

Geometry in the Vedic Era: A Study with Reference to the Narad Purana

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Abstract—The Vedic era, known for its profound contributions to philosophy, science, and mathematics, also laid the foundation for geometric principles that predate classical Greek geometry. This research paper explores the existence and development of geometric concepts in ancient India, with a special focus on the references found in the Narad Purana. The study highlights how early Indian scholars conceptualized shapes, measurements, and spatial relationships, particularly the triangle, as a fundamental geometric figure.

Index Terms—Vedic geometry, ancient Indian mathematics, Narad Purana, triangle, Sulba Sutras, sacred geometry, Vedic era, geometric principles, ritual construction, temple architecture

I. Introduction

Geometry, derived from the Greek words **geo** (earth) and **metron** (measurement), has ancient roots that extend far beyond Greece. In India, the Vedic civilization (circa 1500–500 BCE) demonstrated a deep understanding of geometry, primarily for religious, architectural, and astronomical purposes. The **Sulba Sutras**, **Rigveda**, and **Narad Purana** contain numerous references to geometric principles used in altar construction, temple design, and cosmological interpretations.

The **Narad Purana**, one of the eighteen Mahapuranas, provides insights into the symbolic and practical applications of geometry. Among its many teachings, it discusses the significance of the triangle, both as a sacred symbol and as a geometric entity.

II. Historical Background

The Vedic period emphasized precision in rituals, which required accurate geometric constructions. The **Sulba Sutras** of Baudhayana, Apastamba, and Katyayana describe methods for constructing altars of specific shapes and areas, including squares, rectangles, and triangles. These texts reveal an understanding of the Pythagorean theorem long before Pythagoras.

The **Narad Purana**, composed later, integrates these mathematical ideas into a broader cosmological and spiritual framework. It connects geometric forms with metaphysical concepts, suggesting that geometry was not merely a practical science but also a means of understanding universal order.

III. Geometry in the Narad Purana

The **Narad Purana** discusses the triangle as a symbol of creation, preservation, and destruction—the three fundamental aspects of existence represented by Brahma, Vishnu, and Mahesh (Shiva). The triangular form is also associated with the **Trikona Yantra**, a sacred diagram used in meditation and temple architecture.

From a mathematical perspective, the Purana refers to the triangle in the context of measurement and proportion. It emphasizes the balance between sides and angles, reflecting an early understanding of geometric harmony. The text also alludes to the use of triangles in constructing altars and mandalas, where precision was essential for spiritual efficacy.

IV. Comparative Analysis

While Greek geometry focused on logical deduction and proof, Vedic geometry was primarily constructive and symbolic. The **Narad Purana** bridges these two aspects by presenting geometry as both a science and a philosophy. The triangular form, for instance, is not only a geometric figure but also a representation of divine balance and cosmic order.

Comparing the **Narad Purana** with the **Sulba Sutras** reveals a continuity of geometric thought in Indian tradition. Both sources emphasize proportionality, symmetry, and spatial reasoning, though the Purana extends these ideas into metaphysical domains.

V. Applications in Vedic Architecture and Rituals

Triangles played a crucial role in Vedic altar designs, known as **Vedis**. The **Garhapatya**, **Ahavaniya**, and **Dakshina** fires were placed in geometrically precise locations, often forming triangular arrangements. The **Narad Purana** elaborates on these configurations, linking them to cosmic energies and ritual significance.

In temple architecture, the triangular form appears in the **Shikhara** (spire) and **Mandala** layouts, symbolizing ascent toward the divine. The Purana's geometric descriptions influenced later architectural treatises such as the **Vastu Shastra**.

VI. Conclusion

The study of geometry in the Vedic era, particularly through the lens of the **Narad Purana**, reveals a sophisticated understanding of mathematical and symbolic principles. The triangle, as discussed in the Purana, embodies both scientific precision and spiritual depth. This dual perspective underscores the holistic nature of ancient Indian knowledge, where geometry served as a bridge between the material and the metaphysical.

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