GAYATRI MANTRA

ॐ भूर्भुवः स्वः तत्सवितुर्वरेण्यं
भर्गो देवस्य धीमहि धियो यो नः प्रचोदयात्

Rigveda 3.62.10

DERIVATION OF SPACE-TIME RELATIONSHIPS FOR LOKAS FROM THE GAYATRI MANTRA (RIGVEDA)

A quantitative analysis of the cosmological structure encoded in the supplied material

Addressed to Yogacharya Histas Damania

In the context of the Triloki KAAL cosmological clock and the 12 August 2026 solar-eclipse-day realisation



TRILOKI KAAL - Live Vedic Clock for the Three Lokas

https://kriyablog.in/html/triloki-kaal

The clock reads one present moment across Bhuloka, Svargaloka and Satyaloka using nested time scales.

DERIVATION OF SPACE–TIME RELATIONSHIPS FOR LOKAS FROM GAYATRI MANTRA (RIGVEDA)

A NUMERICAL CHEAT SHEET – COSMIC CORRESPONDENCE

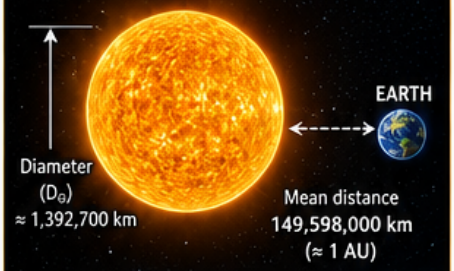
ॐ भूर्भुवः स्वः । तत्सवितुर्वरेण्यं भर्गो देवस्य धीमहि । धियो यो नः प्रचोदयात् । – ऋग्वेद 3.62.10

May we meditate on the divine light of the Sun, the bestower of radiant wisdom, who illumines our intellect.

TRILOKI KAAL – NUMERICAL CORRESPONDENCE AT A GLANCE

1 SUN – SWARGALOKA (The Radiant Realm)

Distance from Earth to the Sun is ~108 solar diameters



KEY NUMBERS	
Sun diameter ($D_\odot$)	1,392,700 km
Earth–Sun distance (1 AU)	149,598,000 km
Ratio (distance / diameter)	≈ 107.4
Traditional harmonic value	108

CONCLUSION

The Sun is about 108 times its diameter from the Earth — remarkably close to 108, which reflects a deep numerical harmony in the cosmos.

LOKA: SWARGALOKA (DEVA REALM)

Presiding Deity: Indra (through Surya)
Nature: Radiance, Order, Sustenance

2 MOON – ATALOKA (The Lunar Realm)

Distance from Earth to the Moon is ~110 moon diameters



KEY NUMBERS	
Moon diameter (D_M)	3,474.8 km
Earth–Moon distance	384,400 km
Ratio (distance / diameter)	≈ 110.6
Mean value (incl. orbital variation) (approx. harmonic value)	≈ 108

CONCLUSION

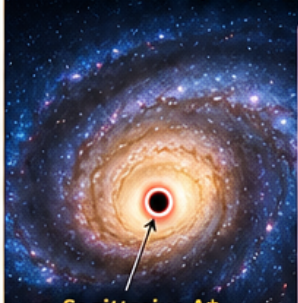
The Moon is about 110 times its diameter from the Earth. 108 remains a close and meaningful approximation. This near-equal angular size makes solar eclipses possible.

LOKA: ATALOKA (LUNAR REALM)

Presiding Deity: Bala (as per Purana)
Nature: Subtle, Reflective, Hidden Depths

3 SAGITTARIUS A* – SATYALOKA (A MASSIVE SUN)

A massive black hole at the centre of the Milky Way Galaxy



Mass (M)	≈ 4×10^6 $M_\odot$ (≈ 7.95×10^{36} kg)
Schwarzschild radius (r_s)	≈ 11.8 million km (diameter ≈ 23.6 million km)
Distance from Sun	≈ 26,000 light-years (≈ 2.5×10^{17} km)
Orbital period (of Solar System)	≈ 230 million years
Half orbit (one way)	≈ 115 million years

LOKA: SATYALOKA (THE TRUTH REALM)

Presiding: Brahmā (Creator Principle)
Nature: Cosmic Source, Truth, Creation

4 VAIKUNTHA – THE ABSOLUTE CENTER (THE BLACK HOLE)

The Transcendent Realm Beyond Space–Time



- A black hole is not a physical object, but a region where gravity is so intense that even light cannot escape.
- It represents the transcendence of space and time — the doorway to higher-dimensional reality.
- Vaikuntha is beyond Satyaloka, beyond creation – the eternal abode of the Supreme (Vishnu).

BLACK HOLE – KEY CONCEPTS	
Event Horizon (r_s)	Boundary beyond which nothing escapes
Singularity	The point of infinite density (beyond current physics)
Nature	Beyond space, beyond time, beyond causality
Vedic Correlate	Vaikuntha – The Supreme Realm beyond all duality

LOKA: VAIKUNTHA (THE SUPREME ABODE)
Presiding: Lord Vishnu (Supreme Consciousness)
Nature: Transcendent, Eternal, Beyond Time & Space

KEY SYNTHESIS: NUMERICAL HARMONY ACROSS SCALES

SWARGALOKA (Sun)	→	ATALOKA (Moon)	→	SATYALOKA (A Massive Sun)	→	VAIKUNTHA (Black Hole)	→	BIGGER VIEW
108 × (Sun diameters)		~108–110 × (Moon diameters)		27 × 4.32 million years = 116.64 million years ≈ Galactic half-period		Beyond space–time The Absolute Center		Sun, Moon, stars, galaxies may be lower-dimensional projections of a higher-dimensional reality (e.g., tesseract → cube).

From the visible **(Swargaloka)** → to the subtle **(Ataloka)** → to the cosmic **(Satyaloka)** → to the transcendent **(Vaikuntha)**.
A coherent numerical architecture that mirrors the Vedic vision.

DERIVATION OF SPACE-TIME RELATIONSHIPS FOR LOKAS
FROM THE GAYATRI MANTRA (RIGVEDA)

A quantitative analysis of the cosmological structure encoded in the supplied material

Addressed to Yogacharya Histas Damania

Triloki KAAL context - 12 August 2026 - Solar eclipse day analysis

This document treats the supplied Vedic cosmological material as a structured system whose internal numerical relationships can be derived, calculated and compared with astronomical quantities. It is therefore framed as a derivation and analysis rather than as a presentation of disconnected speculation.

The distinction between textual statement, mathematical derivation, astronomical observation and interpretive identification is retained throughout. Where an identification is not established by observation, it is stated as an interpretation of the model.

1. CONTEXT: TRILOKI KAAL AND TODAY'S REALISATION

The immediate context is the Triloki KAAL clock, associated in the supplied material with 10 August and the numerical signature 108. The present analysis follows the realisation recorded in the material: if one deva day/night corresponds to one human year, and a human year is the Earth's orbital period around the Sun, then the deva clock naturally becomes a solar-orbital clock.

The supplied material constructs a three-clock architecture: Bhuloka as the human clock, Swargaloka as the deva clock, and Satyaloka as a much slower clock. It also records the 108 relationships, the yuga arithmetic, and the proposed extension toward the Galactic Centre.

2. GAYATRI MANTRA: THE THREE COSMOLOGICAL COORDINATES

Om Bhur Bhuvah Svah. Tat Savitur Varenyam. Bhargo Devasya Dhimahi. Dhiyo Yo Nah Prachodayat.

For the present derivation, the opening triad is treated as a spatial sequence:

Bhur -> Bhuvah -> Svah

The supplied material maps these respectively to Earth/physical reality, the intermediate region, and Swargaloka/heaven. Savitur identifies the solar source and Bhargah the radiance or effulgence. In system terms, this can be represented as:

source -> transmission region -> luminous domain -> receiving intellect

The associated chakra language is retained only as an internal correspondence: Muladhara is associated with the Earth/base principle and Ajna with the luminous or discriminating principle. This document does not require a claim that chakras are physically identical with astronomical objects.

3. DERIVATION OF THE SWARGALOKA SOLAR CLOCK

Corpus relationship:

1 deva day/night = 1 human year

A human year is, to first approximation, one complete revolution of Earth around the Sun:

1 year approximately = 365.2422 days

Therefore the model yields:

1 deva day/night approximately = 365.2422 human days

Under a geocentric coordinate description, the Earth is chosen as the stationary reference point and the Sun is represented by apparent annual motion around it. The same physical observations can therefore be expressed as a solar circuit in the Earth-centred frame.

Swargaloka hypothesis: the solar domain is the physical reference for the deva clock.

4. UTTARAYANA, DAKSHINAYANA AND THE SOLAR HALF-CYCLE

Earth's rotational axis is inclined by approximately 23.44 degrees relative to the normal to its orbital plane. Consequently the Sun's apparent declination oscillates approximately between:

-23.44 degrees <= solar declination <= +23.44 degrees

The resulting northward and southward solar half-cycles provide the physical astronomical background for the traditional Uttarayana/Dakshinayana division. In the model, these become the two halves of the deva day/night.

Deva day/night approximately = annual solar cycle -> two approximately six-month halves

A precision note: Uttarayana should not simply be reduced to Northern Hemisphere summer. The astronomical northward solar motion begins around the December solstice and reaches maximum northern declination at the June solstice; traditional calendrical definitions and modern seasonal boundaries are not identical.

5. THE 108 SOLAR AND LUNAR RELATIONSHIPS

The supplied material uses the approximate relationship:

Earth-Sun distance approximately = 108 x Sun diameter

Using representative mean quantities:

1 AU approximately = 149.598 million km
Solar diameter approximately = 1.3927 million km

149.598 / 1.3927 approximately = 107.42

Thus the modern ratio is approximately 107.4, while the 108 formulation differs by about 0.54 percent. It is a close numerical approximation, not an exact astronomical constant.

For the Moon:

Mean Earth-Moon distance approximately = 384,400 km
Mean lunar diameter approximately = 3,474.8 km
384,400 / 3,474.8 approximately = 110.63

The lunar ratio varies because the Moon's orbit is elliptical. The important geometrical consequence is the near-equality of the Sun's and Moon's apparent angular diameters.

6. WHY THE 108 RATIO IS RELEVANT TO ECLIPSES

For a distant object with diameter D at distance d, the small-angle approximation gives:

angle approximately = D / d

If d/D = 108:

angle approximately = 1/108 radian = 0.00926 radian = 0.531 degrees

This is close to the observed apparent angular size of the Sun and Moon. The eclipse is therefore a direct geometrical consequence of two bodies having comparable apparent angular diameters.

7. SATYALOKA: THE NEXT TIME SCALE

The supplied material gives the Brahma time hierarchy:

Quantity	Derived value
1 Maha-yuga	4.32 million years
27 Maha-yugas	116.64 million years
1 Brahma day	4.32 billion years
1 Brahma day/night	8.64 billion years
1 Brahma year	3.1104 trillion years
100 Brahma years	311.04 trillion years

8. SAGITTARIUS A*: THE GALACTIC SCALE

At the centre of the Milky Way is Sagittarius A*, a supermassive black hole with a mass of approximately four million Suns and a distance from the Solar System of roughly 26,000 light-years. Stars in its immediate environment provide strong-gravity test systems.

M approximately = 4 x 10^6 solar masses approximately = 7.95 x 10^36 kg

Using the Schwarzschild-radius expression:

r_s = 2GM/c^2 approximately = 1.18 x 10^10 m approximately = 11.8 million km

A naive mean density inside that radius is:

rho = M / [(4/3) pi r_s^3] approximately = 1.15 x 10^6 kg/m^3

The important black-hole condition is not simply density. It is compactness: at the event horizon, 2GM/(Rc^2) = 1.

9. RELATIVISTIC CLOCK EFFECT NEAR SAGITTARIUS A*

For a simplified non-rotating black hole, the stationary gravitational time factor outside the horizon is:

d tau / dt = sqrt(1 - r_s/r)

For a star at approximately 1,500 Schwarzschild radii:

d tau / dt approximately = sqrt(1 - 1/1500) approximately = 0.999667

The gravitational contribution is therefore about 0.0333 percent. A star moving at approximately 0.03c also experiences special-relativistic time dilation. This demonstrates the scale of the relativistic effect without claiming a full orbital calculation.

10. THE KEY NUMERICAL COMPARISON: 27 MAHA-YUGAS AND THE GALACTIC ORBIT

The Solar System takes approximately 230 million years to orbit the Galactic Centre. Half of this is:

230 million years / 2 approximately = 115 million years

The supplied Vedic arithmetic gives:

27 x 4.32 million years = 116.64 million years

Difference = 1.64 million years

Relative difference approximately = 1.64 / 116.64 x 100 = 1.4 percent

This is the most interesting numerical correspondence in the proposed Satyaloka analysis. It does not establish that Satyaloka is a particular star near Sagittarius A*. It establishes a concrete numerical comparison that can be investigated without changing the underlying arithmetic.

11. SATYALOKA AS A GALACTIC-CENTRE HYPOTHESIS

The astronomical identification 'Satyaloka' is not an established designation in astronomy. Within the supplied model, the proposed interpretation is:

Satyaloka -> a stellar or celestial domain in the immediate gravitational environment of Sagittarius A*

The strongest astronomical calibration objects are the stars orbiting Sagittarius A*. The hypothesis should therefore be treated as a mapping problem: identify whether any particular stellar orbit, orbital timescale or relativistic environment satisfies additional independently derived constraints.

12. VAIKUNTHA AND THE EVENT-HORIZON ANALOGY

The conceptual correspondence is an irreversible boundary. In the supplied interpretive framework, Vaikuntha is associated with no return to the material cycle. In black-hole physics, the event horizon is a causal boundary from which no future-directed signal can return to the external universe.

irreversible spiritual boundary <-> irreversible causal boundary

The scientifically precise statement is that the laws of physics do not simply stop working at the event horizon. General Relativity remains applicable there. The classical description becomes problematic at the singularity, where a quantum theory of gravity is expected to be necessary. The analogy is therefore structural, not an identification of Vaikuntha with a black hole.

13. HIGHER SPATIAL DIMENSIONS AND PROJECTION

The supplied geometry material distinguishes spatial dimensions from time and uses hypercube projection as the mathematical analogy. For a cube with side length 3:

3^1 = 3, 3^2 = 9, 3^3 = 27, 3^4 = 81, 3^5 = 243

A tesseract is a four-dimensional spatial hypercube. Its projection into three-dimensional space can appear as a lower-dimensional representation of the complete object. This provides a mathematical analogy for the possibility that an observed three-dimensional cosmos could be a projection of a higher-dimensional spatial structure.

(x, y, z, w, ... ; t)

Here w represents an additional spatial coordinate; t remains time. The proposal therefore does not require identifying time as the fourth spatial dimension.

14. CYCLICAL COSMOLOGY

The supplied Vedic chronology is intrinsically cyclical: yugas form Maha-yugas; Maha-yugas form larger cycles; Brahma's day and night form a repeated cosmological rhythm; and the complete lifespan is followed by dissolution and renewal.

cycle -> manifestation -> dissolution -> renewal -> cycle

Modern Big Bang cosmology describes an early hot, dense state followed by expansion of spacetime. It should not be reduced to a literal explosion into pre-existing space. The relevant comparison is whether the observed expanding universe could constitute one phase within a larger cyclic cosmology. That question is not settled by the numerical correspondences alone.

15. THE COMPLETE LOKA CLOCK ARCHITECTURE

Scale	Clock / orbital interpretation	Representative time

Bhuloka	Earth / human clock	1 human day
Swargaloka	Solar / deva clock	1 human year per deva day/night
Satyaloka hypothesis	Galactic-scale clock	about 230 million years per full galactic circuit
Brahma scale	Cosmological / yuga clock	4.32 billion years per Brahma day

16. WHAT HAS BEEN DERIVED

• **Bhur -> Bhuvah -> Svah** gives the three-stage Earth-intermediate-solar framework.

• **1 deva day/night = 1 human year** converts the Swargaloka clock into an annual solar/orbital clock.

• **Earth-Sun distance / Sun diameter approximately 107.4**, close to the traditional 108 approximation.

• **108 = 27 x 4 = 3^3 x 4** links the principal numerical signature to the yuga and geometry structures in the supplied material.

• **27 x 4.32 million years = 116.64 million years** provides the long-period value used in the Satyaloka comparison.

• **230 million years / 2 approximately = 115 million years** gives the approximate half-period of the Solar System's Galactic orbit.

• The two long-period values differ by approximately **1.4 percent**.

• Sagittarius A* provides a real strong-gravity environment in which different clock rates can be calculated.

17. STATUS OF THE DERIVATION

> The numerical derivations above are calculations from stated quantities. The astronomical facts are observational inputs. The identifications 'Sun = Swargaloka', 'Moon = Atala Loka' and 'Satyaloka = a star or stellar domain near Sagittarius A*' are interpretive mappings within the model and should not be presented as established astronomical classifications.

This distinction strengthens the document: it allows the model to be evaluated by calculation rather than by rhetoric. The next scientific step is to identify additional predictions that could independently confirm or falsify the proposed mappings.

18. CONCLUDING SYSTEM STATEMENT

The central result can be stated compactly:

Vedic loka hierarchy -> nested spatial scales -> nested orbital/gravitational clocks -> progressively larger time units.

The Gayatri supplies the first three coordinates; the solar relationship supplies the first astronomical clock conversion; 108 supplies a recurring numerical scale; the yuga arithmetic supplies the longer time unit; and Sagittarius A* supplies a real Galactic strong-gravity environment in which the next level of the clock hierarchy can be investigated.

The appropriate continuation is therefore not an appeal to authority, but a progressively more precise calculation of distance, period, angular size, gravitational potential, relativistic clock rate and dimensional projection.

Prepared for Yogacharya Histas Damania

In the context of the Triloki KAAL cosmological clock

ATALA LOKA: NUMERICAL DISTANCE AND THE MOON

A scientific-temperament analysis of the yojana calculation in the supplied source material

1. THE TEXTUAL NUMERICAL CLAIM

The supplied material proposes a striking comparison: the Puranic description of the lower lokas uses intervals of 10,000 yojanas, while a cumulative 70,000-yojana span can be compared with the modern Earth-Moon distance. The relevant Bhagavata Purana passage describes seven lower regions named Atala, Vitala, Sutala, Talatala, Mahatala, Rasatala and Patala, arranged beneath the Earth, with 10,000 yojanas between successive regions.

7 x 10,000 yojanas = 70,000 yojanas

A precision point is essential. The verse does not straightforwardly say that the Earth-to-Atala distance itself is 70,000 yojanas. It describes seven lower regions in sequence, with 10,000-yojana spacing. Therefore 70,000 yojanas is better treated as a cumulative scale for the full seven-level lower-loka sequence, not as an unambiguous Earth-to-Atala measurement.

2. CONVERTING 70,000 YOJANAS

A yojana does not have one universally fixed modern SI value across all Indian texts and periods. The supplied calculation uses a smaller astronomical conversion of roughly 5.5 to 5.7 km per yojana.

70,000 x 5.5 km = 385,000 km

70,000 x 5.7 km = 399,000 km

The modern mean centre-to-centre Earth-Moon distance is approximately 384,400 km. Using the lower end of the proposed conversion gives a difference of only 600 km:

(385,000 - 384,400) / 384,400 x 100 = 0.156 percent

The conversion that produces an exact 384,400 km match is:

384,400 / 70,000 = 5.4914 km per yojana

Thus a numerical correspondence can indeed be constructed at approximately 5.49 km per yojana. But it should be presented as a correspondence within a selected conversion convention, not as a unique proof, because other yojana definitions produce materially different results.

3. COMPARISON WITH THE ACTUAL EARTH-MOON DISTANCE

Quantity	Approximate value
Earth-Moon mean distance	384,400 km
70,000 yojanas at 5.49 km	384,400 km
70,000 yojanas at 5.50 km	385,000 km
70,000 yojanas at 5.70 km	399,000 km
70,000 yojanas at 8.00 km	560,000 km
70,000 yojanas at 12.87 km	900,900 km

4. WHY THE MATCH IS INTERESTING

The numerical observation is interesting for three independent reasons. First, the modern Earth-Moon distance is not an arbitrary number but a directly measurable astronomical scale. Second, the Puranic system uses a repeated 10,000-yojana interval, creating an internally structured distance ladder. Third, seven such intervals give a number that,

under a particular yojana calibration near 5.5 km, lands extremely close to the modern lunar distance.

10,000 -> 20,000 -> 30,000 -> 40,000 -> 50,000 -> 60,000 -> 70,000 yojanas

This is therefore a worthwhile numerical relationship to record. The scientifically responsible conclusion, however, is: **the numbers are compatible under a particular conversion, but the match alone does not establish that Atala Loka is physically identical with the Moon.**

5. A POSSIBLE MODEL FOR ATALA AND THE MOON

Within the larger Triloki KAAL model, the Moon has already been proposed as the astronomical representative of Atala Loka. The present calculation gives that identification a measurable spatial parameter: the lunar distance is of the same order as the cumulative 70,000-yojana scale of the seven lower-loka sequence when a roughly 5.5 km yojana is used.

Bhuloka -> Moon / Atala representation -> Swargaloka / Sun

The solar-eclipse geometry then supplies a second, independent physical relationship. Earth, Moon and Sun can become nearly collinear in three-dimensional space, allowing the Moon to obscure the Sun's apparent disc. In the proposed loka interpretation, the same event is read as an alignment of Bhuloka, Atala and Swargaloka.

6. IMPORTANT SCIENTIFIC LIMIT

The numerical comparison should not be overstated. The Puranic cosmography and modern celestial mechanics use different coordinate systems and different definitions of distance. The text describes lower regions as cosmological planetary systems; modern astronomy describes the Moon as Earth's natural satellite in an elliptical orbit. A successful numerical conversion therefore establishes a **scale correspondence**, not a demonstrated physical identity.

A stronger test would require additional independent quantities: orbital period, angular diameter, relative motion, eclipse geometry, and a consistent conversion of other distances in the same textual system. If several independent quantities converge on the same astronomical object using one fixed conversion, the evidential case becomes substantially stronger.

7. REVISED CONCLUSION FOR THE MAIN DOCUMENT

The Atala calculation can therefore be stated in the main derivation as follows:

The Bhagavata Purana describes seven lower loka regions in 10,000-yojana intervals. Seven intervals give 70,000 yojanas. At a yojana scale of approximately 5.49 km, this equals 384,400 km, essentially the modern mean Earth-Moon distance. The correspondence is numerically striking, but it depends on the selected yojana conversion and should be treated as a testable scale correspondence rather than as proof of identity.

This is the scientifically strongest way to include the observation: preserve the numerical result, expose the conversion explicitly, identify the textual limitation, and leave the physical interpretation open to further testing.

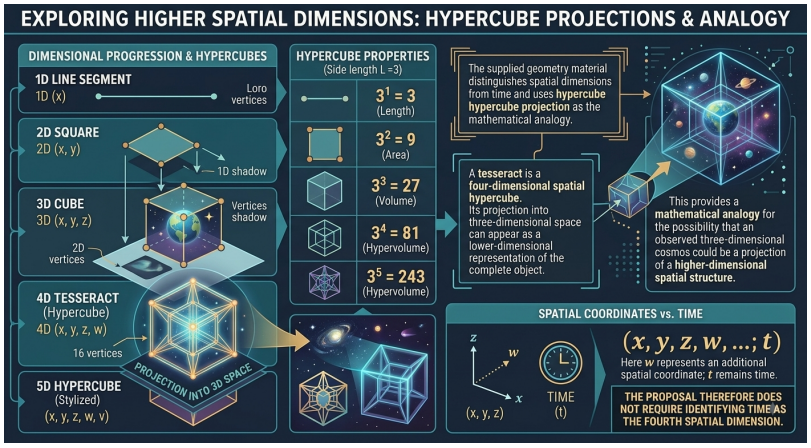
HIGHER-DIMENSION GEOMETRY: THE TESSERACT ANALOGY

THE GEOMETRIC IDEA

The supplied diagram treats a tesseract as a four-dimensional spatial hypercube and uses its projection into three-dimensional space as the mathematical analogy for a higher-dimensional structure appearing through a lower-dimensional representation.

DIMENSIONAL PROGRESSION

1D line: one coordinate.
2D square: two coordinates.
3D cube: three coordinates.
4D tesseract: four spatial coordinates (x, y, z, w).
A 5D hypercube introduces another spatial coordinate.



WHY TIME IS NOT THE FOURTH SPATIAL DIMENSION HERE

The model explicitly keeps time separate: (x, y, z, w, ... ; t). The additional coordinate w is spatial, while t remains time. This is a geometric construction, not a claim that time itself is a spatial dimension.

APPLICATION TO THE LOKA MODEL

Within the proposed framework, the observable Sun, Moon, stars and black holes can be treated as lower-dimensional representatives or projections of structures that are not fully contained in ordinary three-dimensional space.

IMPORTANT LIMIT

This is a mathematical analogy. A tesseract projection demonstrates how a higher-dimensional object can have a lower-dimensional appearance; it does not by itself establish that the physical universe is a higher-dimensional hypercube or that any particular astronomical object is such a projection.