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Project Update

The vedic cosmology website (http://www.vediccosmology.com/) was launched in June 2018. Our goal is to raise $72,000 for creating a high definition animation depicting cosmology as per vedic texts. We have thus far raised $5079 (7%) of the goal. With the money raised, further designs and videos will be released soon on the science of vedic cosmology.

This Issue:

Flat Earth or Spherical Earth

-by HH Danavir Goswami

Question #1:

Many people (flat earth supporters) say that *Bharata-khaṇḍa* [our earth planet] is flat because it is just an island (dvipa) as it is mentioned in Visnu and Vayu Puranas, not as a globe. What is your opinion of the flat earth theory?

If it is flat, then how can we explain day-night changes, because a flat surface will have sunlight twenty-four hours a day, 360 days a year. The sun is not a small object that only brightens 500 yojanas (4,000 miles) area and not even 1,000 yojanas area. Then *Bharata-khaṇḍa* should be in conical shape (like a mountain or temple gopuram) to explain the day-night changes as we experience.

Then what about main stream science that speaks about globular earth with its day-night changes and change in seasons?

Danavir Goswami Answer #1:

We don't find a description in the sastras of Jambudvipa as being spherical—circular yes, spherical no. Regarding the earth we live on which is called *Bharata-khaṇḍa*, it appears that it is a completely round sphere.

Here is the evidence using sastra caksus (seeing through the eyes of the sastras- scriptures) and hearing from the acaryas. Below see a quotation from Siddhanta siromani and a note (commentary) by Srila Bhaktisiddhanta Saraswati Thakura.

> *It is said that the circumference of the earth is 4,967 yojanas and its diameter is 1,581 yojanas. If we subtract the latitudes of the two places situated north and south of each other, multiply that difference with the circumference of the earth and divide this product with 360, we can determine the distance between them in yojanas. **
>
> **Bimala Prasada Siddhanta Saraswati's Note: According to Aryabhata, the circumference of the earth is 1050 yojanas (Aryasiddhantanuvada, page 3). According to Śrī Sūrya-siddhānta the circumference of the earth is 1,600 yojanas (page 9). According to Prof. Beschel, the longest radius of earth is 3962.802 miles and the shortest radius is 3949.555 miles (see Golaadhyaya Page 34). (Siddhanta Siromani p.151)*

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Srila Bhaktisiddhanta is placing forward four authoritative opinions regarding the circumference of the earth we live on (*Bharata-khaṇḍa*).

- The first is the opinion of *Siddhanta Siromani*—circumference: 4,967 yojanas: rounded off to 5,000

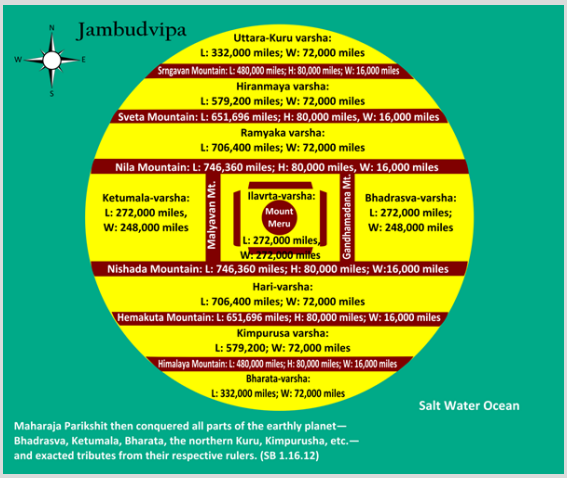
yojanas (40,000 miles). Its diameter is 1581 yojanas (12,648 miles).

- The second opinion is from Sixth-century astronomer Aryabhata— circumference: 1050 yojanas (8,400 miles). It's diameter: 334 yojanas (2,675 miles)
- The third opinion is from *Sūrya-siddhānta*— circumference: 1,600 yojanas (12,800 miles). Its diameter is 509 yojanas (4,072 miles)
- The fourth is from Prof. Beschel—circumference: 3,100 yojanas (24,800 miles). Its diameter is 987 yojanas (7,900 miles)

The terms "circumference" and "diameter" are given in the singular indicating that in all four views, earth (*Bharata-khaṇḍa*) is taken as a round sphere. The definition of a "circumference" is, "the outer boundary, especially of a circular area; perimeter." The definition of a "diameter" is, "a straight line passing through the center of a circle or sphere and meeting the circumference or surface at each end." The earth *Bharata-khaṇḍa* is spherical round that accommodates the view of day and night and the seasons.

Srila Bhaktisiddhanta Sarasvati Thakura construes the earth to be a round sphere and uses Surya siddhanta, Siddhanta Siromani, Aryabhata and Western Scientist Professor Beschel as authorities to corroborate this fact. Srila Bhaktisiddhanta may well be one of the most qualified persons to explain Vedic cosmology because he is at once a master of Siddhantic Vedic astronomy and also a master of Puranic sastra, in particular, of Bhagavata Purana.

The planet earth we live on is located on the southern-most portion of Bhu-mandala's central island of Jambudvipa.



This portion called Bharatavarsa was originally a contiguous land mass but long ago it was drastically re-formed by the incredible digging of Emperor Sagara's sixty thousand sons. They dug so extensively that most of Bharatavarsa became submerged into the saltwater ocean leaving only nine globular islands each with an 8,000 mile (one thousand yojanas) diameter. One of these nine islands is our earth planet known primarily as *Bharata-khaṇḍa*, also known as "Kumara," "Kumarika," "Sagarasambhrta," and so forth.

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Śatasṛṅga was Bharata's son. Eight sons and a daughter were born to Śatasṛṅga. They were Indradvīpa, Kaśeru, Tāmradvīpa, Gabhastimān, Nāga, Saumya, Gāndharva and Varuṇa. The girl's name was Kumārikā. Eight sons and a daughter were born to him. He divided this Bhārata sub-continent into nine regions. Eight of them he gave to his eight sons and the ninth one to Kumārī. (Skanda Purana)

There are eight other continents viz. Indradvipa, Kaserukman, Tamraparna, Gabhastiman, Nagadvipa, Saumya, Gandharva, Varuna. This continent (Bharata) situated in the sea is the ninth one. This continent extends from the south to the north for a thousand yojanas (8,000 miles). (Kurma Purana)

I shall mention nine subdivisions of the Bharata Varsa to you—Indradyumna, Kaseru, Tamravarna, Gabhastimat, Nagadvipa, Saumya, Gandharva, Varuna and the ninth is the sub-continent Sagarasambhrta. This sub-continent lies north to south extending to a thousand yojanas (8,000 miles). (Siva Purana)

Bharatavarsa has nine divisions; Viz.—Indradvipa, Kasera, Tamraparni, Gabhastimana, Nagadvipa, Saumya, Gandharva, Varuna; and the ninth is this place, surrounded on all sides by the ocean. The whole of the dvipa is a thousand yojanas (8,000 miles) in extent, from north to south. (Matsya Purana, Chapter 14, texts 7-10)

Within Bhārata-varṣa, there are nine khaṇḍas. They are known as (1) Aindra, (2) Kaśeru, (3) Tāmraparṇa, (4) Gabhastimāt, (5) Kumārikā, (6) Nāga, (7) Saumya, (8) Vāruṇa and (9) Gāndharva. (Siddhānta-śiromaṇi, Chapter One "Golādhyāya", Bhuvana-kośa section)

The north-south distance of 1,000 yojanas (8,000 miles) is constant among the Puranas. This north-south distance can be taken as the diameter of *Bharata-khaṇḍa* which means the circumference is about 25,000 miles.

We may note that there is agreement between the Puranic literature and Siddhantic literature on the specific nine islands created by Sagara's sons. Furthermore, there is concurrence on the spherical nature of earth which is coincidentally supported by the western scientific view also. The Bhagavata Purana refers to the earth as a globe in the following verses: 3.21.36 (mahīm), 4.9.51 (maṇḍalam), 4.18.29 (bhū-maṇḍalam); 4.21.36 (kṣoṇi-tale); 4.21.48 (pṛthvyāḥ), 4.24.10 (vasudhā-talam) 5.7.1 (avani-tala); 6.11.8 (gām), 7.3.5 (bhūḥ); 8.7.26 (kṣitim), 8.19.5 (mahīm), 10.68.46 (bhū-maṇḍalaṁ), 12.2.7 (kṣiti-maṇḍale).

There are also references to the planet Rahu as being the spherical shape made of the earth's shadow.

Rāhu controls the shadow of the earth which is circular in shape. (Sridhara Swami on Canto 5, Chapter 57, texts 10-13)

Rahu has been created after taking out the shadow of the earth and has a spherical shape. (Brahmanda Purana, Kurma Purana)

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Question #2:

Do you agree that basically, the main explanation of the difference between the Vedic descriptions and modern cosmology boils down to our inability to perceive the "subtle characteristics" of the universe?

Danavir Goswami Answer #2:

Yes, I would agree with that. Modern science uses mathematics, physics, etc., along with radio telescopes, powerful cameras, space craft and other info-acquiring equipment to gather data from observations. Then the data is analyzed and formulated into assumptions, hypotheses and theories. If a theory becomes popular, it is taken as fact for the time being until a more popular theory comes along.

Some of the primary postulates of modern astronomy, astrophysics and cosmology would include: the origin of the universe, the age of the universe, the purpose of the universe, how the universe acquired order and precision, the size of our universe, whether life exists on other planets, etc. Unfortunately, modern science lacks the ability to satisfactorily supply this information.

If science is lacking actual knowledge in all these areas mentioned above, one might ask, how then can science predict eclipses? The answer is that certain aspects of our universe may be predicted accurately based on experiencing the cyclical and regulated functions of nature. For example, any relatively experienced person can predict that the sea water will cover more of the shoreline during high tide and less during low tide.

With a little more experience he can calculate the patterns of the tides' changes and accurately predict more or less shore coverage. Similarly, a person who studies the past records of an area can predict accurately that for areas in the northern hemisphere, the average temperature in January will be such and such degrees less than in July.

Making predictions about future astronomical occurrences are based on experience and observation. However, there is another method for getting this information which is from higher authorities. Vedic cosmology receives much information from higher authorities as well as some support from mathematics such as trigonometry. The knowledge acquired from higher authorities surpasses that which is derived from experience, observation and hypothesis. A major drawback of modern science is that some of its assumptions hold that there exists nothing beyond what humans can perceive with their senses. This excludes the existence of higher dimensional principles including souls (atmas), a supreme all-powerful intelligent designer (paramatma) or any other aspects of the supernatural.

Question #3:

But, what about what we can perceive with advanced technology (like the photographs taken by the Hubble telescope?) How does Vedic cosmology explain the image below, for example (taken with a visible light camera and an infrared camera)?

Danavir Goswami Answer #3:

Believing that because modern science can provide us with colorful,

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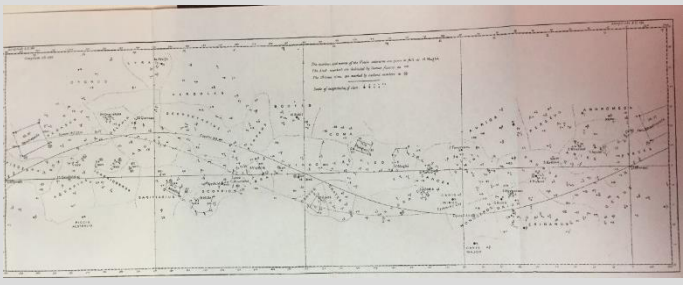
spectacular images of the night sky therefore all its theories are factual is illogical. The asuras were so captivated by beautiful Mohini murti's looks that they trusted her with the nectar they had nearly died to acquire. She deceived the asuras and they lost the nectar.

What we see in the photograph (above) appears to be planets or astro bodies floating in space surrounded by some other matter that seems to form cloud-like appearances. The photograph does not inform us how, when or why the universe began, how the universe is being managed with its ordered complexities. It doesn't tell us whether life exists on other planets, nor does it tell us the distances between the astro bodies in space.

In 2018 modern astronomy experts inform that the distance from earth to the furthest visible galaxy is approximately thirty-two billion light-years. Some students say that unless they get tangible evidence to support that assumption, they cannot believe it.

The convincing way to acquire the evidence would be to send a high-velocity manned-spaceship to measure the time it takes to reach the distant galaxy. If the spaceship could travel at the speed of light (186,000 miles per second) it would take thirty-two billion years to reach the distant galaxy. With an average lifespan of 80 years per astronaut, 400 million generations would be required to sustain the mission. That's far too long to wait for the evidence.

Perhaps it would be preferable to avoid the trouble of sending a manned-spacecraft and instead bounce a laser beam off the distant galaxy. This would be much cheaper and would only require a powerful laser beamer, travel time and personnel to monitor the beam's progress in space and its moment of contact with the target. Scientists today are hoping in this generation to beam a laser to a closer galaxy, Alpha Centauri, (4.24 light-years from the sun) which would only take twenty years to reach. At that rate, however, it would require about 160 billion years for a laser beam to reach the farthest galaxy. That's approximately 2.46 billion generations of earth-based lab experts that would be needed to track the beam's progress in space and to see the project through to success. This is far too long to wait for evidence.



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In the astronomical map above (dated 1860 A.D.) included in Ebenezer Burgess's translation of the Surya Siddhanta from Sanskrit to English, it is interesting to note the following. Many of the constellations accepted by Western science such as (Orion, Bootes, Coma, Auriga, Perseus, Andromeda, Cetus, Eridanus, Monoceros, Canis Minor, Hydra, Crater, Corvus, Serpens, Serpentarius, Hercules, Lyra, Cygnus, Pegasus, Delphin, Aquiea and Scorpius), are placed along with the Vedic signs of the zodiac (*rāśis)* namely (Pisces, Aquarius, Capricorn, Sagittarius, Scorpio, Libra, Virgo, Leo, Cancer, Gemini, Taurus and Aries) as well as many Vedic stars, namely (Punarvasu, Puṣyā, Ārdrā, Aśleṣā, Abhijit, Śravaṇā, Mūlā, Maghā, Anurādhā, Mṛgaśīrṣā, Śatabhiṣā, Jyeṣṭhā, Revatī, Aśvinī, Bharanī, Kṛttikā, Rohiṇī, Hasta, Citra, Svāti, Viśākhā, Phalgunī, Āṣāḍha, and Bhādrapadā). This indicates that the Vedic cosmological paradigm with its zodiac and stars also accommodates the constellations cited by Western astronomers. In other words, the four billion mile inside diameter of the brahmanda (round egg shaped universe that we live in) encompasses space, oceans, stars, planets and earth that we can see. This is described in the Vedas such as the Puranas, Mahabharata, Ramayana, Garga Samhita, Brahma Samhita, and the Jyoti sastras.

Appendix

Astronomical Image processing – a primer

By Ananda Jagannath Das (communicatiuons assistant to HH Danavir Goswami)

The astronomical images we see on the web such as the Westerlund2 star cluster seen in Question#3 is a processed image from raw data obtained from the Hubble Space Telescope. The telescope is stationed approximately 350 miles above the earth's surface and is designed to capture light from distant galaxies. The raw data is in greyscale pixels. According to the different wavelengths of light, different light filters are applied by scientists to the raw images to obtain a colorful picture that is visible to the human eye. Graphics enhancement programs such as FITS Liberator is used for this purpose. Because there is human interpretation of raw data, it is prone to error and can be falsified in the future with advancement in technology. Therefore, astronomical images cannot be interpreted as the actual visual truth.

According to one popular science website, creating raw images involves freedom on the part of the scientist. "When processing raw science images one of the biggest problems is that, to a large degree, you are 'creating' the image and this means a colossal freedom within a huge parameter space…There are some fundamental scientific principles that should normally be observed, but the rest is a matter of aesthetics — taste"

Source

https://www.spacetelescope.org/projects/fits_liberator/improc/ - accessed January 13, 2019
http://hubble.stsci.edu/ - accessed January 13, 2019
https://www.space.com/8059-truth-photos-hubble-space-telescope-sees.html - accessed January 7, 2019
https://www.youtube.com/watch?v=lAL2VrHWRQ0 – accessed January 7, 2019
https://www.youtube.com/watch?v=0LvY1nQibyo – accessed January 7, 2019

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Pavaneshwar Das – project member

HG Pavaneshwar das is a senior brahmachari devotee residing in Mumbai, India. He is part of the Vedic Cosmology team where he works closely with HG Vamsi das regarding translation of Surya Siddhanta. Vamsi das is a scientist working in Rochester, MN.

Pawanehswar das also teaches at the Bhaktivedanta Academy for Culture and Education (BACE) at Sri Sri Radha Gopinath Mandir. He teaches courses on Isopanishad, Nectar of Instruction, Nectar of Devotion, Bhagavad Gita and Srimad Bhagavatam. Pavaneshwar das graduated from Indian Institute of Science with a master's in electrical engineering. He graduated with honors as a Gold medalist, an academic distinction rarely achieved. His interest in cosmology studies has led him to elaborate on the design and structure of the universe as described in the fifth canto of Srimad Bhagavatam. Working with a team of students at Bhaktivedanta Vidyapita at Govardhan Ecovillage, Mumbai, India, Pavaneshwar das and team systematically understood and elaborated the vedic cosmos thus resulting in the release of a book called Bhagavata Cosmology. The book is available on Amazon.com

BIHS Conference - Florida

Based on the findings and studies on vedic cosmology, Pavaneshwar das presented a research paper titled "Planetary motion as per Surya Siddhanta " at the "Science of Consiousness" conference organized by the Bhaktivedanta Institute for Higher Studies (BIHS), held in January, 2019 in Gainsville, The presentation will soon be uploaded in the organizers website www.consci19.org.

Objective of the research: To design a mathematical model to calculate and predict the timings for rising/setting of the planets, seasons, phases of the moon and eclipses as per Surya Siddhanta.

Research paper summary findings: Positions of the planets at the appearance time of Sri Caitanya Mahaprabhu were computed and compared with information available historically. Surya Siddhanta computed that at the appearance time of Lord Caitanya there was full moon and lunar eclipse as corroborated historically.

Conclusion: Surya Siddhanta presents a precise model of the movement of the planets in the universe that is akin to the functioning and precision of a clock.