Spiritual and Cosmological Applications of Triangles

Anantha Anantha

Anand Bhavan, Kanjampatti P.O, Pollachi Via, Tamil nadu 642003, India

Abstract:

It is well known that the laws of triangles are widely applied in classical mathematical branches, physics, engineering and almost all the areas of science, technology and other fields. Trigonometry is the extension of triangles. Cosmology is the application of trigonometry. The Jews, Vedic Aryans, Islam and Taoism were all well versed with triangles and other geometrical figures. In this article, the author attempts to unlock the hidden spiritual mysteries of triangles and also about the part played by triangles in cosmology.

MSC: 51 M04

Keywords: Euclidean Triangles, Spiritual Applications; Cosmological Consequences

Introduction:

The Star of David, a symbol of Judaism, as a religion, and of the Jewish people as a whole. And it also thought to be the shield (or at least the emblem on it) of King David. Jewish lore links the symbol to the "Seal of Solomon", the magical signet ring used by King Solomon to control demons and spirits. Jewish lore also links the symbol to a magic shield owned by King David that protected him from enemies. Following Jewish emancipation after the French revolution, Jewish communities chose the Star of David as their symbol. The star is found on the Flag of Israel.

The six-pointed Star of David is a common symbol for both Judaism and Israel. Known in Hebrew as a *Magen David* (Shield of David), geometrically it is two triangles superimposed on each other, forming the shape of a hexagram.

Though today the symbol popularly communicates Jewishness, its associations with Judaism are newer than one might think. Some historians trace it to Jewish communities in the Middle Ages, but these claims are neither fully substantiated nor widely accepted [See figure 3]

Geometry is used throughout the Rig Veda. However, unlike modern geometry, the emphasis was not on proofs but on usage. Furthermore, the rishis had knowledge of the concept of precision, and this is evident from various descriptions of applications and use of geometry. Further, the depth of precision was based on the requirements of the task or study being described. For example, descriptions of constructions were limited in precision whereas descriptions of astronomical phenomena were described in greater precision.

The following verse in the Rig Veda deals with the formation of the universe.

Who was the measurer *prama*? What was the model *pratimâ*? What were the building materials for things offered *nidânam ãjyam*? What is the circumference (of this universe) *paridhih*? What are the meters or harmonies behind the Universe *chandah*? What is the triangle (yoke) *praugam* [which connects this universe to the source of driving force, the engine]?[2]

All these Sanskrit words (ie: *prama*) are geometrical terms which also occur later in the Sulbasutra (where they are also defined).

Chariots are described in great detail in many different verses in the Rig Veda and Yajur Veda. Dr. Kulkarni writes: The proficiency in chariot building presupposes a good deal of knowledge of geometry... The fixing of spokes of odd or even numbers require knowledge of dividing the area of the circle into the desired numbers of small parts of equal area, by drawing diameters. This also presupposes the knowledge of dividing a given angle into equal parts.

The Rig Veda is full of references to words in rituals whose definitions we find in subsequent Brahmanas and in the Sulba Sutra to be pointing to geometrical figures. For example, three types of fire altars, *garhapatya*, *ahavaniya* and *dakshina* are mentioned in the Rig Veda but defined in the Shatapatha Brâhmana as being square, circular and semi circular, respectively, and also having the same area. Considering that ritualistic fire altar designs were not changed over a period of time and that the shastras were recited for several millennia before being written down, the rishis must have had a method to calculate the square root of the number two and the value of pi, without which they would not be able to determine whether the three altars had the same area or not.[http://www.hindupedia.com/en/Mathematics_of_the_Vedas]

The concept of infinity was also known during Vedic times. They were aware of the basic mathematical properties of infinity and had several words for the concept-chief being *ananta, purnam, aditi, and asamkhyata. Asamkhyata* is mentioned in the Yajur Veda[11], and the Brihadaranyaka Upanishad as describing the number of mysteries of Indra as *ananta*[12]. These two statements are elaborated in the opening lines of the Isha Upanishad (Shukla Yajur Veda). This sholka is as much metaphysical as it is mathematical.

pûrnâsya pûrnamadaya pûrnamevâvasishyate

From infinity is born infinity.

When infinity is taken out of infinity, only infinity is left over.

The concept of Shunya, or zero void, was originally conceived as the symbol of Brahman, expressing the sum of all distinct forms. The symbol of zero and the decimal system of notation is described in the Atharvaveda. it describes how the number increases by 10 by writing zero in front of it. While there is no explicit mention of zero, it must have been common knowledge based on how it is used.

In fact, the concept of shunya was not just mathematical or scientific, but is deeply rooted in all branches of thought - especially metaphysics and cosmology. Shunya is the transition point between opposites, it symboliss the real balance between divergent tendencies. Most ancient mathematicians defined zero as the sum of two equal and opposite quantities. Zero produces all figures, but is itself not limited to a certain value. Zero is the primary or final reservoir of all single numbers. The symbol of zero and the decimal system of notation is described in the Atharvaveda. It describes how the number increases by 10 by writing zero in front of it.

Sacred geometry is the basis through which the –multiverseǁ — as the Ancient One references

— comes into being. Sacred geometry is the mathematical formulas that serve as the foundation or the springboard upon and through which everything exists. Sacred geometry is the place where mind and matter, the spiritual and the physical, the manifest and unmanifest, the bound and boundless meet. If you can imagine an architect's blueprint you can capture a snapshot of just how integral to life sacred geometry is. Just as the blueprint informs the layout, placement, spacing and more of a building, so too does sacred geometry inform the layout, placement, and spacing of Earth, the universes, and all of their inhabitants. Sacred geometry is found everywhere, even your body! At the heart of everything is a mathematical code that inspires, influences,

and informs it and how it appears in physical reality. In short, sacred geometry is the underlying and organizing principle of Creation.[https://www.sagegoddess.com/what-is-sacred-geometry/]

Sacred triangles are applied in Tantra. In this article, section1 deals with the tremendous mysteries of equilateral triangles in Tantra and section 2 attempts by the applications of isosceles triangles that the shape of our universe is flat.

SECTION 1

Applications of equilateral triangles in Tantra

<u>Case 1</u>

4 Yogini Vidya is an important mode of worship in Tantra. 64 equilateral triangles should be inscribed either in a wooden plate or on a cotton piece of cloth. The performer should sit on this and mediate by reciting the 64 yogini mantras. The practitioner will attain spiritual bliss and ecstasy. The author reveals this hidden spiritual and triangle mystery for the benefit of humankind.

See Figure 1

Figure I (Euclidean)
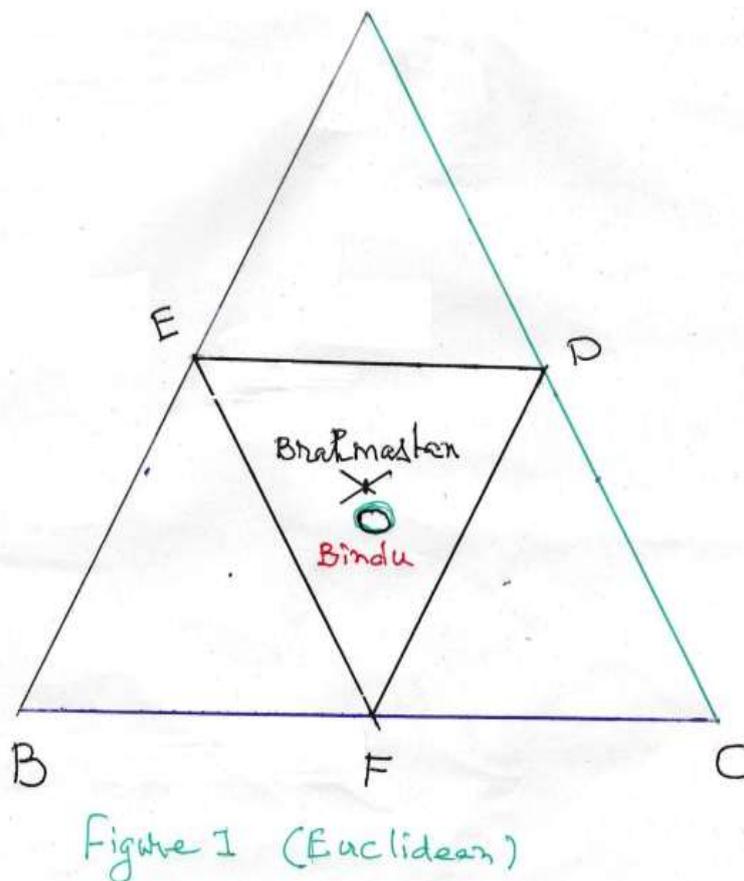
Describe an equilateral triangle ABC. [Elements I, prop.1]. Locate the mid points D. E and F of sides AB, BC and CA respectively. Join DE, EF and FD.

In triangle ABC, all the sides are equal. Since an equal side subtends equal angles, angles ABC, BCA and CAB are equal. i. e each of these angle is 60 degrees.

Now by side, angle side correspondence, triangles AED, BEF and CDF are congruent. So, the base angles AED, ADE, BEF, BFE, CFD and CDF are equal. This shows us that teach of these angles is equal to 60 degrees. So, sides DE, EF and FD are equal. Consequently we obtain that triangles AED, BEF, CFD and EDF

are all equilateral triangles. There are five equilateral triangles in figure 1.We can describe a number of equilateral triangles in each triangle AED, BEF, CDF and DEF.

In figure 1, O is the center of both equilateral triangle ABC and DEF. But it is not the center for equilateral triangles AED, BEF and CDF. So, this construction is mathematically consistent but spiritually incorrect. It is very very essential and important that the center/ brahmastan/bindu should be the same for all 64 yogini triangles. So, such constructions are not acceptable. Some so called spiritual experts foolishly argue that such equilateral triangles hold good for 64 yogini triangles.

Let us switch over to the spiritually and mathematically correct description of equilateral triangles.

See Figure 2

Figure 2 (Euclidean)
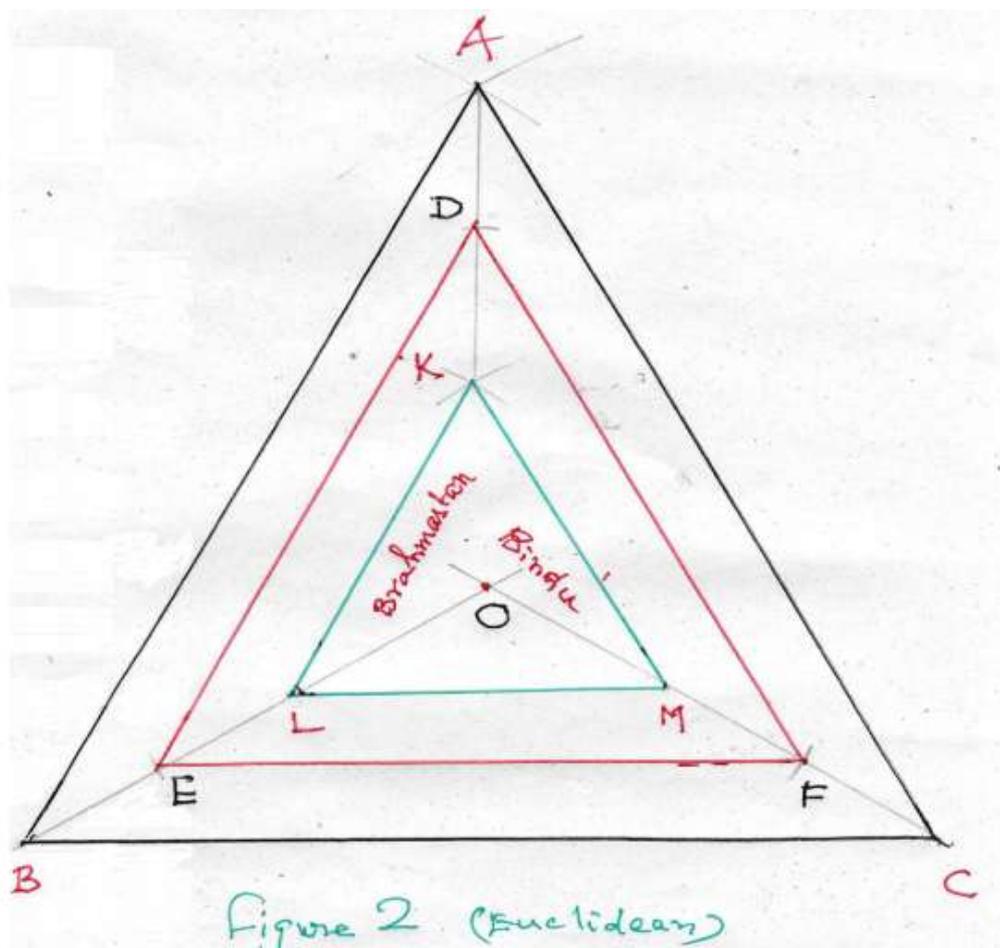
Draw an equilateral triangle ABC. [Figure 2] Let the bisectors of angles ABC and ACB meet at O. This is the center, brahmastan/bindu of equilateral triangle ABC. On BO and CO make BE and CF such that BE = CF. Join EF. On CF describe an equilateral triangle DEF. Similarly, inscribe an another equilateral triangle KLM. So, O is the center, brahmastan/bindu for all the equilateral triangles ABC, DEF and KLM. This is the [figure 2] spiritually and mathematically correct and consistent construction. By repeating this process we can construct 64 equilateral triangles within the biggest equilateral triangle ABC. [Figure 2] In figure b2, each equilateral triangle REPRESENTS a particular deity. There are 64 tantra and 64 yoginis.

The readers may find below the relevant 64 yogini mantras for worship: Worshipping Kali and Her 64 Yoginis Kali is in all forms. She is particularly present in the 64 Yoginis, all extensions of her Cosmic Personality. This 64 Yogini Namavali wins the grace of Maha Kali and her ancient mother aspects.

First published in 1990, these mantras come directly from Sathguru Babaji. Devotees of the Mother and her 64 forms will be pleased to know that they have been posted extensively in multiple sites throughout the internet. All are welcome to use these sacred sounds which will elevate humanity.

For the absolving of sins, clarity of consciousness, a peaceful heart, massive protection, dynamic aura, robust health, and the magnificent grace of abundance of every type, one should chant the sacred names of the sixty-four Yoginis. We should never minimize their potential. They are not minor deities, but the supreme divinity; none other than emanations of the one cosmic Prakriti residing over every aspect of the relative plane. They can pull a soul from the lowest depths of illusion into the most elevated heights of grace- light.

To perform this puja, simply prepare a copper yantra with sixty-four petals and chant the following mantras with an open heart. If copper is not available, draw the yantra with India ink using Bhoj Patra. The daily repetition of these mantras with purify all darkness, jealousy and resentment within. Seek out direct spiritual guidance from a soul animated by the Divine. As the Siddha Rama Devar said, ‒Surrender to the young Shakti, and she will not forget you for the rest of your life.‖

Kali and Her 64 Yogini Namavali

1. Om Kali Nitya Siddhamata Swaha

Mother of the Siddhas

2. Om Kapalini Nagalakshmi Swaha

Lakshmi of Naga

3. Om Kula Devi Svarnadeha Swaha

Of golden body

4. Om Kurukulla Rasanatha Swaha

Ruler of physical pleasure

5. Om Virodhini Vilasini Swaha

Residing within Self

6. Om Vipracitta Rakta Priya Swaha

Who loves passion

7. Om Ugra Rakta Bhoga Rupa Swaha

Enjoyer of passion in the form

8. Om Ugraprabha Sukranatha Swaha

Ruler of the seminal essence

9. Om Dipa Muktih Rakta Deha Swaha

Liberation through the body of passion

10. Om Nila Bhukti Rakta Sparsha Swaha

Who receives pleasure from the touch of passion

11. Om Ghana MahaJagadamba Swaha

Great Mother of the world

12. Om Balaka Kama Sevita Swaha

Attended by the God of Love

13. Om Matra Devi Atma Vidya Swaha

The Goddess with knowledge of Self

14. Om Mudra Poorna Rajatkripa Swaha

Who competely radiates compassion

15. Om Mita Tantra Kaula Diksha Swaha

Initiatress of the Tantric Kaula Path

16. Om Maha Kali Siddhesvari Swaha

Queen of the Siddhas

17. Om Kameshvari Sarvashakti Swaha

Shakti of All

18. Om Bhagamalini Tarini Swaha

Who delivers from calamity

19. Om Nityaklinna Tantraprita Swaha

Fond of Tantra

20. Om Bherunda Tatva Uttama Swaha

 Essence of Sexual Fluid

21. Om Vahnivasini Sasini Swaha

Radiance of the moon

22. Om Mahavajreshvari Rakta Devi Swaha

Sensuous Goddess

23. Om Shivaduti Adi Shakti Swaha Original Feminine Energy

24. Om Tvarita Urdvaretada Swaha

Giver of the Upward Ecstasy

25. Om Kulasundari Kamini Swaha

Desire Itself

26. Om Nitya Jnana Svarupini Swaha

The Great form of Wisdom

27. Om Nilapataka Siddhida Swaha

Giver of perfection

28. Om Vijaya Devi Vasuda Swaha

Goddess who is Giver of wealth

29. Om Sarvamangala Tantrada Swaha

Who Bestows Tantra

30. Om Jvalamalini Nagini Swaha

Snake Goddess

31. Om Chitra Devi Rakta Puja Swaha

Goddess who is worshipped with passion

32. Om Lalita Kanya Sukrada Swaha

Pure Maiden

33. Om Dakini Madasalini Swaha

Shining with rapture

34. Om Rakini Papa Rasini Swaha

Destroyer of sin

35. Om Lakini Sarvatantresi Swaha

Ruler of all tantras

36. Om Kakini Naganartaki Swaha

Who dances with Nagaraj

37. Om Sakini Mitrarupini Swaha

Friend

38. Om Hakini Manoharini Swaha

Mind Stealer

39. Om Tara Yoga Rakta Poorna Swaha

Who in union bestows complete passion

40. Om Shodashi Latika Devi Swaha

Creeper Goddess

41. Om Bhuvaneshwari Mantrini Swaha

Energy of all mantras

42. Om Chinamasta Yoni Vega Swaha

With dripping yoni

43. Om Bhairavi Satya Sukrini Swaha

Supreme Purity

44. Om Dhumavati Kundalini Swaha

Primordial energy of self

45. Om Bagla Muki Guru Moorthi Swaha

Form of the guru

46. Om Matangi Kanta Yuvati Swaha

Youthful beauty enhanced by Love

47. **Om Kamala Sukla Samsthita Swaha**

Residing in the Semen

48. **Om Prakriti Brahmandri Devi Swaha**

Goddess residing in the crown

49. **Om Gayatri Nitya Chitrini Swaha**

Eternal core of the energy of Self

50. **Om Mohini Matta Yogini Swaha**

Intoxicated

51. **Om Saraswathi Svarga Devi Swaha**

Goddess of Heaven

52. **Om Annapoorni Shiva Samgi Swaha**

With Shiva

53. **Om Narasimhi Vamadevi Swaha**

Beloved Goddess

54. **Om Ganga Yoni Svarupini Swaha**

Energy of the Yoni

55. **Om Aprajita Samaptida Swaha**

Who Bestows Orgasm

56. **Om Camunda Parianganatha Swaha**

Ruler of sacred erection

57. **Om Varahi Satya Ekakini Swaha**

Oneness of Truth

58. **Om Kaumari Kriya Shaktini Swaha**

Energy of dedicated action

59. **Om Indrani Mukti Niyantri Swaha**

Guide to bliss

60. **Om Brahmani Ananda Moorthi Swaha**

Image of bliss

61. **Om Vaishnavi Satya Rupini Swaha**

Form of truth

62. **Om Mahesvari Para Shakti Swaha**

Transcendental energy

63. **Om Lakshmi Monoramayoni Swaha**
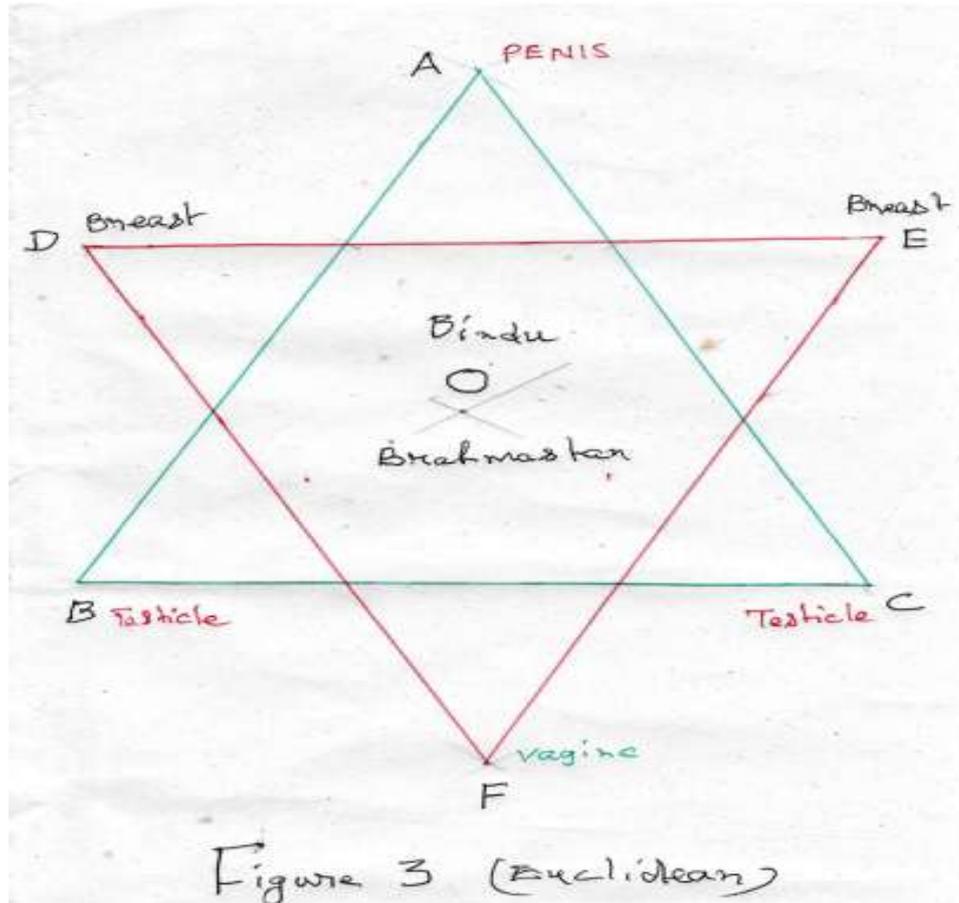
With beautiful yoni

64. Om Durga Satchitananda Swaha

Truth consciousness and bliss

The Sanskrit sacred mantras Om and Aum are identical. But Tantra asserts that males should recite Om whereas females MUST avoid Om recitation and SHOULD recite Aum.

<u>Case 2</u>

Look at figure 3

Figure 3 (Euclidean)

In Christianity the word Amen is very important. Every discourse ends with Amen. In Hindu philosophy, Om and its equivalent word Aum are sacred. It is stated in Tantra that the TANTRIC sexual union of male and female is identical with Universal consciousness. The genitals of males and females are SACRED SPACES in Tantra. The Tantric Monks had formulated a RULE to experience spiritual bliss/enlightenment and universal consciousness and Oneness for the partners. The rule is that the couples must perform by sitting or laying on a cot/ bed/cotton cloth with the sacred equilateral triangles as shown in figure 3. In the sexual equilateral triangles ABC and DEF O is the center/ brahmastan/bindu. So , if a couple enjoy sex on the bed which possesses the sacred sexual equilateral triangles as indicated in the figure 3, certainly they will get climax and orgasm and attain spiritual bliss and universal consciousness and Oneness with the Almighty.

Before coitus, the couples are requested to meditate at least for five minutes.

The Sanskrit sacred mantras Om and Aum are identical. But Tantra asserts that males should recite Om whereas females MUST avoid Om recitation and SHOULD recite Aum

[https://www.yoginiashram.com/namavali-of-kalis-64-yoginis/]

SECTION 2

Applications of isosceles triangles in cosmology

According to Freedman equations, the geometry of the universe has three possibilities namely open, closed and flat. Closed universe obeys the properties of spherical geometry, open universe has the properties of hyperbolic geometry and flat universe agrees with the concepts of classical Euclidean geometry. Recent measurements of WMAP and Planck predict that to a margin of 0.02% error, our universe is flat. But there is no mathematical formulation for the shape of our universe. In this work, the author attempts to show seven mathematical methods for the fate of our universe. The author's findings are just some attempts. The author does not seek any TOP claims. But the author sincerely believes that these studies may be a small clue for further probes and research.

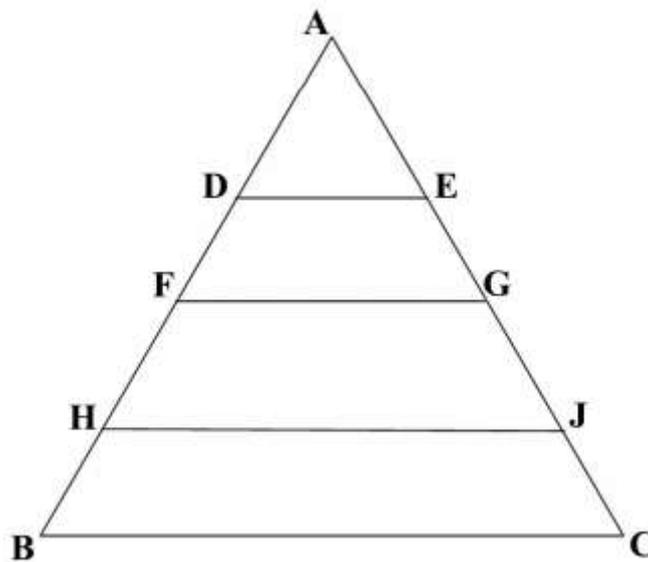**Case 1** **Look at figure 4 (Euclidean**

Figure 4 (Euclidean)

Let m, x, y and z denote the sum of the interior angles of cosmic triangles ADE, AFG, AHJ and ABC respectively. In another words,

ADE = x [I] AFG = x [II] AHJ = y [III] ABC = m [IV]

Results:

xy = a (1) yz = b (2) zm = c (3)

Dividing (1) by (2), x / z = a / b (4) Dividing (2) by (3), y/ m = b/ c (5) Dividing (6) by (7), xm/ yz = a/ c (6) Cross multiplying, xmc = yza   (7)

Applying (1) in RHS, xmc = yz.xy

i.e mc = y^2z

Assuming (3) in LHS, m.zm = y^2z

i.e   m = y   (8)

Comparing [I], [IV] and (8) we obtain that the sum of the interior angles of triangles ABC and AHJ are equal.

In cosmic triangle ABC the latent sides are equal. And by construction the latent sides AH and AJ in triangle

AHJ are equal.

The summit angle BAC is common to these two triangles.

Consequently we obtain that cosmic triangles ABC and AHJ are similar. (9)

<u>Case 2</u> **Look at figure 4 (Euclidean)**

Let e, g, s and w denote the sum of the interior angles of cosmic triangles ADE, AFG, AHJ and ABC respectively. In another words,

ADE = e [I] AFG = g [II] AHJ = s [III] ABC = w[IV]

Results

Applying the laws of tensor algebra, we can formulate the following tensors: A^{eg} (10)

B_{ws} (11)

C_{se} (12)

D^{ws} (13)

E_{eg} (14)

F_{gw} (15)

(10).(11).(13).(14).= A^{eg} $B_{ws}D^{ws}$ E_{eg} = Unity

(10).(12).(13).(15).= $A^{eg}C_{se}$ D^{ws} F_{gw} = Unity

Equating the above two relations, (10).(11).(13).(14).= (10).(12).(13).(15).

i.e. $B_{ws}E_{eg} = C_{se}F_{gw}$

Mwseg = Nsegw   (16)

According to the law of equality of tensors, if two tensors of same rank and same type are equal, then their components are one to one equal, using this law in (16) we get the following relations:

w = s; s = e; e = g; g = w`

From the above relations we obtain that e = g = s = w From the above relation we obtain ,   e = g = w=s. (17)

From (17) and from we get that the cosmic triangles ADE, AFG, AHJ and ABC are similar. (18)

<u>Case 3</u> **Look at figure 4 (Euclidean)**

Let u, x, y and z denote the sum of the interior angles of cosmic triangles ADE, AFG, AHJ and ABC respectively. In another words,

ADE = v [I] AFG = x [II] AHJ = y   [III] ABC = z [IV]

Results:

The angles BDE and DEC are straight angles and so their measures are equal to180 degrees.

Let V be the value of this 180 degree   (1) (20)

Using (1) , $X + Y = V + A$ (2) (21)

i.e. $X = \{V + A - Y\}$ (2a) (21a)

$X + B^{\cdot} = A^{\cdot} + Z = V + C^{\cdot}$ (3) (22)

I.e. $A = \{X + B - Z\}$ (3a) (22a)

Also, $A = \{V + C - Z\}$ (3b) (22b)

$X + Y + Z = 2V + C$ (4) (23)

I.e. $X = \{2V + C - Y - Z\}$ (4a) (23a)

Let us assume that eqns. (21a), (22a), (22b) and (23aa) denote sets.

Intersection of the sets *A* and *B*, denoted by *A* ∩ *B*, is the set of all objects that are members of both *A* and *B*. The intersection of {1, 2, 3} and {2, 3, 4}

is the set {2, 3} .

Let us assume that equations (21a) , (22b) and (23a) are sets.

Considering equations (21a) a n d (22b) and applying the intersection law of set theory we obtain that,

$X \cap A' = \{ V \}$ (24)

Taking equations (3b) and (4a) and assuming interjection law of

set theory we have that, $X \cap A' = \{ - Z \}$ (25)

Comparing (5) and (6) we get that $V = - Z$ (26)

It is well known that in geometry minus theta refers to the vertically opposite angles. Since vertically opposite angles are equal, (7) implies that $V = Z$ (27)

A brief analysis of {I], {IV] and (27) clearly indicates that cosmic triangles ABC and ADE are similar (28)

Discussion:

From the equations (9) of case ONE, (18) of case TWO, and (28) of case THREE we obtain that the cosmic triangles we have studied are similar. The similar triangles are possible only in

classical Euclidean geometry. ***So, in brief we may conclude that the geometry of our universe is*** flat. **[1-8]**

References

1. Sachs,R. K. and Wolfe,A. M. Perturbations of a cosmological model and angular variations of the microwave background, *Astrophys. J.***147**, 73–90 (1967), 73–90

2. Weinberg, S., *Gravitation and Cosmology* ,Wiley & Sons (New York, 1972)

3. Hu,W., Sugiyama,N. and Silk,J. The physics of cosmic microwave background anisotropies. *Nature* **386** (1997) 37–43

4. Bond,J. R., Efstathiou,G. & Tegmark, M. Forecasting cosmic parameter errors from microwave background anisotropy experiments. *Mon Not. R. Astron. Soc.* **291 (1997)** , L33– L41

5. Hinshaw,G. *et al*. Band power spectra in the COBE-DMR four-year anisotropy map. *Astrophys. J.* **464**,(1996) L17– L20

6. Scott,P. F. *et al*. Measurement of structure in the cosmic background radiation with the Cambridge cosmic anisotropy telescope. *Astrophys. J.* **461**(1996) L1–L4

7. Netterfield,C. B. *et al*. A measurement of the angular power spectrum of the anisotropy in the cosmic microwave background.*Astrophys. J.* **474** (1997) 47–66

8. Schmidt,B. P. *et al*. The high-Z supernova search: measuring cosmic deceleration and global curvature of the Universe using type Ia supernovae. *Astrophys. J.* **507**(1998) 46–63

Corresponding Author: **Anantha Anantha**
Email ID: parinirvana.anantha@gmail.com
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