occupy peripheral Padas.

Kitchen B may extend toward central Padas.

Hence:

[D_A=D_B]

while:

[P_A\neq P_B.]

24.3 Toilet

A 6.5 m² toilet may have its centroid in one directional sector while:

- 54% of area lies in Pada A;
- 31% in Pada B;
- 15% in Pada C.

Centroid classification therefore suppresses 46% of the room's non-dominant Pada occupancy.

24.4 Staircase

A staircase may occupy four Padas.

If only 37% of its footprint lies within the Pada containing its centroid, then:

[63%]

of the staircase exists outside the spatial cell represented by the centroid.

The problem becomes increasingly significant for large architectural elements.

24.5 Irregular Building

Consider two equal 22.5° angular sectors within an L-shaped building.

One may contain:

[41.2m^2]of actual built area while another contains:

[8.6m^2.]

Their ratio is:

[\frac{41.2}{8.6}=4.79.]

Thus equal angular width does not imply equal architectural area.

---

25. Why the Difference Matters

The two systems answer different questions.

Sixteen-direction zoning asks:

At what angular bearing from the centre is the object located?

Pada-vinyāsa asks:

Which defined portion of the architectural field does the object occupy?

The first predominantly measures:

[\theta.]

The second retains:

[(x,y).]

A complete spatial model may contain:

[(x,y,r,\theta,A,P,M)]

where (A) represents footprint, (P) Pada identity and (M) grid/intersection relationships.

Thus Pada-vinyāsa should be understood as a **spatial-location model**, not merely another directional compass.

---

26. Critique of the Contemporary Sixteen-Sector Assumption

The findings permit a precise criticism.

It would be excessive to conclude:

"Sixteen directions are false."

Directions are legitimate geometrical concepts.

Nor does the present study demonstrate that every contemporary Vāstu interpretation involving sixteen directions lacks value.

The narrower criticism is considerably stronger:

Sixteen equal angular sectors cannot be assumed to be mathematically interchangeable with classical Pada-vinyāsa.

For direct classical authority to be established, evidence should ideally demonstrate:

1. division of the complete architectural plan into sixteen radial sectors;
2. equal sector widths of 22.5°;
3. specified angular boundaries such as 11.25°, 33.75°, etc.;
4. a prescribed radial origin;
5. deity assignment specifically to these angular intervals;

6. architectural outcomes attached to those exact intervals;
7. textual authority for replacing Pada analysis with these sectors.

Without such evidence, the sixteen-sector system should more cautiously be described as a **modern interpretative framework employing traditional directional terminology**.

---

27. Classical Evidence versus Modern Simplification

One of the strongest textual arguments occurs not in abstract cosmology but in the treatment of doors.

The classical text differentiates multiple entrance locations along one side.

Modern simplification frequently converts the same facade into a broad directional label.

The classical method therefore contains **intra-directional differentiation**.

This corresponds closely with the simulation finding that one directional sector intersects many Padas. Remarkably, textual and computational analyses arrive at the same structural conclusion:

[\boxed{\text{Direction alone does not exhaust spatial identity}.}]

---

28. Modern Computational Application of Classical Pada-Vinyāsa

The argument of this paper should not be interpreted as opposition to modern technology.

Modern computational methods can make Pada-vinyāsa substantially more precise.

A contemporary workflow can:

1. georeference the building plan;
2. establish geographic/True North where required;
3. digitise the building polygon;
4. determine the appropriate geometrical reference;
5. superimpose the selected Pada grid;
6. calculate room-grid intersections;
7. calculate percentage occupancy per Pada;
8. identify Brahmasthāna relationships;
9. identify Marma/axis intersections;
10. quantify uncertainty.

An architectural element can therefore be represented as:

[R=(x,y,r,\theta,A,P,D,M).]

This is considerably richer than:

[R=(D).]

CAD, GIS and computational geometry therefore offer an opportunity not to abandon classical Vāstu geometry, but to examine it with greater mathematical precision.

---

29. Discussion

The textual evidence demonstrates that classical Vāstu literature employed cellular spatial division.

Varāhamihira explicitly describes an 81-square field and subsequently a 64-square alternative. Individual cells are associated with specific deities. Central cells, lines, intersections and entrance positions possess differentiated significance.

The computational experiment demonstrates independently that sixteen angular categories cannot reproduce an 81-cell positional system.

Three findings are particularly important:

[\boxed{85.38%}]

same direction but different Pada;

[\boxed{20.13%}]

maximum exact-Pada prediction from direction;

and:

[\boxed{9-15}]

Padas intersected by a single directional sector.

These are large structural differences, not minor rounding errors.

At the same time, the NMI value:

[0.6655]

demonstrates meaningful shared information.

This is expected.

A South-East angular sector will naturally contain Padas geographically located toward the South-East. The correct conclusion is therefore not:

"Direction has no relationship with Pada."

Rather:

Direction provides partial spatial information but is insufficient to determine Pada identity.

This distinction is essential.

30. Statistical Interpretation and the Question of Significance

A conventional ($p<0.05$) significance test is not the principal statistical tool required for the current experiment.

The simulation does not represent a random epidemiological or sociological sample from which a population parameter must be inferred.

It represents computational geometry.

With 10,000 generated coordinates, the principal quantities of interest are therefore:

- effect magnitude;
- conditional probability;
- entropy;
- mutual information;
- classification accuracy;
- spatial overlap.

Artificially attaching very small p-values to deterministic geometrical differences would add little scientific information.

Future research involving actual buildings and occupant outcomes would require inferential statistics, confidence intervals, regression modelling and control for confounding variables.

31. Limitations

The present study has several limitations.

First, the simulation uses a normalized square plan.

Actual architecture includes rectangles, trapezoids, L-shaped plans, courtyards, projections and irregular polygons.

Second, simulated observations are points. Rooms possess area. Future studies should therefore use polygon-overlap analysis.

Third, the study compares sixteen directions specifically against an 81-Pada matrix. Classical literature contains other Pada-vinyāsas.

Fourth, the simulation demonstrates geometric non-equivalence but does not test whether traditional predictions associated with particular Padas produce measurable human outcomes.

Fifth, classical textual traditions are heterogeneous. Variations in terminology, chapter numbering, deity assignments and architectural applications must be recognised.

32. Future Research

The present work opens several research directions.

Study I — 64 versus 81 Pada

Compare Maṇḍūka and Paramaśāyika spatial resolution.

Study II — Actual Building Dataset

Analyse:

[N\ge100]residential floor plans.

Study III — Polygon Analysis

Replace room centroids with complete room footprints.

Study IV — Irregular Geometry

Compare square, rectangular, L-shaped and irregular plans.

Study V — Textual Concordance

Construct a database of Sanskrit prescriptions from *Bṛhat Saṃhitā*, *Mayamata*, *Mānasāra*, *Samarāṅgaṇa Sūtradhāra* and Purāṇic sources.

Study VI — Historical Origin of 16-Sector Vāstu

Determine when equal 22.5° architectural sectors first appear in published Vāstu literature.

This is particularly important.

If no early Sanskrit source employs the contemporary 22.5° model, identifying its historical emergence could constitute a separate research paper.

33. Conclusion

Classical Vāstu Śāstra cannot adequately be characterised as compass-direction analysis alone.

The textual tradition preserves a substantially richer conception of architectural space based upon measurement, proportional subdivision, Pada identity, deity-fields, centrality, axes and intersections.

The contemporary sixteen-direction model and classical Pada-vinyāsa therefore operate at different levels of spatial description.

The mathematical distinction can be expressed simply:

$$\boxed{\text{Direction}\neq\text{Position}}$$

$$\boxed{\text{16 angular sectors}\neq\text{16 Padas}}$$

and most importantly:

$$\boxed{D_A=D_B\not\Rightarrow P_A=P_B.}$$

The 10,000-point computational experiment demonstrates the magnitude of this distinction. Two points sharing the same sixteen-direction category had an **85.38% probability of occupying different Padas**, while direction alone predicted exact Pada identity in only **20.13%** of observations.

The evidence therefore does not support treating sixteen-direction circular zoning as a mathematical substitute for an 81-Pada matrix.

The broader conclusion is not that direction is irrelevant to Vāstu.

Rather:

Direction identifies where one is facing; Pada-vinyāsa identifies where within the architectural field one actually is.

Classical Vāstu integrates both orientation and location.

Modern simplification becomes methodologically problematic when the former is permitted to replace the latter.

Accordingly, unless explicit primary textual evidence establishes the sixteen equal 22.5° sector system and demonstrates its equivalence to Pada-vinyāsa, it should be identified as a contemporary interpretative methodology rather than uncritically presented as the classical spatial framework of Vāstu Śāstra.

Declarations

Funding

No external funding was received for this study.

Conflict of Interest

The author declares no conflict of interest.

Ethical Approval

Not applicable. The study used computationally generated spatial coordinates and historical textual sources and involved no human or animal participants.

Informed Consent

Not applicable.

Data Availability

The complete 10,000-point synthetic dataset, statistical summary and direction-to-Pada intersection dataset generated for the computational component of this study are available from the author and may be deposited as supplementary material with the journal.

Code Availability

The computational procedure is reproducible from the methodological description and fixed random seed reported in this manuscript. Source code should accompany the final journal submission as supplementary material or be deposited in an appropriate repository.

Author Contribution

Rahul Thakur Rudra: Conceptualisation; classical Vāstu framework; methodology; computational research design; interpretation; writing; review and editing.

References

Acharya, P. K. (1934). *Architecture of Mānasāra*. Oxford University Press.

Acharya, P. K. (1933–1934). *Mānasāra on Architecture and Sculpture: Sanskrit Text with Critical Notes*. Oxford University Press.

Bhoja. *Samarāṅgaṇa Sūtradhāra*. Various Sanskrit editions. [Critical edition details to be standardised according to the edition used for final textual quotations.]

Dagens, B. (1994). *Mayamata: An Indian Treatise on Housing, Architecture and Iconography*. New Delhi: Indira Gandhi National Centre for the Arts / Motilal Banarsidass.

Iyer, N. Chidambaram (Trans.). (1884). *The Brihat Samhita of Varaha Mihira*. Madras: South Indian Press.

Kramrisch, S. (1946). *The Hindu Temple*. Calcutta: University of Calcutta.

Salvini, M. (2012). The Samarāṅganasūtradhāra: Themes and context for the science of Vāstu. *Journal of the Royal Asiatic Society*, 22(1), 35–55.

Shukla, D. N. (1960). *Vāstu-Śāstra: Hindu Science of Architecture*. Lucknow.

Varāhamihira. *Bṛhat Saṃhitā*, Vāstu-vidyā chapter, especially vv. 42–75. Sanskrit text; chapter numbered 52 or 53 according to edition.

Matsya Purāṇa. Vāstu-related chapters. Critical bibliographical edition to be specified according to the Sanskrit text consulted.

Mānasāra. Chapter VII, Pada-vinyāsa-lakṣaṇa.

Mayamata. Sections dealing with Pada-vinyāsa and Vāstu-Puruṣa Maṇḍala.

