

Brahmasthan and Geometrical Centres in Irregular Building Plans

Geometry and Interpretation in Vastusastra

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Abstract-- The geometrical centre of an irregular footprint and the central portion assigned to Brahmā are not interchangeable without a declared interpretive rule. This study combines edition-verified Sanskrit passages from the Mayamata and Mānasāra, published courtyard research, two documented contemporary centre-finding statements, and exact planar analysis. The selected Mayamata schemes assign four central cells in a 64-cell grid and nine in an 81-cell grid; a reported point assignment in another classical scheme limits any universal region claim. Six constructed footprints compare area centroids, enclosing-rectangle midpoints, and central-region coverage. A corner-notch family gives an exact centroid-exit threshold, while a second comparison holds the footprint fixed and varies its reference field. Published Kerala and Patan studies demonstrate why a courtyard void and an absent building corner require different architectural interpretations. The traditional claims concerning auspiciousness and welfare are retained with their Sanskrit meanings, rather than inferred from coordinate agreement or converted into measured economic outcomes. The results establish that point location, region extent, and reference-domain selection are separate decisions. A complete reproduction program generates the geometric tables and four figures. The contribution is a conditional framework for auditing geometrical adaptations of selected prescriptions, without asserting a universal sacred-centre algorithm or an empirical test of traditional efficacy.

Keywords-- Brahmasthāna; Vāstuśāstra; Mayamata; Vāstupuruṣamaṇḍala; polygon centroid; courtyard; architectural interpretation

I. INTRODUCTION

Locating Brahmasthāna in an irregular building requires three decisions: the relevant architectural domain, the centre construction, and the extent assigned to the central region. A centroid computed from floor area answers one geometrical question. The midpoint of a reference rectangle answers another. A deity assignment in a specified mandala identifies a ritually meaningful place or portion.

Their agreement in a regular symmetrical plan can conceal the distinctions; an irregular outline exposes them.

Within Vāstuśāstra, the centre belongs to an ordered architectural and ritual field. Its association with Brahmā, the body of the Vāstupuruṣa, auspiciousness, and welfare is essential to its meaning. A historically sensitive account therefore preserves these associations. Mathematical definitions can clarify a proposed contemporary interpretation, but they cannot independently supply its ritual authority. Nor does an agreement between two coordinate calculations establish a prosperity outcome.

The study asks what the selected prescriptions establish, how documented geometrical candidates diverge, and how changing the reference field affects a fixed footprint. It combines source criticism with exact counterexamples. Published architectural cases provide contextual comparison, not newly surveyed data; the six mathematical examples are constructed plans. The analytical contribution is the relation between point, region, and architectural reference, rather than a new centroid formula. No universal priority claim or efficacy experiment is made.

II. SOURCES AND CONTEMPORARY METHODS

The source corpus separates three kinds of evidence. Dagens' critical Mayamata and Acharya's Sanskrit Mānasāra establish selected prescriptions; architectural studies examine existing spatial practices; contemporary service webpages document stated centre-finding methods. The first two source classes are not replaced by the third. Cases are selected to expose domain and interpretation choices, rather than estimate their frequency across practitioners.

Patan and Funo's full courtyard study uses measured plans and frontage analysis in Patan (2004). Widiastuti's full Kerala study relates courtyard typology to textual prescriptions and regional practice (2018). These studies make the architectural domain a substantive research object.



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Their building and settlement contexts differ; neither is treated as a universal manual for locating Brahmathāna in an apartment.

Meister's published abstract situates temple proportion within ritual and analysis of built structures (1985). Chakrabarti's preface and Tillotson's foreword place Vāstuvidyā within a wider architectural programme (1998). These limited consulted portions supply context, while the detailed architectural comparisons below rely on the full Patan and Kerala articles. The paper does not infer an irregular-building algorithm from an abstract or foreword.

Two contemporary webpages were examined on 13 October 2026 because they state contrasting procedures explicitly. VastuIQ describes its irregular-plan procedure as a polygon centroid and calls it the "same method as classical Vastu texts"; its page identifies the centre with an area-weighted centroid. Aroha's floor-plan guide allows either the midpoint of the smallest enclosing rectangle or the centre of area, while acknowledging differences among practitioners (VastuIQ, n.d.; Aroha Editorial Team, 2026). These are primary evidence of what the services state, not evidence that the methods are classically equivalent. No proprietary implementation was executed or audited.

The contrast motivates an exact comparison. Centroid calculation can be arithmetically correct while its identification with a particular sacred assignment remains an additional interpretive step. The selected classical passages establish central allocations; they do not supply the polygon first-moment algorithm used here. This finding concerns those passages and these documented statements, rather than a dismissal of contemporary Vāstu practice as a whole.

III. TEXTUAL EVIDENCE AND SANSKRIT VERIFICATION

The primary textual checks use page images of Dagens' Mayamata edition (1970) and Acharya's original Sanskrit Mānasāra, volume III (1934). Mayamata 7.43 is on printed p. 93, 7.54 on p. 95, and 7.55–58 on p. 97; their facing French discussions are on pp. 92, 94, and 96. Mānasāra 7.56a is on printed p. 23. Sanskrit text, IAST transcription, contextual translation, and mathematical reconstruction are distinguished. Verification concerns the printed editions and selected readings; it is not a fresh manuscript collation. English Mānasāra line numbers remain distinct from Sanskrit verse numbers.

3.1 Brahmathāna occupies a region

Mayamata 7.43 states the central allocation for the 64-cell diagram:

चतुःषष्टिपदे मध्ये ब्रह्मणश्च चतुष्पदम् ॥ ४३ ॥

IAST: catuṣṣaṣṭipade madhye brahmaṇaś ca catuṣpadam. Contextual translation by the present author: In the sixty-four-cell scheme, the central four-cell portion belongs to Brahmā. Catuṣṣaṣṭipade sets the scheme, madhye supplies the central relation, brahmaṇaḥ identifies the possessor, and catuṣpadam specifies the four-cell extent. The compressed nominal prescription is read within the deity-allocation sequence 7.40–48, not as a stand-alone centroid definition. Dagens' facing explanation confirms the four-cell portion (1970, pp. 92–93).

Mayamata 7.58 gives the central allocation together with surrounding shares in the paramasāyīn scheme:

परमशायिपदे नवभागभाक्
कमलजो मुखतस्तु चतुःसुराः ।
रसपदा द्विपदा हि विदिक्स्थिता
बहिरथैकपदाः सकलामराः ॥ ५८ ॥

IAST: paramasāyīpade navabhāgabhāk / kamalajo mukhatas tu catuṣsurāḥ / rasapadā dvīpadā hi vidiksthītā / bahir athaikapadāḥ sakalāmarāḥ. Contextual translation by the present author: In the paramasāyīn scheme the lotus-born has nine portions; the four gods facing him have six cells each, those in the intermediate directions have two, and the exterior gods have one each. Kamalaja designates Brahmā, navabhāgabhāk assigns nine shares, and rasa functions numerically as six in the surrounding allocation. The extent is therefore interpreted within a complete field of deity positions, supported by the French rendering (Dagens, 1970, pp. 96–97).

Figure 1 renders the central extents of these two regular schemes. Their common midpoint does not make their extents identical: four of 64 cells occupy 1/16 of the field, whereas nine of 81 occupy 1/9. These are properties of the selected assignments, not a rule that every odd grid has one central Brahmā cell. Nor is a coarse three-by-three diagram automatically the same named classical scheme merely because its middle square has area 1/9.

3.2 Terms and variation across schemes

Brahmathāna is used here as a working designation for the place or portion associated with Brahmā in a specified architectural field. The quoted Mayamata lines use Brahmā and his allotted cells; they do not contain the exact compound Brahmathāna. Madhya indicates a central relation, pada and bhāga identify units or shares, marma denotes a vital point, and hṛdaya supplies the heart analogy.

An assigned place, a grid cell, a sensitive intersection, and an anatomical designation therefore remain analytically distinct. The study does not establish the first historical occurrence or a universal definition of the compound.

Acharya's comparative note to *Mānasāra* chapter 7, translated lines 61–68, reports *Brahmā* at a central point without an allotted plot in *Śilparatna* 6.27–29, in a different sixteen-cell context (Acharya, 1933, chapter 7, note 6). This is a classical counterexample to a universal assertion that *Brahmā* must always occupy a multicell region. It does not identify that point with the area centroid of an arbitrary irregular polygon. The *Śilparatna* report is attributed to Acharya rather than presented as a newly verified Sanskrit quotation.

A second edition-checked witness supports the selected nine-cell extent. *Mānasāra* 7.56a, printed p. 23, reads:

एकाशीतिपदं कृत्वा मध्ये नवपदं विधिः ।

IAST: *ekāśītipadam kṛtvā madhye navapadam vidhiḥ*. Contextual translation by the present author: Having made an eighty-one-cell scheme, the rule is nine cells in the middle. The following allocations and Acharya's translated lines 110–115 identify *Brahmā*'s central portion and the surrounding gods. This corroborates the selected extent without making every mandala identical (Acharya, 1934, p. 23; 1933, chapter 7).

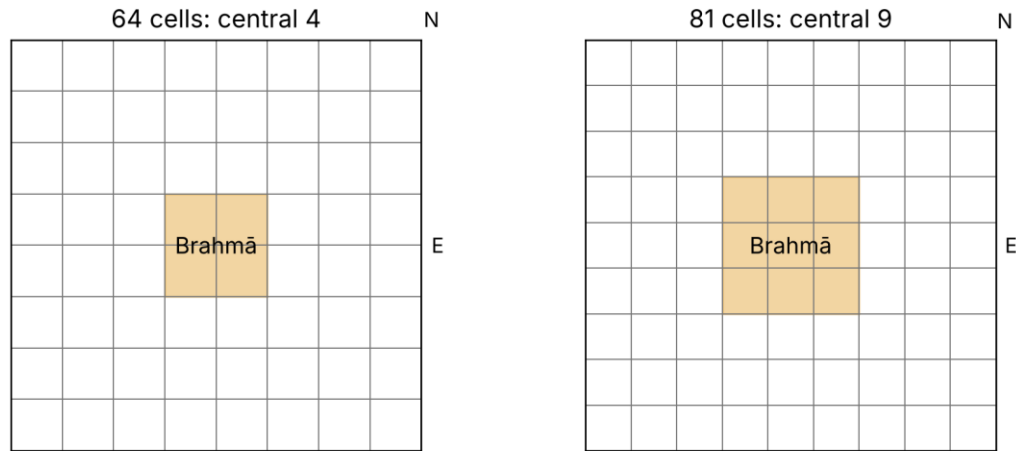


Figure 1. Full grid geometry of the selected 64- and 81-cell schemes, with *Brahmā*'s central extent highlighted. N and E indicate the declared orientation. Other deity names and marma lines are omitted; this is an extent diagram rather than a complete reconstruction of the pantheon.

3.3 Sacred meaning and traditional welfare

Mayamata 7.54 includes the following half-verse in its description of the *Vāstupuruṣa*:

वस्तुमध्ये तु मर्माणि ब्रह्मा हृदयमुच्यते ।

IAST: *vastumadhye tu marmāṇi brahmā hṛdayam ucyate*. Translation by the present author: In the middle of the site are the vital points; *Brahmā* is called the heart. The printed vastu reading is retained. *Marmāṇi* is plural and concerns vital points, while *hṛdayam* identifies *Brahmā* as the heart in the bodily description. Neither expression supplies the area-weighted integration rule for a centroid. In 7.49–54, the surrounding account distinguishes the *Vāstupuruṣa*'s limbs, trunk, heart, and channels; its anatomical relations should not be collapsed into one coordinate (Dagens, 1970, pp. 94–95).

Mayamata 7.55 begins with the following edition-checked line, which makes the traditional efficacy claim explicit:

गृहे गृहे मनुष्याणां शुभाशुभकरः स्मृतः ।

IAST: *grhe grhe manuṣyāṇāṃ śubhāśubhakarāḥ smṛtaḥ*. Translation by the present author: In every dwelling he is understood to bring auspicious and inauspicious conditions to people. The subject is the *Vāstupuruṣa* carried over from the preceding description. *Śubha* and *aśubha* concern auspiciousness and adversity; they do not themselves specify monetary prosperity. Verse 7.56 consequently directs the learned builder to avoid injuring the *Puruṣa* with building elements. Dagens' apparatus records a wording variant at 7.55 and the absence of the chapter ending in manuscript E (1970, pp. 96–97). These are features of transmission, not grounds to erase the teaching.

The traditional claim is retained affirmatively: architectural care is prescribed in relation to human welfare and avoidance of harm. Prosperity is a related but distinct expression in Acharya's residential translation at Mānasāra chapter 36, lines 16–17. That passage belongs to historically specific social allocations; it is not a universal financial prediction derived from a centre coordinate. This paper analyses the spatial procedures through which such prescriptions may be interpreted, without converting auspiciousness, prosperity, happiness, and health into one interchangeable outcome variable.

An open courtyard and an absent corner must therefore be distinguished architecturally even if both subtract material area from a polygon. The former can be a designed and ritually meaningful place; the latter can be exterior land outside the building outline. The relevant interpretation depends on the architectural object and prescription. Published cases in Section 6 illustrate this distinction without treating every courtyard as an identical Brahmasāhāna or converting protection of marmas into an unrestricted ban on all structure anywhere in a central region.

IV. GEOMETRICAL DEFINITIONS AND METHOD

4.1 The domain and orientation

Let Ω be a bounded closed planar footprint of positive area. Outer edges and courtyard edges are retained, while courtyard interiors are excluded. This convention does not alter area integrals but fixes membership at equality. The declared domain might be a site, plinth, building, or one floor; these are different objects and must not be substituted silently. Coordinates use consistent arbitrary length units. Fixed axes represent a declared orientation; a rectangle parallel to those axes differs from a minimum-area rectangle allowed to rotate.

Let $E = [x_0, x_1] \times [y_0, y_1]$ be the smallest enclosing rectangle parallel to the declared axes. Write $W = x_1 - x_0$ and $H = y_1 - y_0$, both positive. Its midpoint M depends only on these extremes. The area centroid G weights every unit of Ω equally. It is not the centre of mass of a building with unequal materials, walls, or loads, nor a location established by a ritual procedure.

$$M = ((x_0 + x_1)/2, (y_0 + y_1)/2)$$

$$G = (1/A) \int \Omega (x, y) dA, \quad A = \text{area}(\Omega)$$

4.2 Exact polygon calculation

For a counterclockwise simple polygon with m vertices $p_i = (x_i, y_i)$, cyclic indexing, and $q_i = x_i y_{i+1} - x_{i+1} y_i$, the signed-area expressions are:

$$A = \frac{1}{2} \sum q_i$$

$$G_x = \sum (x_i + x_{i+1}) q_i / (6A)$$

$$G_y = \sum (y_i + y_{i+1}) q_i / (6A)$$

These identities follow by integrating each triangle formed by an edge and the origin: its signed area is $q_i/2$ and its centroid is $(p_i + p_{i+1})/3$. Adding signed triangle moments recovers the polygon's moments even when the origin is outside. Holes are subtracted by area and moment, or represented with opposite orientation. Self-intersecting outlines require a resolved domain before the formula can be used as a footprint calculation.

4.3 Central regions as declared analytical constructions

Let $R = [x_0, x_1] \times [y_0, y_1]$ be a declared rectangular reference field, with width W and height H . In Table 1, R is the axis-parallel envelope E of Ω ; Table 2 varies R while keeping Ω fixed. Define $F_{n,k}(R)$ as the centred rectangle of width kW/n and height kH/n . The selected comparisons use $(n,k) = (9,3)$ and $(8,2)$. On a square these reproduce the central cell extents; on a rectangle they are affine constructions. Extending them across an irregular footprint is a declared analytical overlay, not a classical prescription inferred from the result. From this point, M denotes the midpoint of the selected reference R ; Table 1 uses $R = E$.

$$\text{area}(F_{9,3}) / \text{area}(E) = 1/9$$

$$\text{area}(F_{8,2}) / \text{area}(E) = 1/16$$

$$D = |G - M| / \sqrt{(W^2 + H^2)}$$

$$Q_{n,k}(R; \Omega) = \text{area}(F_{n,k}(R) \cap \Omega) / \text{area}(F_{n,k}(R))$$

D compares the centroid with the reference midpoint and is dimensionless; it is invariant under translation, uniform scaling, and joint rotation of footprint and reference frame. Anisotropic scaling need not preserve D .

Q compares the declared central region with material area, and is invariant under a common nonsingular affine transformation when both footprint and region are transformed. The present axis-parallel construction is recomputed only after its axes are specified. Neither D nor Q is an auspiciousness score. $Q = 0$ alone cannot distinguish a designed courtyard from exterior land.

V. GEOMETRICAL RESULTS

5.1 Agreement under symmetry does not establish occupancy

Lemma 1. If the footprint is invariant under point reflection about c , then its area centroid is c , and its envelope parallel to fixed axes has midpoint c . Proof: paired area elements at $c + u$ and $c - u$ have cancelling first moments; reflected coordinate extremes have the same midpoint. This standard geometric fact supports the courtyard counterexample. It is not advanced as an original theorem.

It does not require c to belong to Ω . A centred courtyard plan therefore has $G = M$ inside the courtyard void. A full rectangle can have the same G and M while its central region is entirely within the footprint. Thus $D = 0$ cannot determine Q, let alone the traditional interpretation of the centre.

5.2 Removal moves the area centroid away from the removed region

Lemma 2. If a region of area A_r and centroid G_r is removed from a domain of area A_0 and centroid G_0 , with $0 < A_r < A_0$, the remaining centroid satisfies the following standard first-moment identities:

$$G = (A_0 G_0 - A_r G_r) / (A_0 - A_r)$$

$$G - G_0 = [A_r / (A_0 - A_r)](G_0 - G_r)$$

Proof: subtract the removed area's first moment from the original first moment and divide by remaining area. The shift is opposite the removed region's centroid and increases with the ratio of removed area to remaining area. An off-centre courtyard can move G even when the outer extremes, and therefore M , are unchanged. A change in G is consequently not evidence that the reference mandala itself has moved.

5.3 A vertex average is not an area centroid

As a diagnostic comparison, let $V = \Sigma p/m$ be the unweighted mean of a polygon's listed vertices. Inserting a collinear point q changes this mean to $V' = (mV + q)/(m + 1)$, without changing the footprint or its area centroid. Equality holds only when $q = V$. This is a representation-dependence counterexample, not an allegation that the documented contemporary services use vertex averaging. No survey of how widespread this shortcut might be is claimed.

5.4 Six exact examples

Table 1 and Figure 2 compare six constructed domains. Outer rectangles begin at the origin. The mild L has the closed polygon with vertices (0,0), (10,0), (10,6), (6,6), (6,10), and (0,10); the thin L replaces the re-entrant coordinate 6 by 2. The triangle has vertices (0,0), (12,0), and (0,8). The offset courtyard excludes the interior of $[8,11] \times [2,5]$ from a 12×10 rectangle; the centred courtyard excludes the interior of $[3,7] \times [3,7]$ from a 10×10 square. All polygon edges are retained.

Table 1. Exact domains and centre comparisons

Domain	Area	G	M	D	Q81	Q64
Rectangle	96	(6, 4)	(6, 4)	0.0000	1	1
Mild L	84	(31/7, 31/7)	(5, 5)	0.0571	24/25	99/100
Thin L	36	(29/9, 29/9)	(5, 5)	0.1778	0	0
Triangle	48	(4, 8/3)	(6, 4)	0.1667	1/2	1/2
Offset courtyard	111	(423/74, 379/74)	(6, 5)	0.0198	1	1
Centred courtyard	84	(5, 5)	(5, 5)	0.0000	0	0

Q81 denotes $Q_{9,3}$ and Q64 denotes $Q_{8,2}$. Coordinates and coverages are exact fractions; D is rounded to four decimals. Area is expressed in squared coordinate units. Values of Q use the enclosing-rectangle overlays defined in Section 4.3.

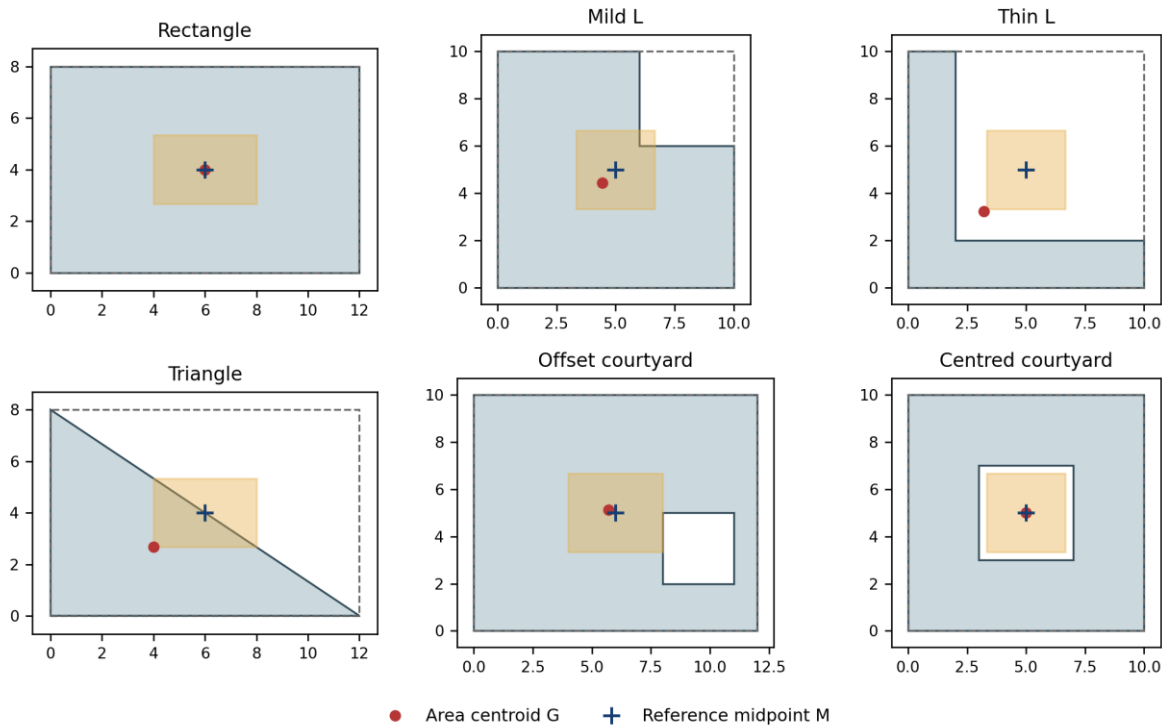


Figure 2. Six constructed plans. Shaded blue denotes the material footprint; white denotes void or exterior. The gold overlay is $F_{9,3}$, including portions outside the footprint. Red circles mark G and blue crosses mark the reference midpoint M. Coincident markers are superimposed. Dashed outlines mark E.

The mild L illustrates disagreement without an exterior centroid: both G and M belong to the footprint. Its central-nine overlay loses a corner area of $(2/3)^2$, so $Q81 = 1 - (4/9)/(100/9) = 0.96$. The central-four overlay loses $(1/4)^2$, giving $Q64 = 0.99$. The difference follows entirely from selecting different central extents.

In the thin L, $G = (29/9, 29/9)$ and $M = (5, 5)$ both lie in the removed corner because both coordinates exceed 2. Neither is an interior point of the actual footprint. Both central overlays are also outside it. A procedure that insists every computed centre must be an occupied room would therefore fail on this plan. Moving the point into the nearest room would introduce a new rule, not correct the centroid formula.

For the triangle, M is on the hypotenuse and G is interior. The line through M divides each centrally symmetric overlay into equal areas; hence $Q81 = Q64 = 1/2$. For the offset courtyard, G shifts to $(423/74, 379/74)$, while M remains $(6, 5)$. The courtyard meets the central-nine region only at its $x = 8$ boundary, which has zero area, so both coverages equal one. The centred courtyard reverses the occupancy relation: $G = M$, but both central regions lie wholly in the courtyard and both coverages are zero.

5.5 A continuous family and an exact threshold

Consider the closed footprint $\Omega_a = \{(x, y) \text{ in } [0, 10]^2 : x \leq 10 - a \text{ or } y \leq 10 - a\}$, with $0 < a < 10$. This definition retains the re-entrant boundary while excluding the northeast corner interior. The remaining area is $100 - a^2$ and $M = (5, 5)$. Lemma 2 gives:

$$G_x = G_y = [500 - a^2(10 - a/2)] / (100 - a^2)$$

$$D = (5 - G_x)/10$$

Since G lies on the diagonal, it remains in the footprint precisely when $G_x \leq 10 - a$. Substitution and multiplication by the positive denominator give $a^3 - 200a + 1000 \geq 0$. Factorisation gives $(a - 10)(a^2 + 10a - 100) \geq 0$. Therefore G leaves the footprint when $a > 5(\sqrt{5} - 1)$, approximately 6.18034. At equality it is on the re-entrant boundary. The radical is a consequence of this constructed family, not evidence of a classical prescription involving the golden ratio.

For a central square F with lower coordinate l and upper coordinate u, the removed overlap has side $t = \max(0, \min(10, u) - \max(10 - a, l))$; thus $Q = 1 - [t/(u - l)]^2$.

For the central nine, $l = 10/3$ and $u = 20/3$; for the central four, $l = 15/4$ and $u = 25/4$. Q64 becomes zero at $a \geq 25/4$ and Q81 at $a \geq 20/3$.

At equality, an edge can still meet the footprint, so zero area coverage is not identical to an empty set intersection. These thresholds describe region overlap and differ from the point-exit threshold.

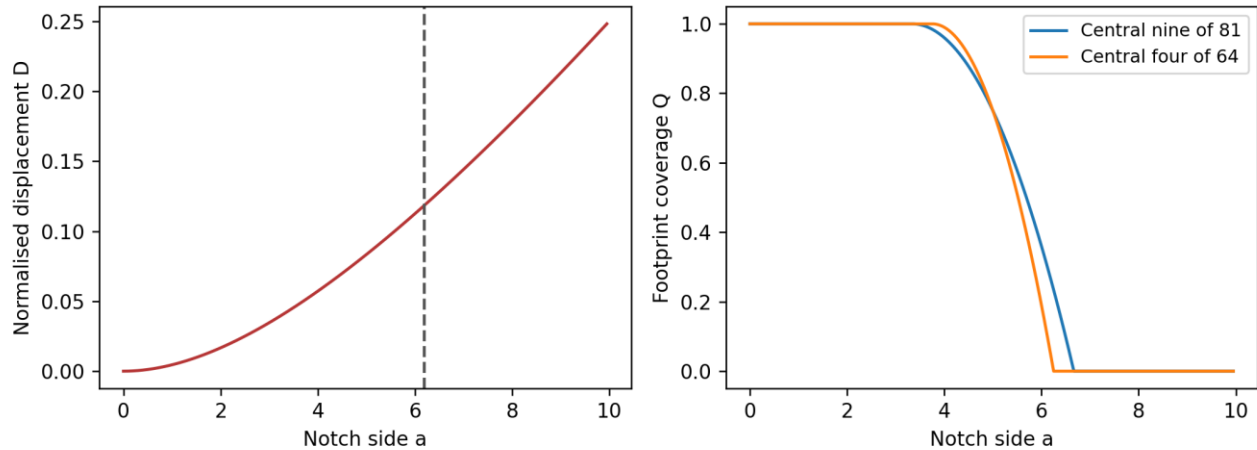


Figure 3. Exact corner-notch family. The dashed line in the displacement panel marks $a = 5(\sqrt{5} - 1)$, where the centroid reaches the re-entrant boundary. Coverage curves concern the two explicitly declared overlays. Smooth plotted samples visualise the analytic functions; they are not building observations.

5.6 Reference fields for the same footprint

The mild L is now held fixed while four rectangular reference fields are compared: its envelope $[0,10] \times [0,10]$, a hypothetical parcel $[0,14] \times [0,12]$, its full vertical block $[0,6] \times [0,10]$, and its full horizontal block $[0,10] \times [0,6]$.

The parcel and block choices are constructed alternatives, not claimed classical recommendations. They answer distinct architectural questions and expose the consequence of selecting a field before computing the central assignment.

Table 2. Alternative reference fields for the fixed mild L

Reference field	Midpoint	Q81	Q64
Envelope	(5, 5)	24/25	99/100
Site	(7, 6)	9/14	17/28
Vertical block	(3, 5)	1	1
Horizontal block	(5, 3)	1	1

The material centroid remains (31/7,31/7) in every row. The hypothetical parcel gives midpoint (7,6), while choosing either full block gives (3,5) or (5,3). For the parcel overlay, Q81 = 9/14 and Q64 = 17/28; both block overlays have full material coverage.

Neither block is uniquely privileged by this geometry: choosing one rather than the other requires a design or interpretive reason. Coverage in this table is relative to the same building footprint, not the whole parcel area.

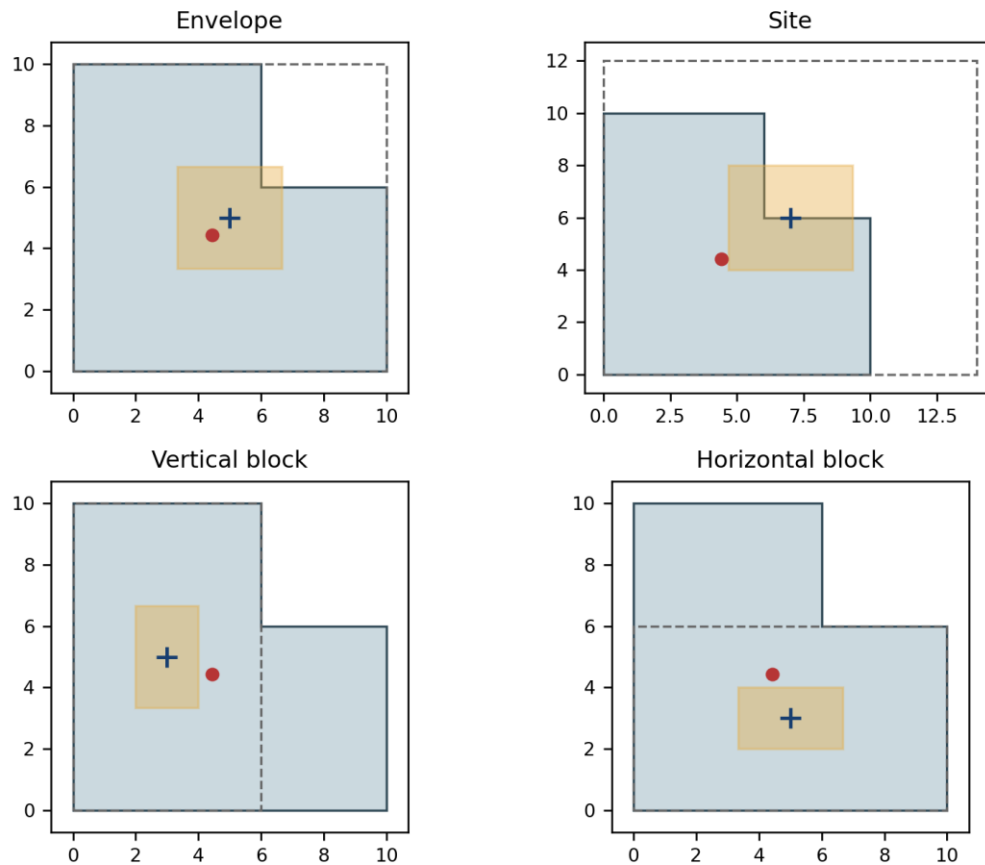


Figure 4. A fixed mild L under four declared reference fields. Blue denotes the unchanged footprint, gold the central-nine overlay, dashed boundaries the reference field, red circles the unchanged material centroid, and blue crosses each reference midpoint. Block boundaries are analytical selections, not inferred ritual authorities.

VI. ARCHITECTURAL INTERPRETATION AND PUBLISHED COMPARISONS

6.1 Courtyard evidence from Kerala and Patan

Widiastuti's Kerala study examined 52 residential compounds, including 27 courtyard houses, and related their configurations to regional practice and the Manusyalayacandrika tradition (2018, pp. 365–370). Its diagrams distinguish mandala order from sutram lines and marmam intersections. The courtyard is an architectural component, not simply missing material. The study also documents departures from prescriptions, so its types cannot be treated as one compulsory plan. This supports keeping region extent, sensitive points, structural arrangement, and actual practice distinct. The article's reported sample is contextual evidence; none of its buildings has been newly measured in this paper.

Pant and Funo compare four residential courts in Patan, using detailed plans for two and frontage measurements for the other two (2004, pp. 197–205). Their Nabahal account describes an approximately square open court with a central caitya and an axial relationship to entrance and shrine. This Buddhist settlement context illustrates a sacred central feature within an open court; it cannot be converted into a residential Brahmā allocation or a universal instruction to leave every centre physically empty. The authors themselves leave ritual and metaphysical aspects of their reconstructed planning model for further inquiry. Their measurements are reported evidence, not a new centroid dataset.

6.2 Documented adaptation and levels of reference

The Charles Correa Foundation describes Jawahar Kala Kendra as a contemporary design based on a Navgraha mandala with one square displaced, recalling Jaipur's plan (2022).



This is documented conceptual adaptation, not proof that a nine-planet diagram is interchangeable with the selected eighty-one-cell deity allocation. Its relevance is methodological: a named reference diagram and a stated transformation explain an irregular composition. A centroid of the resulting built outline would answer a different question unless the architect or another documented authority explicitly related it to that diagram.

A centre-finding report must distinguish the location of a point, the extent of a central region, and the architectural reference field that carries the assignment. In the two selected Mayamata grids, changing 64 to 81 changes extent but not the midpoint. Replacing an envelope by a site or a selected block can change both extent and midpoint. Choosing a centroid changes the point construction without, by itself, specifying any central-region geometry.

The mathematical courtyard examples are counterexamples to point-based occupancy judgements, not measured reconstructions of the published buildings. Including a courtyard in the outer spatial field and excluding it from material area answer different questions. In a multistorey building, floor-material polygons can differ while a common site or plinth remains fixed.

Each report should identify its level of reference and its treatment of voids before interpreting apparent disagreement.

Orientation also affects the enclosing-rectangle method. A fixed cardinal orientation gives a well-defined E, whereas allowing rotation selects another geometric optimisation. The area centroid transforms consistently under translation and rotation; an axis-aligned envelope changes its defining extremes when the axes are changed. This difference is mathematical, but the selection of a cardinal frame can have traditional reasons that should be explained in its own terms. A report should record the orientation rather than letting software defaults decide it silently.

The textual welfare teaching and the geometry can be analysed together without confusing their evidence. The Mayamata's śubhāsubhakara formulation asserts auspicious and inauspicious consequences within the tradition; the Mānasāra residential translation separately reports prosperity in suitable placements. Those meanings explain why spatial decisions matter to practitioners. Exact coordinates establish geometrical consequences, while a traditional judgement additionally depends on the cited prescription and its context. No measured household outcome is supplied by D or Q.

Table 3. Minimum information for a reproducible application

Field	Required specification
Reference object	Site, plinth, building, floor, or other declared domain
Boundary and voids	Exact outline and whether courtyards, terraces, and recesses are included
Orientation	Fixed axes and their relation to cardinal directions
Textual authority	Work, edition, passage, building context, and selected mandala
Centre construction	Point or region; centroid, grid assignment, envelope, or other method
Irregular-plan adaptation	Overlay, clipping, deformation, subdivision, or other explicit operation
Interpretation	Separate geometry, traditional judgement, and any measured outcomes

A practitioner can therefore report that a centre follows a particular mandala on a specified boundary, or that a point is the centroid of a specified material polygon. Where these differ, the difference should be explained rather than hidden. An adaptation may be justified by a documented lineage, a particular text, or an architectural design decision.

The reporting protocol does not declare those authorities interchangeable; it makes their application inspectable.

VII. LIMITATIONS AND FURTHER RESEARCH

The textual corpus is deliberately bounded: selected Mayamata and Mānasāra prescriptions, Acharya's comparative notes, and published architectural research.

It does not establish identical rules across all Sanskrit traditions. The Śilparatna point assignment is reported through Acharya, not independently collated here. Classical building categories and social prescriptions are retained as historical context, not converted into present-day requirements for occupants. The two contemporary webpages are purposively selected statements, not a representative sample of practice or a software-validation study.

The geometrical results hold for the declared planar domains. They do not model structural mass, three-dimensional volumes, slopes, shared walls, changes over time, or imperfect survey data. An uncertain boundary can produce an uncertain centroid; exact arithmetic eliminates numerical round-off in the constructed examples, not uncertainty in a real survey. The enclosing-rectangle overlays are analytical adaptations used to expose assumptions, rather than recommendations that every irregular building must use an enclosing rectangle.

Further research can compare measured drawings with locally identified sacred centres, recording who supplies the identification and which text or lineage supports it. New building surveys should report wall thicknesses, courtyard boundaries, orientation uncertainty, and alternative reference domains. A separate welfare study would need explicit outcomes and an appropriate observational or experimental design; such outcomes should not be manufactured from geometric labels. The published cases used here supply architectural context only.

VIII. CONCLUSION

In the selected 64- and 81-cell Mayamata schemes, Brahmā's allocation has a specified extent and belongs to an ordered sacred field. A reported classical point assignment in another scheme prevents a universal definition by region alone. The exact examples establish that a centroid, a reference midpoint, and central-region coverage are different properties: point agreement can occur in a void, and reference selection can change the result for the same footprint. Published courtyard research shows why physical absence of floor material does not settle architectural or ritual meaning. A defensible adaptation therefore identifies its text, domain, axes, point construction, and region extent, preserving the tradition's welfare purpose while making the geometry reproducible.

Declarations

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Competing interests. The author is a practising Vedic astrologer and Vāstu consultant, teaches Jyotiṣa and Vāstu at Saraswati Vidyapeeth and Vedic Manthan, and holds office in the Assam Bangiyo Tantra Jyotish Samiti. The author has no commercial relationship with the Vāstu services whose published statements are examined in Section 2.

Ethics. Not applicable. The study involved no human participants, personal data, or new building surveys.

Data and code availability. No new empirical data were collected. All geometric tables and figures can be regenerated with the program in Appendix A.

About the Author

Rahul Thakur Rudra is a researcher in Vedic sciences, Jyotiṣa, Tantra and Vāstu, with a parallel training in the physical and data sciences. He holds a PhD in Jyotiṣa–Vāstu and an honorary PhD in Tantra, and is pursuing a PhD in Chemistry at Panjab University, Chandigarh, as a DST Fellow. He holds an M.S. in Nanotechnology from the National Forensic Sciences University, Gujarat, a B.Tech, and training in Data Analytics from the University of Amsterdam. He is Faculty at Saraswati Vidyapeeth (Institute of Jyotiṣa and Vāstu), Mohali; National Vice President of the Assam Bangiyo Tantra Jyotish Samiti, Kolkata; Chairman and Faculty of Vedic Manthan, Chandigarh, an initiative to create awareness of the Vedic sciences; Pramukh Sevak of Shree Bhairav Tantra Peeth; and Co-Founder of the Veddhama Foundation. He previously served as Director of Research and Development at Canaveral Research Centre, Florida, USA.

REFERENCES

- [1] Acharya, P. K. (1933). Architecture of Mānasāra: Translated from original Sanskrit. Mānasāra Series, volume IV. Oxford University Press. Chapters 7 and 36 and chapter 7 comparative notes. Digital translation: <https://www.wisdomlib.org/hinduism/book/manasara-english-translation>.
- [2] Acharya, P. K. (1934). Mānasāra on architecture and sculpture: Sanskrit text with critical notes. Mānasāra Series, volume III. Oxford University Press. Chapter 7, verse 56a, printed p. 23. ASI/IGNCA scan: <https://archive.org/details/in.gov.ignca.22948>. Repository catalogue date: 1932; identified here by volume and printed passage.
- [3] Aroha Editorial Team. (2026, October 2). How to read a floor plan using Vastu principles. Aroha. Section “Step 2.” <https://www.arohaastrology.in/blog/how-to-read-floor-plan-vastu>. Accessed October 13, 2026.
- [4] Chakrabarti, V. (1998). Indian architectural theory: Contemporary uses of Vastu Vidya. Curzon Press. Preface, pp. xix–xxi.
- [5] Charles Correa Foundation. (2022, February 23). Jawahar Kala Kendra. <https://charlescorreafoundation.org/2022/02/23/jawahar-kala-kendra/amp/>. Accessed October 13, 2026.

- [6] Dagens, B. (Ed. and trans.). (1970). Mayamata: Traité sanskrit d'architecture. Première partie, chapitres I–XXV. Publications de l'Institut Français d'Indologie, no. 40.1. Institut Français d'Indologie. Chapter 7, pp. 90–97. https://www.ifpindia.org/documents/160/PIFI_040.1.pdf.
- [7] Meister, M. W. (1985). Measurement and proportion in Hindu temple architecture. *Interdisciplinary Science Reviews*, 10(3), 248–258. <https://doi.org/10.1179/isr.1985.10.3.248>.
- [8] Pant, M., & Funo, S. (2004). A study on the pattern of plot divisions of courtyard residential blocks of Patan, Kathmandu Valley. *Journal of Asian Architecture and Building Engineering*, 3(1), 197–205. <https://doi.org/10.3130/jaabe.3.197>.
- [9] Tillotson, G. H. R. (1998). Foreword. In V. Chakrabarti, *Indian architectural theory: Contemporary uses of Vastu Vidya* (pp. xi–xvii). Curzon Press.
- [10] VastuIQ. (n.d.). Free Brahman calculator—Find centre of your house. Sections “How the Calculator Works” and “How is the centre of a house calculated.” <https://vastuiq.com/brahman-calculator/>. Accessed October 13, 2026.
- [11] Widiastuti, I. (2018). Typology study of vernacular courtyard-house in Kerala, South India. *Jurnal Sositoknologi*, 17(3), 365–372. <https://doi.org/10.5614/sostek.itbj.2018.17.3.4>.

Appendix A. Complete geometric reproduction program

Save the following program as reproduce_brahman.py and run it with Python 3 and Matplotlib installed. It writes the exact geometric tables as CSV files and the four original analytical figures into a reproduction directory. Fractions preserve exact input arithmetic; floating-point conversion is limited to Euclidean distances and plotting. The plotted notch family includes the full square at $a = 0$ as a continuous endpoint, while the proved nondegenerate notch case uses $0 < a < 10$. Printed Table 3 is a reporting protocol and has no numerical dataset.

The program accepts the explicitly defined counterclockwise simple outer rings and counterclockwise disjoint courtyard rings. Holes must be contained within their outer polygon, and reference rectangles must have positive width and height. These are input preconditions, not an arbitrary-polygon validation service. Checks cover exact centroids and coverages, orientation reversal of signed moments, and insertion of a collinear point. Figures illustrate generated geometry, not measured buildings or historical plans.

```
"""Reproduce all geometric tables and figures; Python 3 + matplotlib.
Integer or rational-string coordinates; CCW simple rings, disjoint inner holes.
"""
```

```
from fractions import Fraction as F
from math import hypot, sqrt
from pathlib import Path
import csv
import matplotlib
matplotlib.use('Agg')
import matplotlib.pyplot as plt
from matplotlib.patches import Polygon, Rectangle
OUT = Path('reproduction'); OUT.mkdir(exist_ok=True)
```

```
def rect(w, h):
    return [(0,0),(w,0),(w,h),(0,h)]
def moment(vertices):
    v = [(F(x),F(y)) for x,y in vertices]
    if len(v) < 3: return F(0), (F(0),F(0))
    q = [v[i][0]*v[(i+1)%len(v)][1]
          - v[(i+1)%len(v)][0]*v[i][1] for i in range(len(v))]
    a = sum(q)/2
    m = tuple(sum((v[i][j]+v[(i+1)%len(v)][j])*q[i]
                  for i in range(len(v)))/6 for j in (0,1))
    return a, m
def geometry(v, holes=()):
    a,m = moment(v)
    if a <= 0: raise ValueError('Outer ring must be CCW')
    for hole in holes:
        ah,mh = moment(hole)
        if ah <= 0: raise ValueError('Hole ring must be CCW')
        a -= ah; m = tuple(x-y for x,y in zip(m,mh))
    if a <= 0: raise ValueError('Positive remaining area required')
    return a, tuple(x/a for x in m)
def clip(v, box):
    # Sutherland-Hodgman clipping against four rectangle half-planes.
    v = [(F(x),F(y)) for x,y in v]
    for j, bound, sign in [(0,box[0],1),(0,box[1],-1),
                          (1,box[2],1),(1,box[3],-1)]:
        if not v: break
        result=[]; previous=v[-1]
        for current in v:
            ip = sign*(previous[j]-bound) >= 0
            ic = sign*(current[j]-bound) >= 0
            if ip != ic:
                t=(bound-previous[j])/(current[j]-previous[j])
                result.append(tuple(previous[k]+t*(current[k]-previous[k])
                                   for k in (0,1)))
            if ic: result.append(current)
        previous=current
    v=result
    return v
def envelope(v):
    return tuple(F(x) for x in (min(x for x,y in v),max(x for x,y in v),
                               min(y for x,y in v),max(y for x,y in v)))
def middle(box):
    return ((box[0]+box[1])/2,(box[2]+box[3])/2)
def core(box,n,k):
    x,y=middle(box); w=(box[1]-box[0])*F(k,n)
    h=(box[3]-box[2])*F(k,n)
    return (x-w/2,x+w/2,y-h/2,y+h/2)
def coverage(v, holes, box):
    a=moment(clip(v,box))[0]
    a -= sum(moment(clip(h,box))[0] for h in holes)
    return a/((box[1]-box[0])*(box[3]-box[2]))
CASES=[('Rectangle',rect(12,8),[]),
        ('Mild L',[(0,0),(10,0),(10,6),(6,6),(6,10),(0,10)],[]),
        ('Thin L',[(0,0),(10,0),(10,2),(2,2),(2,10),(0,10)],[]),
        ('Triangle',[(0,0),(12,0),(0,8)],[]),
        ('Offset courtyard',rect(12,10),[(8,2),(11,2),(11,5),(8,5)]),
        ('Centred courtyard',rect(10,10),[(3,3),(7,3),(7,7),(3,7)])]
ROWS=[]
for name,v,holes in CASES:
    a,g=geometry(v,holes); e=envelope(v); m=middle(e)
    d=hypot(float(g[0]-m[0]),float(g[1]-m[1]))/hypot(
        float(e[1]-e[0]),float(e[3]-e[2]))
    qs=[coverage(v,holes,core(e,n,k)) for n,k in [(9,3),(8,2)]]
    ROWS.append([name,a,*g,*m,d,*qs])
assert ROWS[1][2:4] == [F(31,7),F(31,7)]
assert ROWS[2][2:4] == [F(29,9),F(29,9)]
```



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```
assert ROWS[4][2:4] == [F(423,74),F(379,74)]
assert [r[-2:] for r in ROWS] == [[1,1],[F(24,25),F(99,100)],
                                   [0,0],[F(1,2),F(1,2)],[1,1],[0,0]]
v=CASES[1][1]; a,m=moment(v)
assert moment(list(reversed(v))) == (-a,tuple(-x for x in m))
assert moment([v[0],(5,0),*v[1:]]) == (a,m)
REFERENCES=[('Envelope',(0,10,0,10)),('Site',(0,14,0,12)),
            ('Vertical block',(0,6,0,10)),('Horizontal block',(0,10,0,6))]
REF_ROWS=[]
for label,b in REFERENCES:
    b=tuple(map(F,b)); q=[coverage(v,[],core(b,n,k)) for n,k in [(9,3),(8,2)]]
    REF_ROWS.append([label,*middle(b),*q])
assert REF_ROWS[1][:-2:] == [F(9,14),F(17,28)]
for filename,heads,rows in
    [('table1.csv','Domain','A','Gx','Gy','Mx','My','D','Q81','Q64'],ROWS),
     ('table2.csv','Reference','Mx','My','Q81','Q64'],REF_ROWS)]:
    with (OUT/filename).open('w',newline='') as f:
        writer=csv.writer(f);writer.writerow(heads);writer.writerows(rows)
def draw(ax,v,holes,box):
    ax.add_patch(Polygon(v,facecolor='#cbd9df',edgecolor='#314a57'))
    for hole in holes:
        ax.add_patch(Polygon(hole,facecolor='white',edgecolor='#314a57'))
    c=core(tuple(map(F,box)),9,3);x0,x1,y0,y1=map(float,c)
    ax.add_patch(Rectangle((x0,y0),x1-x0,y1-y0,color='#e6ad46',alpha=.4))
    x0,x1,y0,y1=map(float,box)
    ax.add_patch(Rectangle((x0,y0),x1-x0,y1-y0,fill=False,ls='--',color='#666'))
    g=geometry(v,holes)[1];m=middle(tuple(map(F,box)))
    ax.plot(*map(float,g),'o',color='#b63535',ms=5,label='Area centroid G')
    ax.plot(*map(float,m),'+',color='#173e70',ms=9,mew=1.5,label='Reference
midpoint M')
    ax.set_aspect('equal');ax.tick_params(labelsize=8)
    ax.set(xlim=(-.7,max(x1,max(x for x,y in v))+.7),
           ylim=(-.7,max(y1,max(y for x,y in v))+.7))
fig,axs=plt.subplots(1,2,figsize=(8,3.3))
for ax,n,k in zip(axs,[8,9],[2,3]):
    ax.add_patch(Rectangle(((n-k)/2,(n-k)/2),k,k,color='#e6ad46',alpha=.5))
    for z in range(n+1):
        ax.axhline(z,color='#777',lw=.6);ax.axvline(z,color='#777',lw=.6)
        ax.text(n/2,n/2,'Brahmā',ha='center',va='center',fontsize=11)
        ax.set(xlim=(0,n),ylim=(0,n),title=f'{n*n} cells: central {k*k}')
        ax.set_aspect('equal');ax.set_xticks([]);ax.set_yticks([])
        ax.text(n+.2,n+.25,'N',ha='center');ax.text(n+.2,n/2,'E',va='center')
    fig.tight_layout();fig.savefig(OUT/'figure1.png',dpi=240);plt.close(fig)
fig,axs=plt.subplots(2,3,figsize=(9,5.5))
for ax,(name,v,holes) in zip(axs.flat,CASES):
    draw(ax,v,holes,envelope(v));ax.set_title(name,fontsize=10)
    handles,labels=axs.flat[0].get_legend_handles_labels()
    fig.legend(handles,labels,loc='lower center',ncol=2,frameon=False,fontsize=9)
    fig.tight_layout(rect=(0,.06,1,1));fig.savefig(OUT/'figure2.png',dpi=240);plt.close(fig)
fig,axs=plt.subplots(1,2,figsize=(9,3.4))
xs=[F(i,100) for i in range(996)];ds=[];q81=[];q64=[]
for a in xs:
    g=(500-a*a*(10-a/2))/(100-a*a);ds.append(float((5-g)/10))
    for n,k,target in [(9,3,q81),(8,2,q64)]:
        l=5-5*F(k,n);u=5+5*F(k,n)
        t=max(F(0),min(F(10),u)-max(10-a,l))
        target.append(float(1-(t/(u-l))*2))
    axs[0].plot(list(map(float,xs)),ds,color='#b63535')
    axs[0].axvline(5*(sqrt(5)-1),ls='--',color='#555')
    axs[0].set(xlabel='Notch side a',ylabel='Normalised displacement D')
    axs[1].plot(list(map(float,xs)),q81,label='Central nine of 81')
    axs[1].plot(list(map(float,xs)),q64,label='Central four of 64')
    axs[1].set(xlabel='Notch side a',ylabel='Footprint coverage
Q');axs[1].legend(fontsize=9)
fig.tight_layout();fig.savefig(OUT/'figure3.png',dpi=240);plt.close(fig)
fig,axs=plt.subplots(2,2,figsize=(7,5.5));v=CASES[1][1]
for ax,(label,b) in zip(axs.flat,REFERENCES):
    draw(ax,v,[],b);ax.set_title(label,fontsize=10)
fig.tight_layout();fig.savefig(OUT/'figure4.png',dpi=240);plt.close(fig)
print('Exact checks passed; tables and four figures written to',OUT)
```