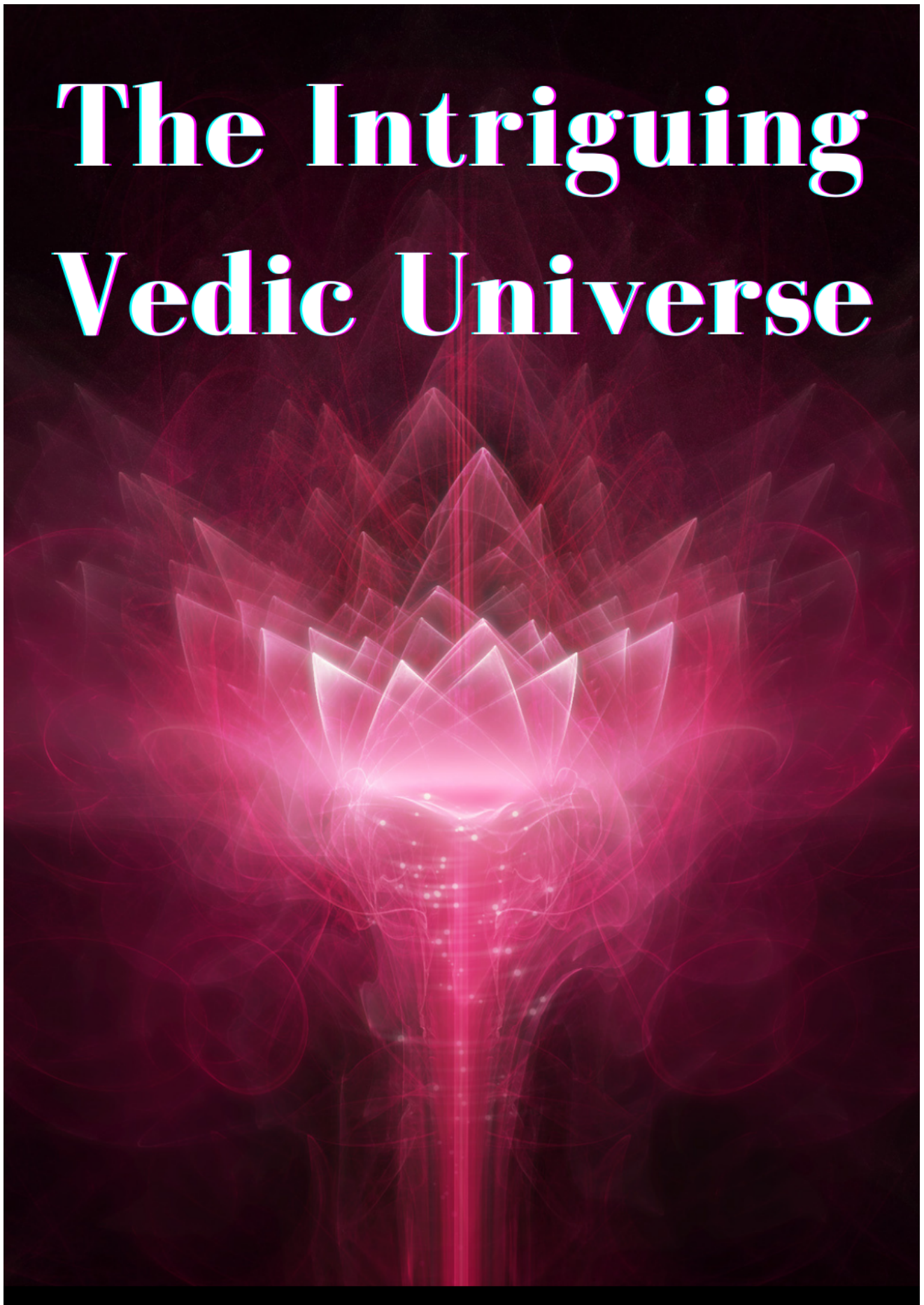


The Intriguing Vedic Universe



CAITANYA CHANDRA DASA

The Intriguing Vedic Universe

Caitanya Chandra Dasa

2022

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Introduction

The Vedas explain many topics, including the soul, metaphysics, God, and superior beings living in higher planetary systems. Most of these topics can't be proven or disproven by modern science since they are outside the realm of experimentation. One can make experiments only with things or beings that are lower than himself. One can freely experiment with inanimate matter or even with animals, but one can't experiment with beings that are more powerful than him. A researcher may experiment with rats and rabbits, but he can't make experiments with the president of the United States, for example. Unless he would agree to come and be experimented upon, the researcher would be baffled. Similarly, one can't make experiments with God: or he accepts the conditions set up by Him, or he will not get anything.

Science is based on experimentation and therefore is by design not an effective tool for getting knowledge about God, the soul, or higher beings, as well as subtler entities or higher levels of reality that are beyond our sense perception. These are topics that will always remain out of the reach of modern researchers. One may accept or not the Vedas, but the fact is that there is no other source that gives detailed knowledge about these topics. That's an area where the Vedas have a monopoly we can say.

However, there is a part of Vedic knowledge that overlaps with modern science: cosmology. The Vedas give knowledge about the structure of the universe, as well as important historical events that can be proven or disproven by experimentation.

This is a very important point because if it's proved that the cosmological knowledge of the Vedas is correct, this makes a very strong case that

everything else in the Vedas is correct, including all the spiritual knowledge. However, if the cosmological knowledge from the Vedas can be disproved by modern science, this makes an equally strong case that everything else in the Vedas may be incorrect, and everything may be actually just a big fantasy.

The British in India did a very good job of discrediting the Puranas with their spurious translations and false propaganda, to the extent that even most Indians believe that the Puranas are just myths. As a result, other parts of the Vedas are also not taken seriously and people are deprived of the spiritual knowledge they contain. Once the Puranas are discredited, people automatically become skeptical about the knowledge from the Bhagavad-Gita and other books of spiritual knowledge.

The problem with the cosmology of the Puranas is that it offers a description of the world that is different from our sense perception. It's not easy to understand and even harder to harmonize with recent cosmological discoveries. Many read the 5th canto of the Srimad Bhagavatam and get under serious doubts. Do I need to believe that the earth is flat and the men never went to the moon to be a devotee of Krsna?

When the first Apollo mission landed, many were skeptical that they really went to the moon. The quality of the footage was quite bad, and the dispute with the USSR and other factors raised a lot of questions for a lot of people. Many started to wonder if that first mission was not just some kind of hoax. Prabhupada himself wrote a letter raising a number of questions about the landings.

However, with the subsequential Apollo Missions, as well as probes from the USSR, Europe, China, and India the evidence started to mount. The same evidence was verified by different sources, making it very difficult to

contest that men indeed were going to this piece of rock orbiting our planet that we call The Moon.

Similarly, it's very easy to prove that the Earth we can observe with our senses is not flat. Greeks did so more than 2000 years ago using simple experiments. Especially nowadays, when so much information is just a Google search away, it's becoming increasingly difficult to just dismiss all the scientific information in this regard as hoaxes.

I have been studying the Vedas, and especially the books of Srila Prabhupada since 1992, and the enigmatic descriptions of the Universe offered in the 5th canto of the Srimad Bhagavatam are a topic that always intrigued me. However, over the years I started to better understand it, helped by the research of Sadhaputra Prabhu, Drutakarma Prabhu, and many others.

In this book, I try to "*stand on the shoulders of giants*", sharing what I learned about this topic over the years and trying to offer a simple and inclusive explanation of how to make sense of the cosmological knowledge of the Puranas. As a bonus we will study how modern science is actually corroborating the knowledge from the Srimad Bhagavatam, which is quite amazing, considering that the Puranas were written more than 5000 years ago.

How the sages of ancient times were able to give dates for the creation of the solar system, as well as the creation of the universe itself and extinction events whose dates were discovered only recently by modern researchers is a question that modern scientists still have to answer.

Chapter 1: What does the Bhagavatam say?

The first step to understanding the model of the Universe given in the Puranas is to study it. This same explanation is repeated in the different Puranas, but to keep the description short, here we will focus on the description of the Universe offered in the 5th canto of the Srimad Bhagavatam. In this chapter, I will just give a short description of the model, and the rest of the book will be dedicated to explaining it.

The Srimad Bhagavatam compares our Universe to a coconut. A coconut is composed of several layers, with a hollow space inside that is half-filled with water. Because of the coverings, the space inside the coconut is completely dark. A living entity living inside a coconut would never see the light shining outside.



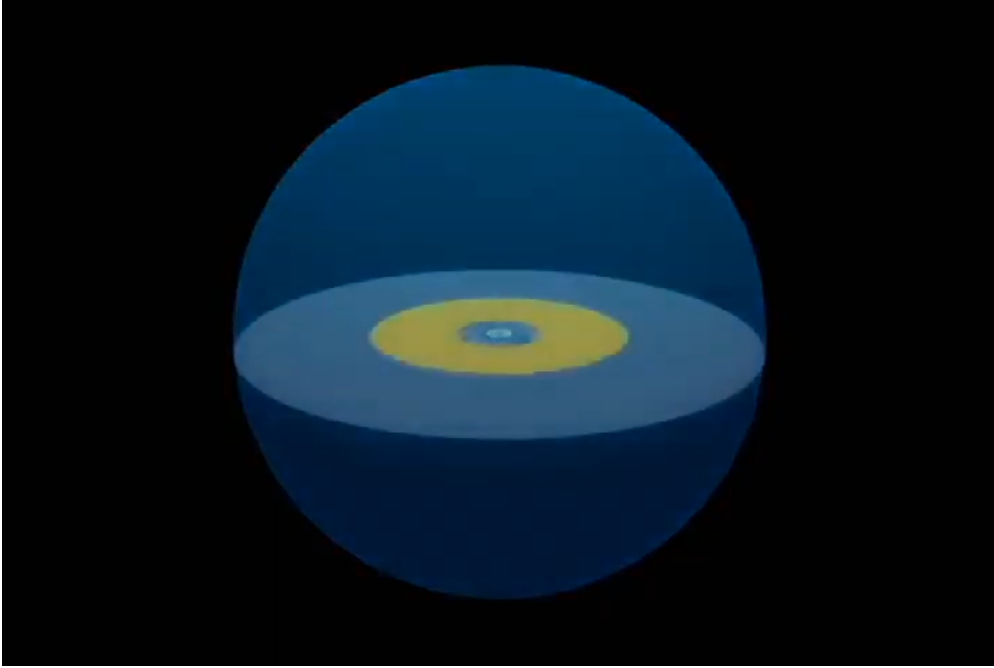
Vast as it may be, our universe is just one amongst many universes that float in the causal ocean, just like balls floating on water. The entirety of the causal ocean, including all the universes, equals just one-quarter of the total creation. Outside there is the spiritual realm that represents the other three quarters.

Each universe is composed of seven coverings and a hollow space in the middle. Half of this space is filled with subtle water, over which Lord Garbhodakasayi Vishnu lays down on the bed of Sesa Naga, while the other half is empty. This is the space where the Universe is created by Lord Brahma.

All the distances mentioned in the Srimad Bhagavatam are given in yojanas. There is debate related to the exact length of the yojana, but Srila Prabhupada in his commentary adopts the probable length of 8 miles per yojana for the verses of the Srimad Bhagavatam. Other authors accept different measures, substantiating their hypotheses with the help of experimental knowledge.

The main structure of the Vedic Universe is Bhu-Mandala. Situated in the horizontal middle of the empty space, Bhu-Mandala is 500,000,000 yojanas (4 billion miles) in diameter, which is roughly the size of our solar system.

In Srimad Bhagavatam 5.16.1, it's mentioned that "*the radius of Bhu-mandala extends as far as the sun spreads its light and heat and as far as the moon and all the stars can be seen*". This verse should not be taken literally, since SB 5.20.37 mentions that the light of the sun extends only up to the Lokaloka mountain (which is positioned in the middle of Bhu-Mandala), and also because different beings may see things in different ways, but it gives us an idea of its size.

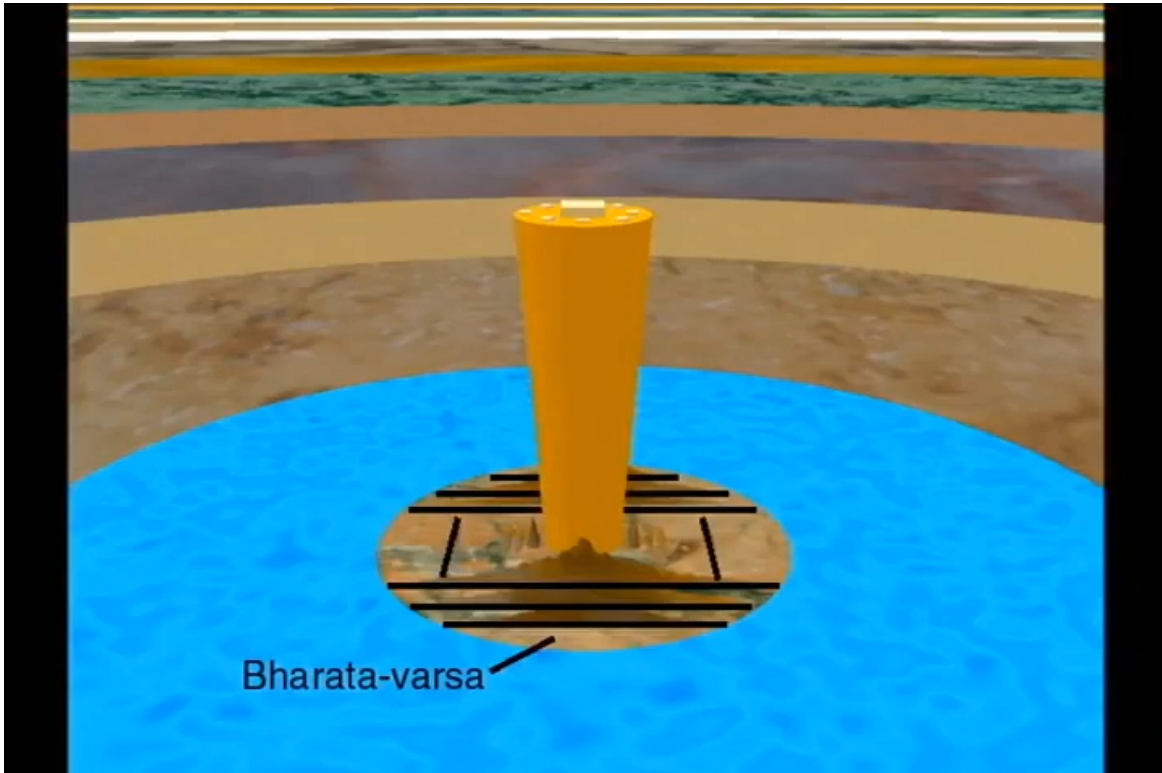


Bhu-Mandala (source: Sadaputa Prabhu)

Bhu-Mandala is formed by a sequence of seven concentric islands, separated by oceans. These oceans came into existence from the ditches created by the chariot of Maharaja Priyavrata (SB 5.1.31).

It's mentioned that the planetary system of Bhu-Mandala resembles a lotus flower and the seven islands resemble the whorl of the flower.

At the center of Bhu-Mandala lies the island of Jambudvipa, of which Bharata-Varsha is part. This island is circular, with a width of one hundred thousand yojanas. To be able to understand this model we need to first forget about the model offered by modern astronomy and concentrate solely on the features of Bhu-Mandala as described in the Srimad Bhagavatam. We will try to harmonize this model with what we see when we look at the sky in the subsequent chapters of this book.



*Jambudvīpa at the center of Bhū-Mandala, surrounded by the salt ocean
(source: Sadaputa Prabhu)*

Jambudvīpa is subdivided into nine separate portions of land, each one with a length of 9,000 yojanas. These tracts of land are inhabited by different races of intelligent beings and are separated by very tall mountains.

At the center, there is Ilavrta Varṣa, which contains the Sumeru mountain, which is made from solid gold. This mountain looks like an inverted golden cone that is very similar in form to the pericarp of a lotus flower. The presence of this mountain is a feature that makes Bhū-Mandala look very much like a lotus flower.



Another significance of this golden mountain is that it makes Jambudvīpa look like an arena of a fire sacrifice. This reminds the inhabitants that this is a place for performing yajnas with the purpose of ascending into higher realms, instead of just spending our time in useless sense gratification.

This mountain is extraordinarily tall. It is mentioned that the height of the mountain is also 100,000 yojanas, the same measurement as the width of Jambudvīpa. Of this, 16,000 yojanas are buried inside the earth, and thus the total height of the visible part of the mountain is 84,000 yojanas.

A normal mountain has a large base and a narrow peak, but Sumeru is inverted, and thus it is narrow at the base and wide at the peak. The width of the mountain at the top is 32,000 yojanas, and this space is occupied by nine towns dedicated to Lord Brahma and the eight principal demigods. Although all these demigods have their own planets, they also preside over

these cities. Sometimes it is described that these cities at the top of Mount Sumeru are like summer villas for these demigods.

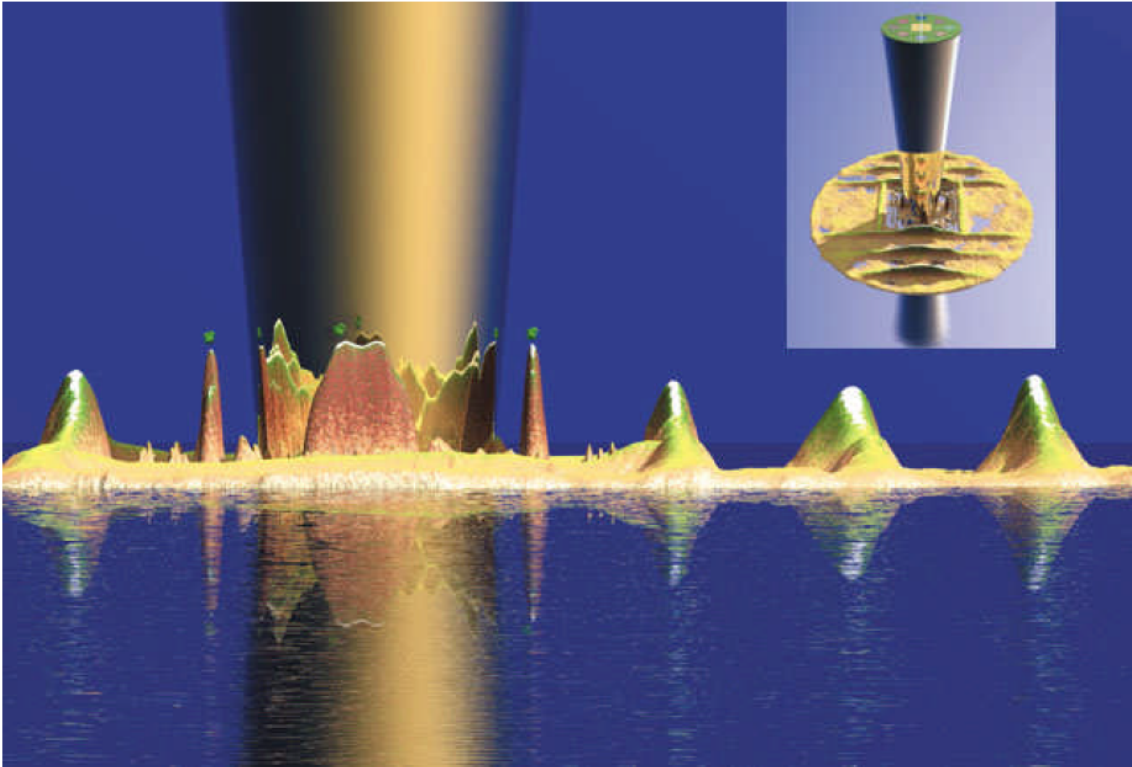
On the four sides of Sumeru are four smaller mountains, called Mandara, Merumandara, Suparsva, and Kumuda, that are like its belts. These mountains are 10,000 yojanas in length. At the top of these four mountains, there are four gigantic trees, positioned like flagstaffs. These trees have a height of 1,100 yojanas and their branches spread over the same length.

Other verses of the 16th chapter of the 5th canto describe other geographical features of the island of Janbudvipa, including lakes and other mountains. All these features are absolutely gigantic compared with the geographical features of our planet. Just to compare, the Earth of our sensory experience has a diameter of 7,926 miles (991 yojanas), which is less than the size of one of the four trees positioned at the top of the above-mentioned mountains! Similarly, the Himalayas we can experience with our earthly senses have a height of just five and a half miles, which is nothing compared with the 672,000 miles of the visible part of the Sumeru mountain.

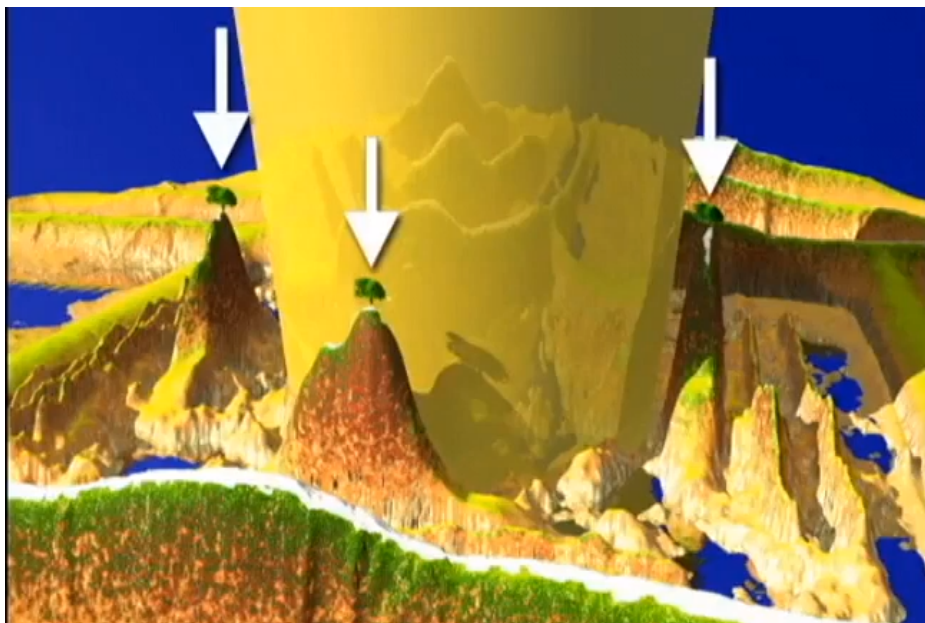
It's also important to note that SB 5.16.9 mentions that the Himalayas are 10,000 yojanas tall. Obviously, the sages who transmitted this knowledge were intelligent enough to understand the difference between a mountain 5.5 miles tall and 10,000 miles tall. This hints at the idea that different features of the Vedic Universe may be perceived differently by beings with different sets of senses and in different stages of spiritual evolution. This is something we will examine more carefully in the subsequent chapters of this book.

Surrounding Jambudvipa is a great ocean of salt water that also extends for 100,000 yojanas, the same length as the island itself. If we could see this

structure, the view would be breathtaking. Sadaputa Prabhu made at his time a 3D rendering of Jambudvipa with accurate proportions:



Can you see the minuscule trees on top of the mountains that surround Mount Meru? Each of these trees is bigger than our planet. This gives an idea of how gigantic this structure is.



The river Ganges flows from the celestial planets to the top of Sumeru mountain, where it divides into four branches that flow in the four directions, bathing different portions of Jambudvīpa, and ultimately flows into this salt ocean. The Ganges we see on our planet is a feature of the Alakananda branch, that flows through Brahmālaya and reaches Bharata-varsa after passing through many mountains.



We live in Bharata Varsa, which is the field of activities where souls take birth to create a new set of karma that will enjoy or suffer in their subsequent lives. Inhabitants of Bharata Varsa are supposed to worship the Lord by following the Varnasrama system.

The other varsas that are part of Jambudvīpa are celestial places, inhabited by souls who are enjoying the results of their past karma. A different incarnation of Kṛṣṇa presides over each of these varsas and is worshiped by the inhabitants. You can find the complete description in the 18th chapter of the 5th canto.

Jambudvipa and its salt ocean are surrounded by a series of concentric islands called Plaksadvipa, Salmalidvipa, Kusadvipa, Krauncadvipa, Sakadvipa, and Puskaradvipa. Each of these islands has its own ocean, and each is two times wider than the previous. In this way, the distances increase exponentially, culminating with the 51,200,000 miles of Puskaradvipa.

Beyond it, there is a huge concentric mountain called Lokaloka, which marks the boundary of the portion of the universe that is illuminated by the sun. After the Lokaloka mountain, there is Aloka-varsa, a dark tract of land where the rays of the sun are not visible.

On the top of Lokaloka mountain, there are four huge elephants (called gaja-patis) that balance it, preventing it from tilting in any direction.

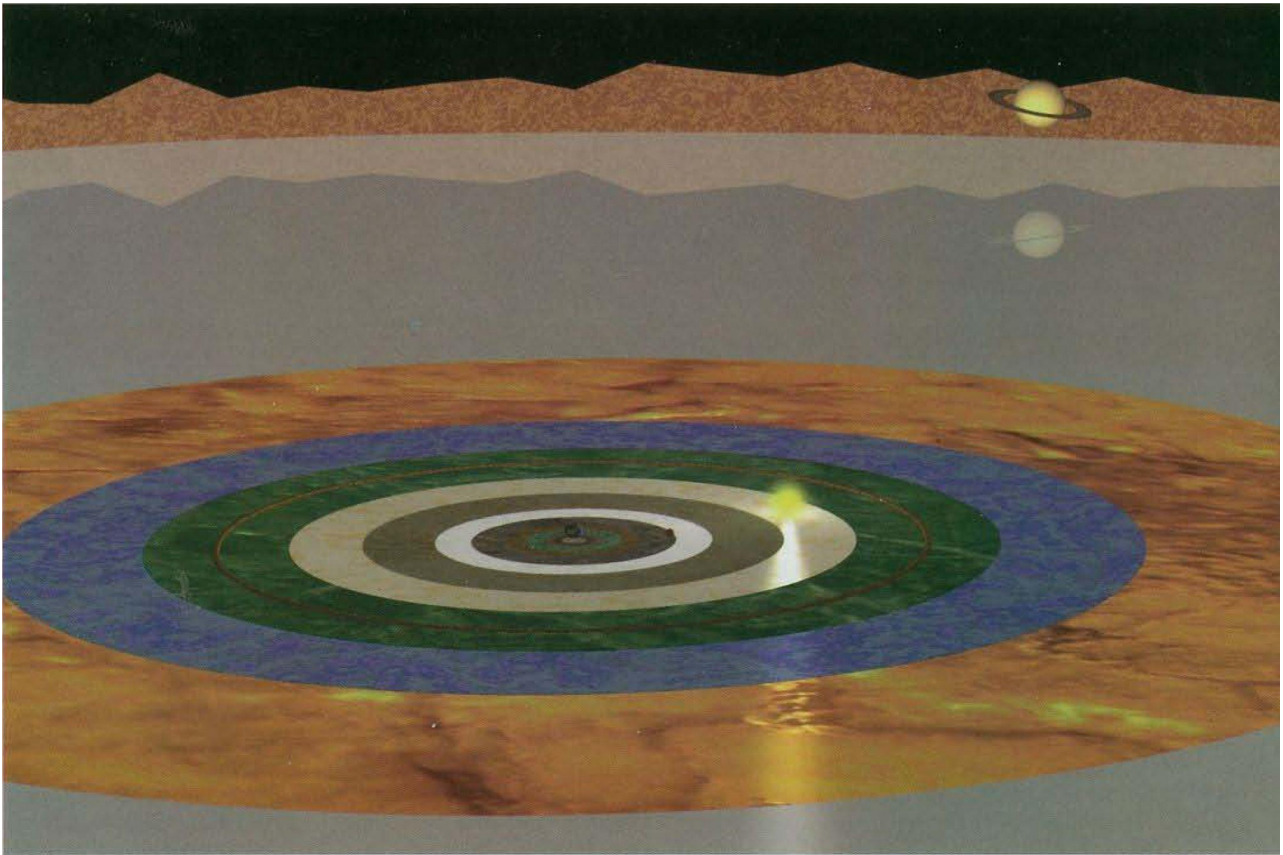
The total distance from Mount Sumeru to the Lokaloka mountain is 125,000,000 yojanas (1 billion miles), and Aloka-Varsha extends for the same distance. The universe thus has a radius of 250,000,000 miles (from Mount Sumeru to Lokaloka Mountain), and the total diameter of the universe is calculated as 500,000,000 yojanas or 4 billion miles.

Bhu-Mandala is thus a gigantic flat structure that is fixed in place. According to Vedic cosmology, the sun goes around Mount Sumeru in a circular orbit. It's described that the sun-god seats in a chariot that has only one wheel. One side of the axle is fixed at the top of Mount Sumeru, and the side with the wheel goes on Manasottara Mountain, situated in the middle of Puskaradvipa.

Vertically, the sun is situated close to the plane of Bhu-Mandala, and horizontally it is situated close to Sumeru Mountain. It circles around Bhu-Mandala once a year, and as a result, the inhabitants of Bhu-Mandala receive less sunlight during part of the year. When the sun is in the north,

the inhabitants of the south receive less light and when the sun is in the south the inhabitants of the north receive less light. This led to the pastime of King Priyavrata creating an artificial sun and circling Bhu-Mandala on the opposite side to make the distribution of light equal (SB 5.1.30).

This diagram made by Sadaputa Prabhu gives the idea of the orbit of the sun around Bhu-Mandala:



Advanced Astronomy, Back to Godhead

This may at first appear like a very simplistic description that doesn't explain the movements of the sun as we observe on our planet, including the passage of the days and nights and the seasons of the year. It happens that the orbit of the sun in the Vedic model is much more complex than it may appear at first glance. We will discuss this in more detail in the following chapters.

Apart from the orbit of the sun, Srimad Bhagavatam also describes the orbits of the planets of our solar system. All the planets circle around in orbits higher than the plane of Bhu-Mandala. Different from Bhu-Mandala, which is a flat structure, all the planets are globes that float in space, much like believed in modern astronomy. According to the description, however, the moon is much bigger and more distant, being 800,000 miles above the sun over the plane of Bhu-Mandala.

Considering that the axis of the sun is supported by Mount Sumeru (which has an elevation of 84,000 yojanas, or 672,000 miles, above the plane of Bhu-Mandala), we can calculate that the moon described in the Srimad Bhagavatam is much more distant than the gross moon studied in modern astronomy. We will discuss more on this point in the subsequent chapters.

Apart from this horizontal description of the universe, which describes Jambudipa and the other islands that form Bhu-Mandala, there is also a vertical description of the universe, which describes the other planetary systems. These planetary systems are described as being like discs positioned one on top of the other.

Very close to our plane, starting from the area of the upper atmosphere there is the plane of Bhuvarloka, inhabited by the subtle beings who are followers of Kuvera. Their realm spreads around Mount Sumeru. It's described in the Mahabharata that the Pandavas visited this realm while traveling through the Himalayas, being able to access mount Sumeru through paths that are inaccessible to us.

Higher than Bhuvarloka is Swargaloka, the abode of the demigods. Swargaloka is situated higher than the top of Sumeru mountain. Demons frequently go there to battle the demigods, and sometimes they win, temporarily gaining control over the celestial plane.

10,000,000 yojanas higher than Swargaloka is Maharloka, and 20,000,000 higher than Maharloka is Janaloka. These are the abodes of great sages who dedicate their lives to worshiping Lord Vishnu and cultivating spiritual knowledge. These are higher elevated beings, who live for extraordinarily long lifespans and are unaffected by the disputes between the demons and demigods.

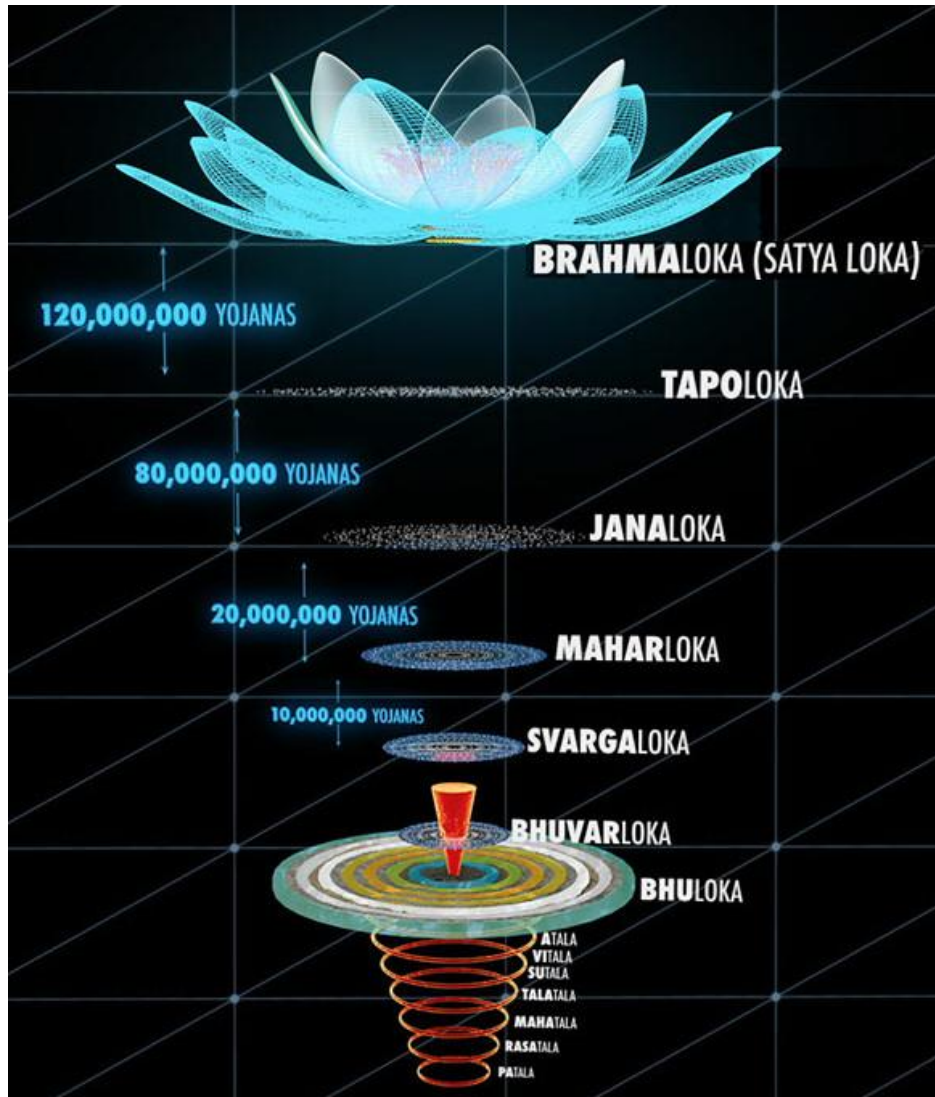


Diagram of the different planetary systems from the Rupanuga Vedic College

80,000,000 yojanas above Janaloka is Tapoloka, the abode of great ascetics, who perform solitary meditation on the Supersoul. This is the planet where the Four Kumaras live. 120,000,000 yojanas above Tapoloka is Brahmaloika, the abode of Lord Brahma and the most elevated planetary system of our universe. Only extraordinarily elevated souls can take birth there.

You can find a detailed description of life in these different planetary systems in the Brhad Bhagavatamrta, a book that describes the travelings of Gopa Kumara through the higher planetary systems and his experience in these different planes. Although it may sound like a work of fiction at first, the Brihad Bhagavatamrta narrates a true story that happened long ago in a different universe, a story that Sanatana Goswami could capture in his meditation and write in the pages of his book.

Just like there are planetary systems above our plane, there are also the lower planetary systems. These are subterranean realms that are situated lower than the plane of Bhu-Mandala. These are the abodes of the Asuras, consisting of the planes of Atala, Vitala, Sutala, Talatala, Mahatala, Rasatala and Patala. Lower than Patala are the hellish planets, the abode of Yamaraja, and still lower is Ananta-Sesa, who sustains the whole Universe on the top of His hoods.

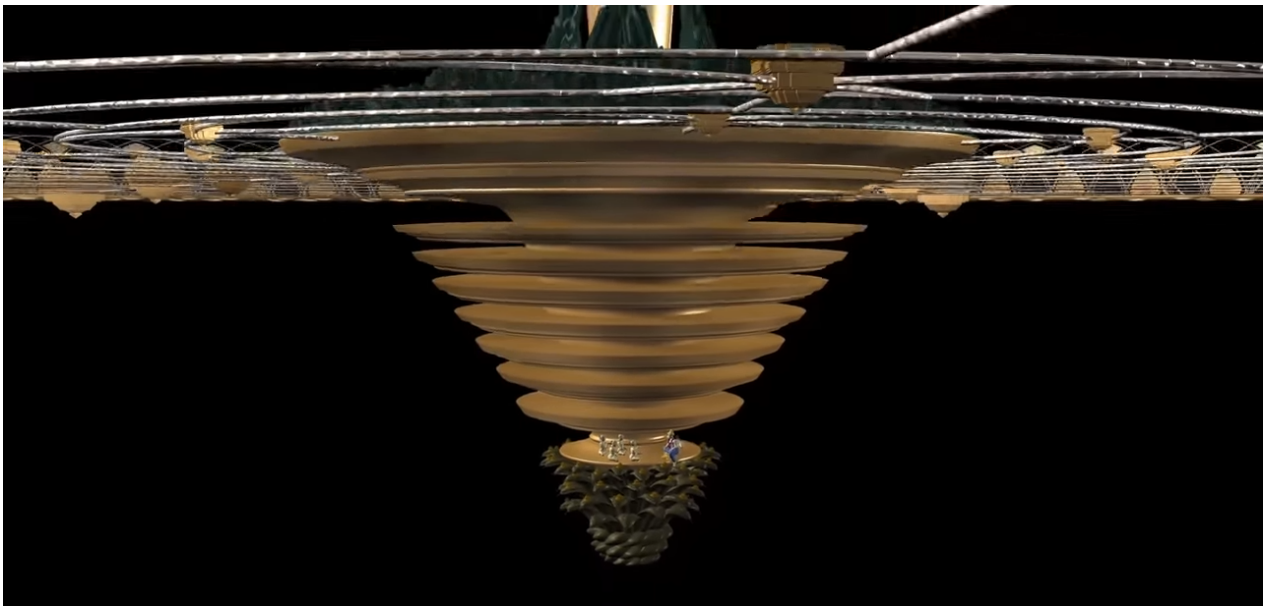


Illustration of the seven subterranean planetary systems from the ToVP

At first, this description may seem very bizarre, since it's completely different from what we can see using our senses, or any type of instrument

we have at our disposal. It's very easy to attest that the earth is not flat (one just needs to take a plane and go around it), and it's easy to see that we don't have a gigantic island with a golden inverted cone 672,000 miles high after the north pole.

Srila Prabhupada was quick to point out that since this explanation is given in the Srimad Bhagavatam, it must be correct. The sastras are not the fruit of mundane experimentation, but a knowledge that is received from higher sources, going all the way to Krsna himself. Since Krsna is perfect, the knowledge of the Vedas must also be perfect, and this includes not only the metaphysical knowledge about the soul but also the cosmological model of the Universe given in the Srimad Bhagavatam. If the description given in the Puranas sounds too far out it's just because there is a deficiency in our perception or the methods we are using to try to understand it.

However, Srila Prabhupada didn't try to explain all the details of this model himself. Instead, he left the mission to explain it and depict it in the Vedic Planetarium to his disciples and grand disciples. As he wrote in a letter to Svarupa Damodara (27 April, 1976): *"So now you all Ph.D.'s must carefully study the details of the 5th Canto and make a working model of the universe. If we can explain the passing seasons, eclipses, phases of the moon, passing of day and night, etc. then it will be very powerful propaganda."*

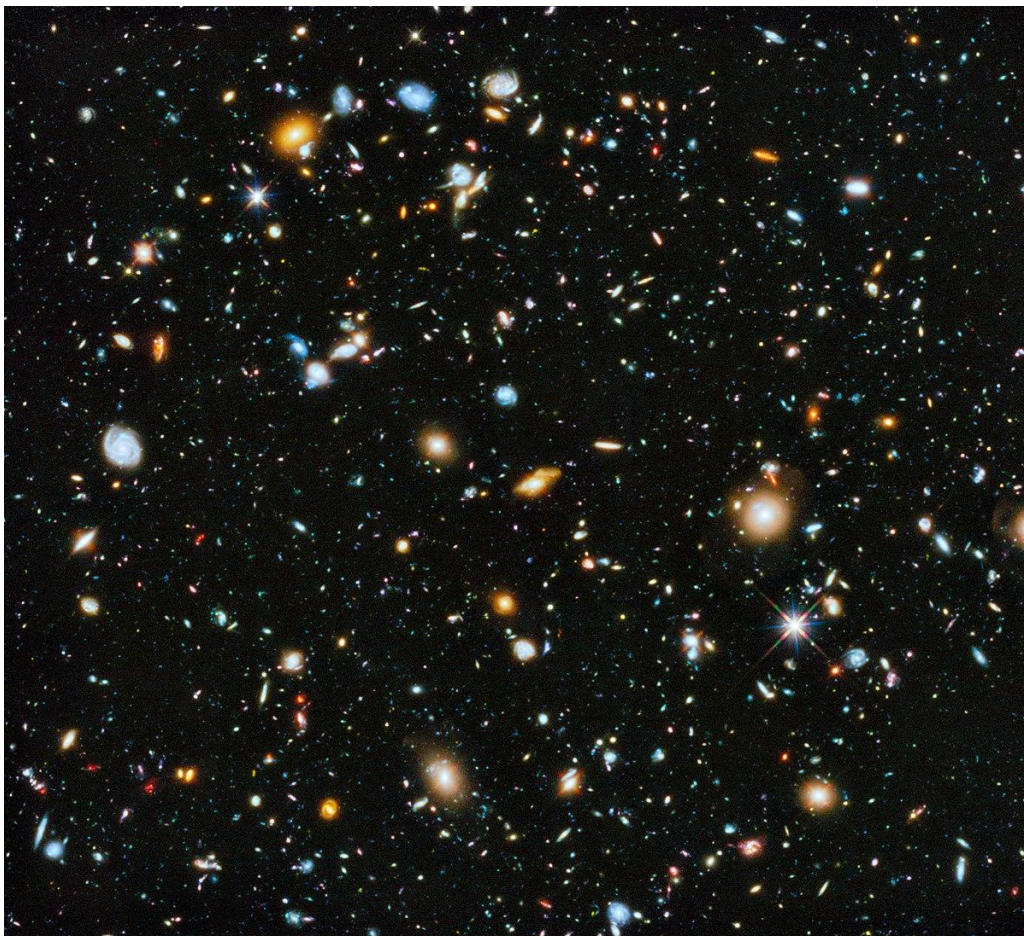
At the time they looked for Indian astronomers and astrologers who could explain it, but they were as perplexed by it as the devotees themselves. They even brought a pandit to see Srila Prabhupada, but he quickly had to admit that he could not explain it.

The first to try to explain it in a scientific way was Sadaputa Prabhu, followed by Drutakarma Prabhu and others. By studying their works, I started to understand that the cryptic description of the Universe in the

Srimad Bhagavatam is quite fascinating and holds the key to a higher level of understanding. There is a lot more information there than it appears on the surface.

Chapter 2: Different perceptions of reality

According to modern astronomy, our universe is extremely vast but almost empty. The different stars and planets are separated by such extreme distances that it is practically impossible for one to go from one to the other. According to modern astronomers, Proxima Centauri is 40,208,000,000,000 km away from Earth, and that's the closest star. There is even doubt if life exists on other planets, or if it's just an anomaly that just appeared once on Earth.



Modern view of the Universe

At first, the model of the Universe given in the Vedas may look primitive, but a more careful study reveals that this is actually a quite elaborate explanation, which is in many aspects more far-out than the wildest science fiction.

Once we go beyond the superficialities, the model of the Universe described in the Vedas is quite complex and offers a quite compelling explanation of the metaphysical structure of the Universe, with multiple dimensions, cosmic passages, and mystical features, based not on matter and physical laws, but different levels of consciousness. Studying the model of the Universe given in the Vedas is the key to not only better understanding the complexities and subtleties of our universe but also how to expand and elevate our consciousness.

The first point to understand is that the view of the cosmos given by modern science is based on sense perception, or what we can observe using our vision and other senses. It doesn't matter if one tries to observe the universe using his naked eye or a telescope: he will be limited by his senses and intelligence.

In the Jyotish sastras, the Vedas also give a view of the universe very similar to modern science. Radha Mohan Prabhu shares that in the Surya Siddhanta, it's described that the diameter of the Earth is 8000 miles (very close to the modern estimate of 7928 miles), and the distance to Mars is estimated to be 1.54 AU (astronomical units) -- again very close to the modern estimate, that is 1.52 AU. The average distance to the moon is given as 415,210 km (close to the modern 384,000 km), and so on. The Surya Siddhanta even hints at the orbit of Uranus, which was "discovered" only in 1781. Therefore, the view of the Universe described by modern science was not unknown to the sages of previous ages. The question is that the Vedas offer something more.

In the model offered in the Srimad Bhagavatam, as well as in the other Puranas, our universe is organized in several levels of planetary systems, which resemble disks one on top of the other. In the middle, we have earth and other intermediary planetary systems. In the lower half, we have the lower planetary systems, where the Asuras live, while in the upper half we have the planetary systems where the Devas, as well as very elevated sages, live. In this description, each planetary system resembles a disk, and these different disks are stacked on top of the other, separated by a certain distance.

This view of the universe is radically different from what we learn in school, and also different from what we can observe when we look at the sky. How can we understand it?

The situation is that modern astronomy, as well as the Surya Siddhanta, describes the universe according to the sense perception of human beings, matching what we can perceive using our senses. The Puranas on the other hand describe the Universe from the point of view of superior beings, who have different sets of senses and thus perceive reality in a completely different way than we do.

Most of the books in the Vedas were received by humanity from higher beings. Most of them were spoken by great sages or by inhabitants of the higher planets, while others were spoken by perfect beings from the spiritual realm. The Surya Siddhanta however was received from Maya Danava, an architect from the lower planetary systems. Being a materialist, Maya Danava is interested in the practical aspects of matter and not in spirituality. Therefore, he gave humanity knowledge of the gross dimension, the same we can also perceive. It's not surprising thus that the model of the universe given in the Surya Siddhanta is very similar to the model conceived by modern cosmology.

In the Surya Siddhanta, very ingenious calculations are given. These calculations allow one to calculate the position of a planet at any given time. Nowadays, the calculation of orbits of planets is done by complex software that takes a lot of processing power to run, while the calculations in the Surya Siddhanta were developed to be simple enough to be solvable by hand. This knowledge was used by sages in older times to calculate the position of different planets, eclipses, etc. calculations necessary for performing astrological calculations, which were taken very seriously by people in previous ages. This knowledge has thus a practical application.

The description offered by the Puranas on the other hand was given to humanity by higher beings, and thus describes their view of the cosmos. These beings live in a subtle dimension and have not only a much higher level of consciousness but also different sets of senses.



It may sound strange that different beings can have such different conceptions of reality, but this is something that can be observed even on our own planet. Some carnivorous animals, like tigers, see in black and white, while we see in color. Butterflies can see ultraviolet light that is invisible to us, while certain animals can't see at all, being guided only by smell. In fact, our concept of reality is based on electrical signals our brain receives from our eyes, nose, ears, etc. If one would receive a different set of senses, he would perceive reality differently.



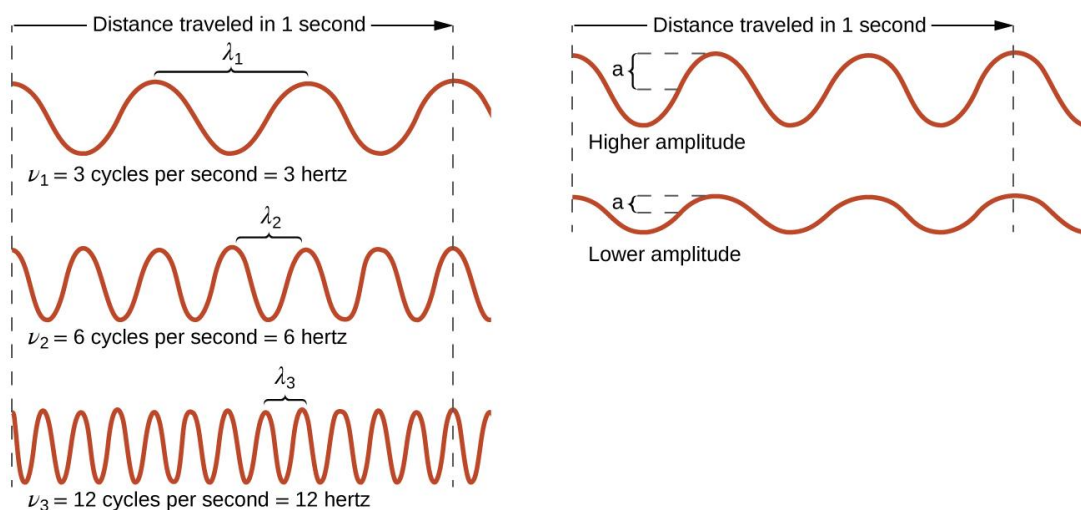
In other words, we can only experience the world to the extent our senses allow, therefore our sense perception is not the most reliable instrument to understand how things really work. The same way a person who is completely blind will never be able to understand what color is, the limitations of our senses prevent us from seeing and understanding many things that are experienced by higher beings.

Apart from physical differences, there is also a difference in consciousness. The concept of reality of an ant is rudimentary if compared to a human

being. Similarly, our concept of reality is very limited if compared to the view of more evolved beings.

For us, the numerous planets and stars that compose the Universe are distributed in a more or less random fashion throughout the cosmos. For the demigods, however, planets and stars are grouped according to the level of consciousness of their inhabitants. Therefore, planets inhabited by beings of higher consciousness are grouped together and similarly, planets of beings of lower consciousness are close to each other. However, the planets of the higher beings are very far from the planets of lower beings. This leads to the semantical and hierarchical perception of the Universe that is described in the Puranas.

We can better understand how the universe may be perceived so differently by different beings with a simple example: In the same room, we can have different frequencies of radio signals, like AM, FM, TV, 3G, 4G, 5G, WiFi, etc. each one carrying a particular set of information. Although all the signals are simultaneously available, one can tune in according to the device he is using. Someone using an old radio will be able to capture only sound, while another with a television will be able to also see images. One with a phone will have access to the internet, which includes much more content, including radio and TV programs.



Not only different frequencies may carry completely distinct sets of information, but the same information may be organized in different ways on different medias.

On the TV, programs are organized in a linear way, and therefore two chapters of the same series may be very "distant" from each other (one may have to wait for a whole week), while on the internet the same programs are organized by topic, and one can go from one episode to the next effortlessly. On the TV, an episode of the series may be "closer" to a news program that is exhibited immediately after it, while the next episode may be very "far" being exhibited only in the next week, but on the internet, things are organized in a semantic way, and therefore one who is using the internet see them "close" to each other, in the same site or playlist, while the news program may be "distant", in a completely different address.

Similarly, our universe is composed of different dimensions, and space is organized in different ways according to the dimension one is living. Not only reality is much more complex than we can perceive with our senses, but different beings have different sets of senses and can perceive the universe in different ways. Just like the conception of reality of a human is much more evolved than the concept of reality of an ant, superior beings perceive the universe in a very different way than we do. For the Devas, everything is much closer and they can travel from one planet to the other the same way we visit different cities.

One can "syntonize" these different dimensions according to the particular set of senses he got, which is in turn determined by his previous consciousness.

According to the Vedas, our concept of reality is determined according to our consciousness. Because of our consciousness, we assume a particular type of body, on a certain planet, and have access to a certain level of reality. In our case, we live in a gross dimension, where the universe appears cold and almost vacant, with the stars and planets very distant from each other and practically inaccessible to us. We are essentially imprisoned on our little planet by the law of gravity. Even if we send some probes or astronauts, at an exorbitant cost, to investigate what is beyond, we can't find anything very interesting outside.



Chapter 3: A Multidimensional Universe

One of the keys to understanding the model of the universe described in the Puranas is to understand the idea of multidimensions: Different beings have different sets of senses and thus can observe the universe in different ways. As mentioned, the model of the universe described in the Surya Siddhanta, as well as in our modern astronomy, is based on our sense perception, while the universe described in the Puranas is based on the perception of higher beings. The reason why this higher model of the universe is described is exactly to help us syntonize with this subtler dimension, helping us to get free from our gross senses and intelligence.

That's why we have two models of the universe described in the Vedas: The model of the Surya Siddhanta (based on our sense perception) is used when one wants to understand practical aspects of the solar system, be able to calculate orbits of planets, eclipses, and so on, while the model given in the Puranas (based on the perception of higher beings) can help one to elevate one's consciousness.

While for us everything is very far away, separated by inconceivable distances we measure in thousands of light-years, for the Devas (as well as for advanced Asuras) everything is much closer and accessible. Devas can go from their planets to the milk ocean to pray for Ksirodakasayi Vishnu just like someone may go to India. Similarly, Asuras can cross the Universe to fight the demigods just like Napoleon crossed Europe to invade Russia. If we would try to reach other stars of the universe in a spaceship, this would take millions of years, but the Devas and Asuras can cover such vast distances quite quickly. Very advanced sages like Narada Muni can go even

faster, going practically instantly from one extreme to the other of the Universe.

One explanation for how superior beings have such a different concept of space than we do is the existence of interplanetary pathways. It's described, for example, that certain passages in the Himalayas connect our planet to the celestial planets, but only persons with a certain level of consciousness can access such passages. In the Mahabharata, for example, it is described how the Pandavas ascended to the place of Kuvera, the king of the Yakshas through one of these pathways.

For one who is able to cross these pathways, the other parts of Jambudvipa are just a walk away, and therefore the Srimad Bhagavatam describes these different interconnected fragments as a continuous area, which is exactly the perception of one who is traveling through them, although in our sense perception these different parts of the structure are spread through different planets.

This explains the huge dimensions of the geographical details of Jambudvipa described in the Srimad Bhagavatam. The enormous mountains and trees described there are not found on our planet (at least not in our gross dimension), but qualified people can access these geographical locations through these subtle passages.

For one who doesn't have the proper qualification, however, the pathways are invisible, and he will be stuck on this planet. As a result, when he crosses the Himalayas he goes to China instead of the celestial planets.

We can better understand how this can be possible by a simple example. Imagine two tall buildings built beside each other:

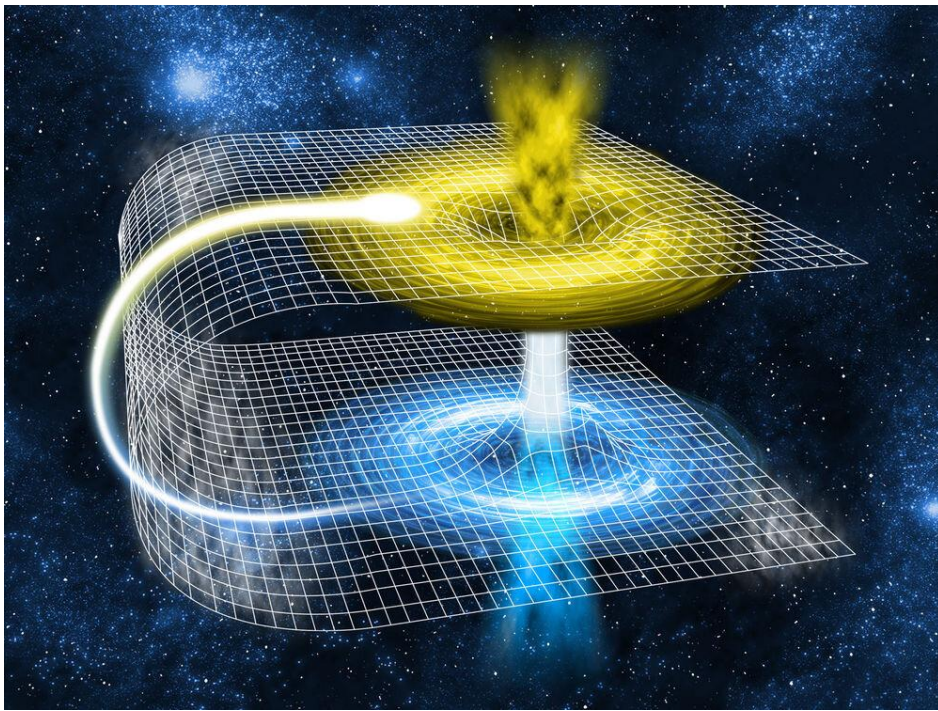


Normally, to go from an apartment on the top of the first building to another on the top of the second, one would have to go all the way down and then all the way up, which could be a long way. If he had access to a walkway between the two buildings, he could go from one apartment to the other very easily. For him, the distance between the two apartments would be very short, while for other people, who had to take the long way, it would still be very far.



Similarly, a person who could use the pathway would have the perception that the two apartments form a continuous area instead of being part of two separate buildings. In the same way, the fact that the Devas can travel easily through the Universe makes their concept of space very different from ours.

The existence of connected objects that are far apart, as well as “shortcuts” that allow one to access places that are far away may sound like fantasy, but these ideas are also discussed in modern physics, with the phenomenon of quantum entanglement and the theory of the wormholes, for example.



According to modern theories, wormholes link separate points in spacetime, like a tunnel connecting two ends at separate points in time space and time.

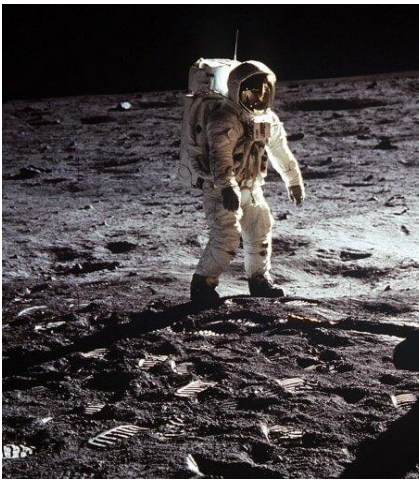


In the theory of Quantum entanglement, discussed in modern physics, two particles can be linked together in a certain way so that their state remains the same, no matter how far apart they are in space.

Another concept given in the Puranas is the idea of a subtle vertical dimension. More than just a change in geographical location, to access higher planets one has to also change his consciousness, which can be done only by practicing a spiritual process of self-realization.

Not only other planets are very far from earth, but even if one goes there, he will find only rocks, dust, poisonous gasses, and extremes of temperature, without the possibility of interacting with the local inhabitants, who will be living in a different dimension. For example, according to our tridimensional view of reality, measured by experimental methods, the moon is situated at about 384,000 km from earth, and one can reach it in about three days in a space probe. Unfortunately, if one goes there he will find only dust and rocks.

The Puranas, however, state that the moon is in reality a celestial planet, with a standard of living much superior to our planet. There, people live for 10,000 celestial years, drinking soma-rasa in the company of celestial ladies. The question is that to access it one has to develop a very subtle consciousness, similar to the superior beings who live there. Without this change in consciousness, one may visit this piece of rock orbiting our planet that we call the Moon, but he will see only rocks. The celestial moon described in the Puranas will however remain inaccessible.



This can be explained with yet another example. Suppose you want to visit an office on the 82nd floor of a prestigious building in Manhattan. You may take a taxi and go to the front of the building, and this would bring you close to the office in the horizontal dimension. However, to finally reach it you would need to also travel in the vertical dimension, taking the elevator or the stairs and going up until you reach the right floor.

If somehow your credentials would not allow you to enter the building, you would be stuck in the street, which would not be as luxurious as the inside.



Where are the apsaras? I'm seeing only rocks...

Similarly, when a human being tries to go to the moon without the proper consciousness he will not be able to travel in the subtle vertical dimension and will thus be stuck in the gross dimension, where there is only dust and rocks. Our universe is composed of different dimensions and we can synchronize in each one according to the particular set of senses we have, which is in turn determined by our level of consciousness.

Many discuss if man really went to the moon or not. It actually depends on what one calls "moon". If we accept the moon as this piece of rock that is 384,000 km distant from Earth, then it's perfectly possible to go there on a spaceship, the point is that there will be nothing interesting to observe

there. However, if we accept the moon as the celestial planet described in the Puranas, then it's possible to attain it only by mystical means.

The Puranas state that the celestial moon is actually very far from Earth in the subtle vertical dimension, even further away than the sun. To reach there, one has to radically change his level of consciousness. A space probe will not help.

The process to access the celestial moon involves not only changing one's consciousness and thus traveling in the subtle vertical dimension but also acquiring a particular set of senses and a suitable body to live there. In the past, this was an art understood by yogis, who were able to travel through the Universe by elevating their consciousness and thus transferring themselves to the desired planet. Nowadays we try to do the same using probes and space suits, but the results are not the same.

Chapter 4: Vedas vs Science

Once, I was speaking with a very senior person, a disciple of Srila Prabhupada who has been practicing Krsna Consciousness since before most of us were even born. She was explaining to me how this point of the cosmology of the 5th canto of the Srimad Bhagavatam is a difficult point for many devotees. In the 1970s, when the fifth canto of the Srimad Bhagavatam came, she explained, some left after not being able to reconcile the view of the Universe given in the Srimad Bhagavatam with the modern view.

Modern science is flawed in many ways because often physicists and paleontologists want to be over their heads, explaining things that are above their experimental knowledge, like the existence of God and the origin of life. However, when it comes to measuring and testing things, the information given by modern science can't be easily dismissed. We can presume that most of the data we get in terms of distances, measurements, and time periods that come from modern science is correct. What is incorrect is the interpretations many give out of them.

Paleontology, for example, gives us information that there were lifeforms living on our planet billions of years ago, and that they looked different from the forms we have now based on fossils and other findings, which is perfectly reasonable. The problem is when people try to use this to sustain the idea that life appears by chance, which is a huge leap of faith.

Science is good at explaining things one can measure using his sense perception. The point is, as Srila Prabhupada mentions on several

occasions, the view of reality we have by measuring things with our gross senses and imperfect intelligence is not the most accurate.

One may correctly measure the dimensions of one's body, and even understand how the internal organs work, the flow of the blood, and so on. However, without information about the soul, this study may lead one to conclude that the body works by itself and there is no superior cause behind it. The anatomical study of the body may thus be used to support the wrong conclusion that human beings are just a combination of material elements and that life has no higher purpose. We can see that in this case, the problem is not the data gathered by measuring and studying the body, but the wrong conclusion derived from it.

When we read in the Vedas that the soul resides in the heart and the energy of the soul is what sustains the body, we may at first think that this contradicts the scientific knowledge that attests that the body is maintained by the nutrients carried by blood circulation, but it's not difficult to understand how the two ideas fit together. The soul is inside the heart and the subtle energy of the soul maintains the whole body. Blood circulation is just a feature of this process.

If however, one would argue that there is no blood circulation and that the nutrients are mystically distributed throughout the body due to the presence of the soul, it would be a problem, since this idea could be easily disproved by experimental knowledge. Once it would be proved that there is indeed blood circulation, people may be inclined to distrust him in other areas. This is an important point to consider when we speak about Vedic Cosmology.

For example, the Srimad Bhagavatam mentions that the moon is 800,000 miles above the sun over the plane of Bhu-Mandala. This doesn't necessary means that the moon is more distant than the sun (for this we would need

to also calculate the horizontal distance) but in any case, it means that the distance to the moon is not less than 2,368,948 km, much more than the figure of 384,000 km obtained by modern methods.

The problem is that this is very easy to disprove experimentally. One can measure the distance to the moon using light, and that's exactly how it's done in recent times. Astronomers send laser beams that are reflected back by mirrors installed on the rocky moon by astronauts on the Apollo missions. The time is measured and quite accurate measurement of the distance is given. One can also measure the distance by sending rockets and probes, which was also done several times. Other experiments give similar results, therefore it's difficult to dispute that, according to experimental knowledge, the moon is approximately 384,000 km from the earth and not 2,368,948 km or more as described in the Bhagavatam.

At this point, one has three options.

One option is to accept that the information given in the Srimad Bhagavatam is incorrect. The implication is that if the Bhagavatam is wrong about astronomy, maybe it's also wrong about other things. Maybe everything is wrong. That's the conclusion some came to in the 1970s and after that, and that's the reason some left.

The second option is to accept that the Bhagavatam is correct and science is wrong. This is better than the first, but it requires one to switch off his intelligence and accept fanatically that the earth is flat, the moon is 800,000 miles higher than the sun, and so on, things that can be easily disproved experimentally. This makes us look very silly and causes many intelligent people to keep themselves far away.

To say, 50 years ago, that Nasa never went to the Moon, and everything was staged in some desert made reasonable sense at the time. However,

later more missions were sent, then the Japanese sent a probe, then Chinese and Indian agencies joined the list. Now it sounds very silly to say that the Moon is 800,000 miles higher than the sun and men never went there when everyone is sending probes and confirming the same information.

We then come to the third possibility, which is to accept that there are higher levels of reality that are different from the gross reality we can perceive with our senses. There is a gross moon, a piece of rock that orbits our planet, where we can send our small probes and measure using our small lasers, and there is a celestial moon, where people drink soma rasa and live for 10,000 celestial years. If we accept this possibility, then we need to accept that there are many things in the Universe that we can't observe or experiment upon. There is the gross reality we can study using our telescopes, and there is a subtle reality we can study only through the Vedic scriptures. One just needs to decide what's more interesting to him.

Many very intelligent devotees who researched this subject for many years came to this third explanation. This is an explanation that doesn't require one to doubt the scriptures, nor to shut down his brain. If we accept this idea, then many things explained in the Srimad Bhagavatam and other scriptures make perfect sense. Since we accept the existence of the soul (that is by definition also impossible to measure experimentally) then why is it so difficult to accept that our whole concept of reality is limited and that there are higher levels of reality?

We can see that Srila Prabhupada never claimed to be a specialist in astronomy. What he did was uphold the principle that the knowledge given in the scriptures is correct, and that when it conflicts with experimental, sensorial knowledge it means that there must be some subtler point being missed. Srila Prabhupada at first categorically dismissed that men could go to the Moon, upholding the principle that the moon is a celestial planet,

and that it's impossible for modern human beings to go there. Later, however, as more information came, Srila Prabhupada raised other possibilities, like the idea that maybe they landed on Rahu, that maybe they went to the moon but were not able to meet the inhabitants due to not having sufficient qualifications or proper senses, and so on.

Modern men can go to this piece of rock that orbits our planet. This piece of rock may be a gross representation of the moon in our gross dimension, or it may even be Rahu, as Srila Prabhupada suggested on occasion. The point is that this is an exercise of futility since there is nothing interesting for us there. As Srila Prabhupada wrote:

"It may be remarked in this connection that even the modern so-called scientists who are going to the Moon are not able to stay there, but are returning to their laboratories." (SB 7.15.50-51)

"Though the modern astronauts go to the Moon with the help of spaceships, they undergo many difficulties, whereas a person with mystic perfection can extend his hand and touch the Moon with his finger." (NOD)

One may plant a flag and collect a few rocks, or one may even try to build a small colony there and maintain -- at an exorbitant cost -- a few astronauts living in cramped conditions, but they are missing the point. What the Vedas explain is that there is another moon, a celestial moon, that is bigger and more distant from the earth, where the inhabitants live for 10,000 celestial years, drinking soma rasa in the company of celestial apsaras. This moon however can't be reached by mechanical means.

It's just like a computer or phone where there are two users: an admin who has complete access, and a limited user who has access to only certain features. The environment they see can be completely different. Even if

they open the same folder, the contents they see can be distinct. If the restricted user and the admin would start describing what they can see and the resources they can use, their descriptions would be different. It's not that one is right and the other is wrong, it's just that they are describing different environments.

In Los Angeles, on December 26, 1968, Srila Prabhupada had a long conversation with a reporter about moon landings. There Srila Prabhupada made the point that one can only go to the moon by achieving a suitable body. If science could produce such a body one could go to the moon, otherwise not. The reporter raised the point about space suits, and Prabhupada countered that this is not a suitable body, and therefore an astronaut in a spacesuit would not be able to visit the moon. A few months later, when Neil Armstrong set foot on the Moon, Srila Prabhupada was watching the footage on TV with a few disciples. When the images were shown, Srila Prabhupada exclaimed: "*I told you they would not go! See!*". Neil Armstrong reached the rocky satellite that orbits our planet, but he was never able to reach the celestial moon Srila Prabhupada was talking about.

In conclusion, if we systematically study what the Vedas explain about the structure of the Universe, we can see that the knowledge we find can be divided into three groups:

- a) A set that is more or less in harmony with modern science (like the figures given in the Surya Siddhanta)
- b) A set that is completely different from modern science (like the cosmological knowledge given in the Srimad Bhagavatam), that describes the reality of higher beings.

c) Knowledge about a spiritual reality that is completely beyond our sense perception and experimental knowledge.

We can see that these three portions of knowledge describe exactly these three levels of reality:

- a) The gross reality we can experiment with.
- b) The subtle reality of the demigods and other evolved beings.
- c) The spiritual reality of the spiritual plane.

A and C are pretty straightforward to understand, but B is more tricky. If we don't understand the difference between A and B, we can become seriously confused.

Chapter 5: Understanding Bhu-Mandala

One of the most notable features of the Universe described in the Vedas is Bhu-Mandala, which comprises the intermediate planetary systems. Bhu-mandala is situated in the middle of the universe and essentially divides it in half, being the lower and dark part reserved for the Asuras, and the upper luminous part for the Devas. Human beings live close to the surface of this structure, on the luminous side.

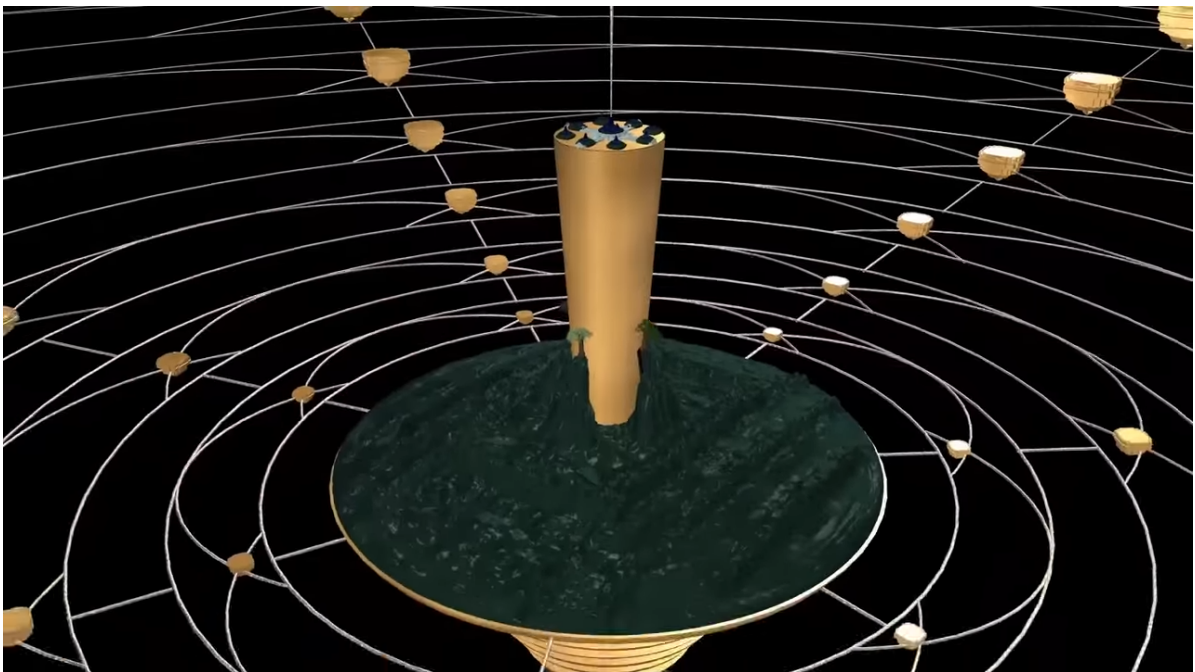


Illustration from the ToVP showing a stylized representation of Bhu-Mandala

Our planet is situated close to the center of the gigantic structure, in a landmass called Jambudvipa, which is surrounded by other islands and oceans. In the middle, there is a mountain chain, which culminates in Sumeru Mountain. The Srimad Bhagavatam gives a detailed explanation of the different beings who live in different parts of this structure.

This is the part of the Vedic Universe that is most difficult to understand, especially because it brings to mind the idea of a flat earth, which is obviously not the case. The Srimad Bhagavatam, for example, states that:

"People living in countries at points diametrically opposite to where the sun is first seen rising will see the sun setting, and if a straight line were drawn from a point where the sun is at midday, the people in countries at the opposite end of the line would be experiencing midnight. Similarly, if people residing where the sun is setting were to go to countries diametrically opposite, they would not see the sun in the same condition." (SB 5.21.9)

This verse describes the basic notion of the Earth as a globe and the motions of the sun, resulting in the passages of days and nights as we can observe. When it's midday in Japan it will be midnight in Brazil, for example. The same Srimad Bhagavatam also describes the movements of the sun that result in the passage of seasons. The main difference is that it explains from a geocentric perspective, while modern astronomy uses a heliocentric model. However, for practical purposes, both work for describing the movements of the sun and of the different stars and planets.

As stated:

"Let it be understood at the outset that it makes no difference, from the point of view of describing planetary motion, whether we take the Earth or the Sun as the center of the solar system. Since the issue is one of relative motion only" (Astronomer, Fred Hoyle)

"I can construct for you a spherically symmetrical universe with Earth at its center, and you cannot disprove it based on observations. You

can only exclude it on philosophical grounds. In my view there is absolutely nothing wrong in that." (Physicist, George F. R. Ellis)

"We know now that the difference between a heliocentric and a geocentric theory is one of motions only, and that such a difference has no physical significance." (Astronomer, Fred Hoyle)

Apart from that, the Srimad Bhagavatam describes that in the higher dimensional Universe of the Devas, other intermediary planetary systems are on the same plane as our planet and can be accessed by sufficiently evolved beings through interplanetary passages. It's described for example that Pariksit Maharaja, the grandson of the Pandavas, was able to visit other parts of Jambudvipa and receive tribute from the different kings living there.

For us, however, the other parts of Jambudvipa are inaccessible, since we don't have the required level of consciousness and thus we are isolated on our little planet.

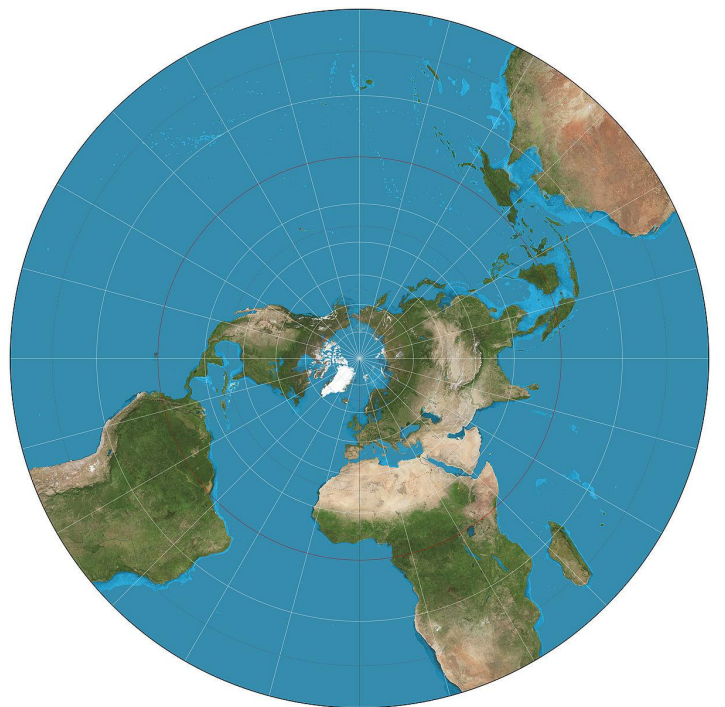
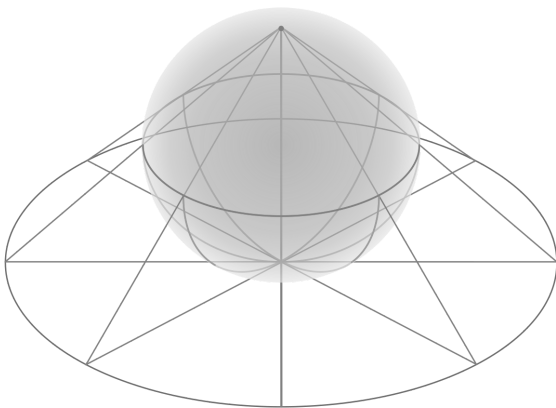
Sadaputa Prabhu explains that the description of Jambudvipa offered in the Srimad Bhagavatam actually includes four different explanations. According to one's previous knowledge and area of interest, one could get one of these four understandings from the same explanation. This is possible due to the nature of the Sanskrit language, where the same words can have more than a meaning, and thus an expert poet is capable of composing sentences that have multiple simultaneous meanings.

One elementary example of this clever usage of the Sanskrit language is given in the first chapter of the Bhagavad-Gita, where Duryodhana, not wanting to displease neither Bhishma nor Drona (his two senior generals), used a clever construction to praise both at the same time, using the sentence "*aparyaptam tad asmakam balam bhismabhiraksitam*". This

sentence simultaneously means "*Our strength is immeasurable because we are protected by Bhishma*" and "*Our strength is insufficient because we are protected by Bhishma*". When Bhishma heard this sentence, he took the first meaning and was therefore encouraged. Dronacharya, on the other hand, took the second meaning, understanding that Duryodhana was glorifying him by minimizing the capacity of his rival.

Such clever usage of words is common in Sanskrit literature, however, in the Srimad Bhagavatam it goes to a completely new level of complexity, explaining not less than four different models simultaneously in just a few chapters. This explains the many apparent contradictions one may find in it. Some verses describe the earth as a globe, while others appear to describe a flat island. Some describe the structure of rivers that were flowing in ancient India, while others describe mountains and other structures that are not found on our planet.

According to Sadaputa Prabhu, the first explanation is Bhu-mandala as a stereographic projection (or a planisphere) of our planet, taking the north pole as the center. This is commonly used to represent the features of a sphere on a map.



His research indicates these maps were used for astronomical purposes, helping one to understand the movements of the sun, planets, and important stars. Such planispheres were also used in instruments such as the astrolabe. A planisphere is very convenient in such situations because it allows one to calculate the position of stars and planets, as well as land and maritime routes without entering into all the complexities of calculating the curvature of the earth. That's basically what we do every time we use a map.



Astrolabe

The second explanation is Bhu-mandala as a topographic map of south-central Asia, offering a basic description of the geography of our planet, with a focus on the area of the Himalayas, India, and adjacent countries. This model describes the different rivers which flowed there in antiquity.



The third explanation is as a map of the solar system. In this explanation, the borders of the different islands of Jambudvīpa describe the orbits of the planets of our solar system from the geocentric point of view adopted by the Puranas. Sadaputa Prabhu did a lot of research that confirmed that the borders of the islands of Bhu-Mandala, as described in the Srimad Bhagavatam roughly match the orbits of the planets of our solar system.

SCIENCE

ADVANCED ASTRONOMY

In the *Śrīmad-Bhāgavatam*

This ancient Vedic text gives an accurate map of the planetary orbits known to modern astronomy.

by Sadāpūta Dāsa

TODAY WE TAKE for granted that the earth is a sphere, but the early Greeks tended to think it was flat. For example, in the fifth century B.C. the philosopher Thales thought of the earth as a disk floating on water like a log.¹ About a century later, Anaxagoras taught that it is flat like a lid and stays suspended in air.² A few decades later, the famous atomist Democritus argued that the earth is shaped like a tambourine and is tilted downwards toward the south.³ Although some say that Pythagoras, in the sixth century B.C., was the first to view the earth as a sphere, this idea did not catch on quickly among the Greeks, and the first attempt to measure the earth's diameter is generally attributed to Eratosthenes in the second century B.C.

Scholars widely believe that prior to the philosophical and scientific achievements of the Greeks, people in ancient civilized societies regarded the earth as a flat disk. So to find that the *Bhāgavata Purāna* of India appears to describe a flat earth comes as no surprise. The *Bhāgavata Purāna*, or *Śrīmad-Bhāgavatam*, is dated by scholars to A.D. 500–1000, although it is acknowledged to contain much older material and its traditional date is the beginning of the third millennium B.C.

In the *Bhāgavatam*, Bhūmandala—the “earth mandala”—is a disk 500 million *yojanas* in diameter. The *yojana* is a unit of distance about 8 miles long, and so the diameter of Bhūmandala is about 4 billion miles.⁴ Bhūmandala is marked by circular features designated as islands and oceans. These features are listed in Table 1, along

Left, above: The modern heliocentric solar system. Below: Bhūmandala, the “earth mandala” of the Śrīmad-Bhāgavatam. Although Bhūmandala appears at first glance to represent a flat earth, it is actually an accurate map of the solar system.

Illustrations by Kṛṣṇa-kṛpā Dāsa and Bhakta Eddie Johnston

Finally, the fourth explanation is as a map of the intermediate planetary system (which includes our planet), as observed and experienced by the Devas. Although this description doesn't directly match what we see when we look into the sky, nor the information we can get by experimentation, it is actually the most important of all, because it helps us to elevate our consciousness.

In this way, in just a single explanation, Srimad Bhagavatam offers astronomical, geographical, and mystical knowledge. Due to the complexity of the explanation, the details may appear contradictory at first, but as one delves into the details, the picture starts to suffice. Naturally, the geographical and astronomical part is covered by modern geography and astronomy, but the mystical knowledge about the subtle structures of the Universe is exclusive to the Puranas.

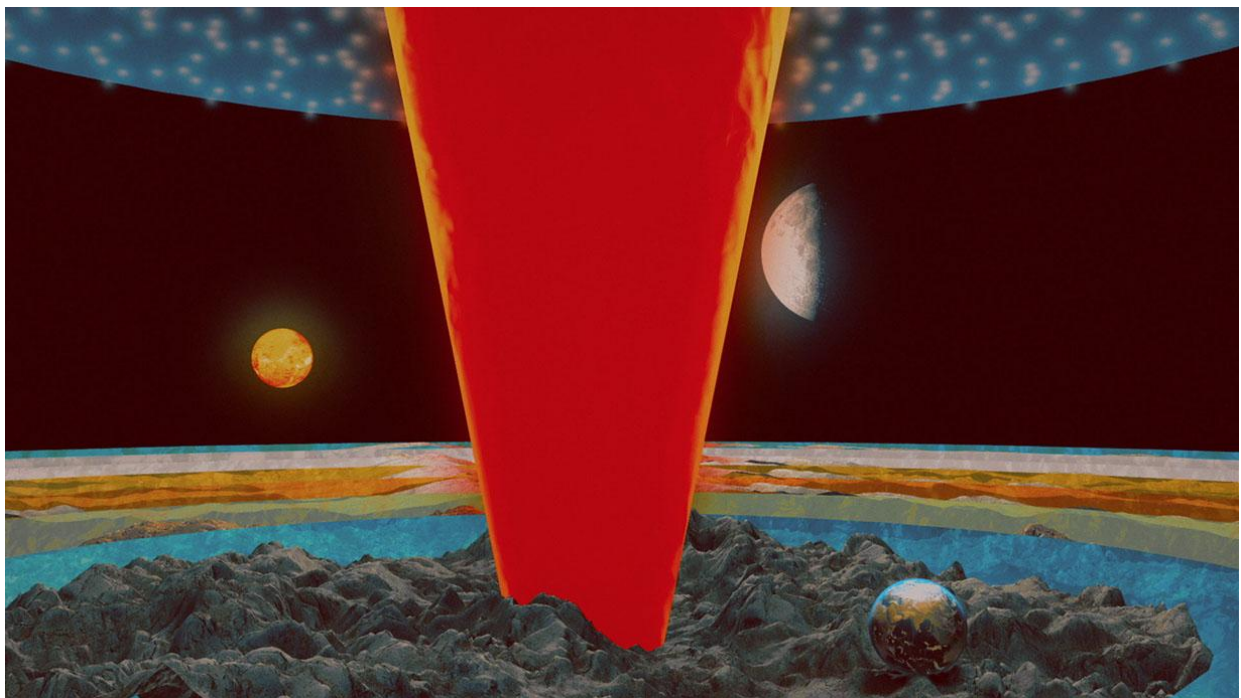


Illustration of Jambudvīpa from the Rupanuga Vedic College.

This illustration of Jambudvīpa from the Rupanuga Vedic College may help to get the picture. Our planet resides in a different dimension than the rest of Jambudvīpa, therefore the rest of the structure is invisible to us, but if

everything would be put together we would have a similar picture to what is depicted here. In this illustration, the Earth is relatively big in relation to Jambudvipa, but if the correct proportions would be used, it would appear as just a small dot.

We can see that the Earth is positioned on the outskirts of Jambudvipa. The planet is spherical and slightly tilted. The sun and the moon orbit around it, resulting in the days and nights, as well as the passage of the seasons. Mount Sumeru is close to us, but it doesn't block the light of the sun since it is in a different dimension; the passage of days and nights for us happens solely due to the movements of the sun around our planet, as we will discuss in more detail in chapter 7.

The moon is higher than the sun in relation to the plane of Jambudvipa. Higher than the moon are the other planets of our solar system as well as the different stars.

We can see that the model of the Universe described in the Srimad Bhagavatam diverges from modern astronomy in certain aspects, such as the idea of a geocentric Universe instead of a heliocentric one, and the differences in the distance to the moon and different stars. However, when it comes to describing the passage of days and night, as well as the seasons and the movements of stars and planets, both models work.

When we study the description of the Srimad Bhagavatam it's important to understand that some verses describe geographical features of our planet, geographical features of Jambudvipa, the orbits of the different planets of the solar system, and the characteristics and orbits of the sun and moon. In some situations, the same verse may mix elements of more than one model, like when it's described that the sun-god rides in his chariot around Bhu-Mandala. The chariot of the sun is part of the model of Bhu-Mandala, while the orbit being described can also be observed from our plane.

When we put everything together, we can understand that everything forms a single picture, but until we can realize that, different verses appear to contradict each other.

Chapter 6: Is the Earth flat?

One difficulty with the description of the universe given in the Puranas is that it can be easily misunderstood as a description of a flat earth. Such misunderstanding is very common since the subtle aspects of the Vedic Universe are rather difficult to comprehend.

One may be then tempted into a simplistic conclusion that the earth is flat because that's what he understands when he reads Srimad Bhagavatam, while others may be propense to reject the teachings because it doesn't match his view of the cosmos. Both are mistaken.

Many things we take as irrevocable facts can be different or even opposite in different contexts. For example, we all learn that water boils at 100 degrees celsius and this can easily be proved by just boiling some water and checking the temperature with a thermometer, right? Well, not exactly. For most of us, the water will not boil at 100 degrees, but at 99.5, 98, 95, or even 87, according to the altitude one lives. One would have a hard time cooking a meal on top of Mount Everest, for example, since there the water boils at just 68 degrees!

Things are also different according to the point of view. For example, we understand that as a planet, the earth is spherical. However, for one who is standing on the ground, it appears quite flat. Since the earth is so big, the curvature can only be seen if one goes quite high. Although the earth is spherical, islands and continents are not, therefore one who lives on an island like Mauritius or Seychelles actually lives in a flat structure that is part of a spherical planet.

Similarly, the spherical earth is part of a flat structure: the solar system, which in turn is part of an also relatively flat structure: the milky way galaxy. Therefore, one's concept of living in a flat or spherical structure, as well as any description created by him, can vary, according to which level he is speaking about. One can say that he lives on a flat island, that is part of a spherical planet, that is part of a flat solar system, and the three statements are going to be simultaneously true.

Such apparent contradictions are also found in the Vedic literature, where our cosmic house is described as spherical or flat according to the context. The earth itself is described as Bhu-Gola, which can be translated as "the earthly globe", but it's also stated that our planet is part of a bigger structure called Jambudvipa, which in turn is part of an even bigger structure called Bhu-Mandala. Both Jambudvipa and Bhu-Mandala lie on a flat plane. Such structures cannot be observed from our dimension, therefore when we look into the sky we see only the vastness and darkness of space, but according to the Vedas, higher beings can see such subtle structures, and thus their view of reality is very different from ours.

As Srila Prabhupada mentions in a morning walk (December 9, 1973, Los Angeles):

"In Vedic literature it is bhu-gola, jagad-anda. These words are there. We can see also it is round, jagad-anda. The universe is round. And Goloka. Or Bhu-gola. Bhū-gola, the earth is round. So in the Vedic literatures... Therefore their knowledge is also imperfect because they do not refer to the Vedic literatures. It is already there. Bhu-gola. Bhu means the earth; gola means round. It is already there. And the geography's called, according to Sanskrit, it is called Bhu-gola. Long, long ago, before Galileo."

Therefore, just like one can simultaneously live on a flat island, on a spherical planet, and on a flat solar system, one also lives simultaneously on a spherical earth which is part of a larger flat structure. There is the round Bhu (Bhu-Gola) and the flat Bhu (Bhu-Mandala), and both exist simultaneously. As human beings, we have access only to the gross dimension, and thus we can see only the earthly globe where we live, but higher beings can see more, and their understanding of reality is different from ours. Their view of the Universe is conveyed in books like the Srimad Bhagavatam, and thus such books of knowledge describe a reality that does not directly correspond to what we can observe using our human senses.

Thus, different levels of reality are described with the same words, and one can pick one or the other according to his level of understanding. This is simultaneously one of the most intriguing, and one of the most difficult to understand aspects of the Vedic literature.

Another interesting point to be observed is how the view of the Universe of different people from antiquity was similar. The Vedas explain that before the beginning of Kali-yuga, our present age, different peoples of antiquity were part of a global Vedic culture, and thus had access to the same knowledge. This explains how different groups had similar views of the universe, from the Chinese to the American Indians, including practically everyone in between. The Vedas explain that all these ancient civilizations were once connected with the Vedic culture. They had thus access to the same knowledge about the structure of Bhu-Mandala.

With the passage of time, however, the advanced concepts were forgotten and these different civilizations became stuck with a flat earth concept, imagining our universe as some kind of flat island with the abode of the Gods above, demons living below in subterranean abodes, and some kind of great mountain in the middle.



The Universe, as conceived by the ancient Chinese, Nordic people, Native American Indians, and Mayas

This concept ended up being described also in the Bible and the Quran, leading to the modern flat-earth theories. Flat earthers are thus actually not completely wrong, the problem is that they base their beliefs on impoverished incomplete descriptions of the Vedic Cosmos, failing to understand its higher aspects.

On the other hand, the modern view of the cosmos is purely based on our sense perception, which leads to a mechanistic view of the Universe that discards all the subtle and spiritual aspects. Many instinctively disagree with this materialistic explanation and start looking for a more holistic view of the cosmos, that accounts for the subtle dimensions they can understand and sometimes even perceive.

It's not a wonder thus that there is a growing interest in Vedic Cosmology. The Vedas offer a much more complete view of the Universe, which accounts for both gross and subtle aspects and allows for the expansion of our consciousness. By meditating on the subtle aspects of the Universe described in the Vedas, one can gradually elevate his consciousness and attain the same level of awareness as higher beings. Conversely, the materialistic view of the universe offered by modern science offers one a dead universe, which leads only to the stagnation of one's consciousness.

The fact that our planet is a globe also illustrates another concept given in the Vedas. We think we are imprisoned on this planet because of the law of gravity, but actually, we are prisoners of our own consciousness. One who tries to access higher realms by mechanical means will not be able to go anywhere, just like a person who tries to escape our planet by walking will just come back to the same place after circumambulating the globe. He may even go to Mars or Venus, but without changing his consciousness he will remain stuck in this gross dimension and will not be able to find anything interesting there. Real freedom is thus connected with the

expansion of one's own consciousness. Without a change in consciousness, one may go anywhere in the cosmos, but he will remain in prison.

The great contribution of the model of the universe given in the Puranas is that it gives a mystical and theistic view of the universe, a universe that is teeming with life. By meditating on these descriptions, one can gradually elevate his consciousness and attain the same level of awareness as higher beings.

The great challenge when we study the model of the universe given in the Srimad Bhagavatam is to reconcile what we can observe with our gross sense perception and the ideas of multi-dimensions, different sets of senses, and degrees of consciousness, and the idea of a subtle vertical dimension. Without understanding these concepts, one may end up with some simplistic or limited understanding.

Chapter 7: The orbit of the sun

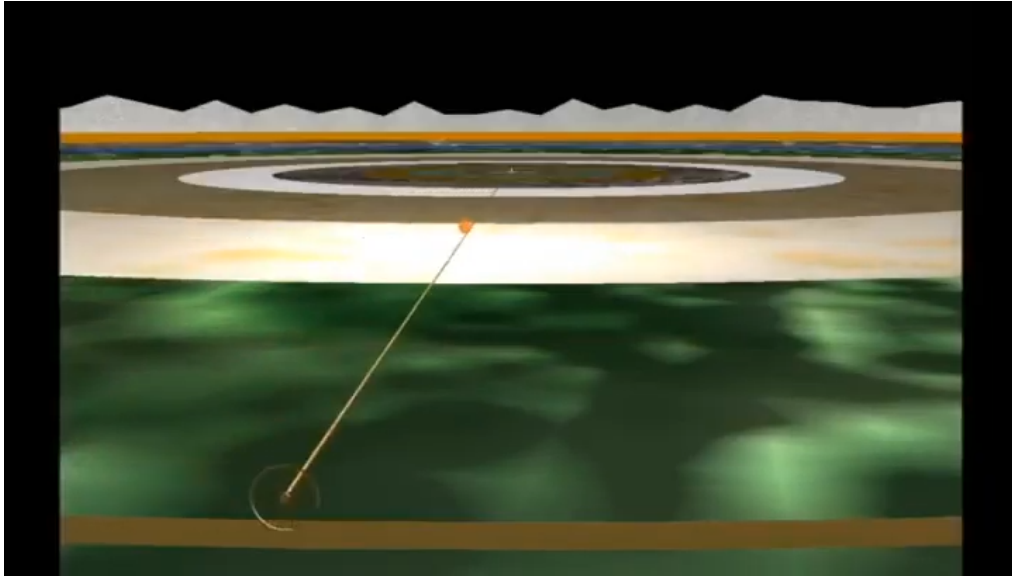
One question one could raise when discussing the structure of Bhu-Mandala is the orbit of the sun and the passage of days and nights, as well as the passage of the seasons.

It appears that the Srimad Bhagavatam describes that the sun goes around Bhu-Mandala in a fixed orbit, once per year. Accepting that our planet is part of Bhu-Mandala, being situated somewhere on the outskirts of Jambudvipa, how can we explain the passages of days and nights?

The point is that the movement of the sun around Bhu-Mandala is much more complicated than it may seem at first. We need to be very attentive to understand how the sun circles Bhu-Mandala and how these movements result in the passage of days and nights as well as the seasons.

One axle of the sun is fixed on Mount Sumeru and the Manasottara Mountain. This is the horizontal axle that makes the sun circumambulate Bhu-Mandala once per year in a counter-clockwise direction.

Since Mount Sumeru is higher, the axle is sustained on the other side by a gigantic wheel that revolves on top of Manasottara Mountain, a gigantic ring-shaped mountain. The axle itself, as well as other features of Bhu-Mandala, are not visible to us, but we can experience the practical result of this motion as the annual movement of the sun.



The horizontal axle of the sun over Bhū-Mandala, as conceived by Sadaputa Prabhu

One may be quick to point out that this explanation does not explain the passage of days and nights, nor does it properly explain the passage of the seasons and the variation of the length of the days and nights as the year passes. If the Earth would be flat, we would see the sun circling around and it would never be night. If we accept the Earth as a sphere situated close to the center of Bhū-Mandala, this model would result in a very long day that would take a whole year to be completed, with 6 months of sun and 6 months of darkness. This is because the orbit of the sun around Bhū-Mandala is not the complete model. There is more.

SB 5.21.14 describes that the sun has also a vertical axle, which is fixed in Dhruvaloka:

"As in an oil-pressing machine, this first axle is attached to a second axle, which is one-fourth as long [3,937,500 yojanas, or 31,500,000 miles]. The upper end of this second axle is attached to Dhruvaloka by a rope of wind."

The vertical axle connected to Dhruvaloka makes the sun rotate in a clockwise direction, while the horizontal axle fixed on Mount Sumeru is

responsible for a counterclockwise motion. So, in one sense, the sun travels around Druvaloka, maintaining both Druvaloka and Mount Sumeru on its right, and in another sense it travels around Mount Sumeru, facing the constellations of the Zodiac and keeping both Mount Sumeru and Druvaloka to its left.

At first, this idea sounds contradictory, if not absurd. How can the sun move simultaneously in both directions? This apparent contradiction was caught by Maharaja Pariksit, who asked a timely question:

"My dear lord, you have already affirmed the truth that the supremely powerful sun-god travels around Dhruvaloka with both Dhruvaloka and Mount Sumeru on his right. Yet at the same time the sun-god faces the signs of the zodiac and keeps Sumeru and Dhruvaloka on his left. How can we reasonably accept that the sun-god proceeds with Sumeru and Dhruvaloka on both his left and right simultaneously?"
(SB 5.22.1)

Srila Prabhupada didn't comment on these verses on Srimad Bhagavatam, but he gave the answer later when he was discussing the structure of the universe with his disciples with the purpose of creating the universal model of the universe for the temple of the Vedic Planetarium. At that time he explained:

"This planetary system is rotating from east to west, and it is hanging like the chandelier, taking shelter of the polestar. That we can see every night. Now where is the situation, which planet, where is sun, where is moon—so that he has to assert." (March 2-3, 1977, Mayapur)

Another similar explanation was given in a letter to Svarupa Damodara Maharaja (April 27, 1976):

“My final decision is that the universe is just like a tree, with root upwards. Just as a tree has branches and leaves so the universe is also composed of planets which are fixed up in the tree like the leaves, flowers, fruits, etc. of the tree. The pivot is the pole star, and the whole tree is rotating on this pivot. Mount Sumeru is the center, trunk, and is like a steep hill... The tree is turning and therefore, all the branches and leaves turn with the tree. The planets have their fixed orbits, but still they are turning with the turning of the great tree... Distances are also described in the 5th Canto just how far one planet is from another. We can see that at night, how the whole planetary system is turning around, the pole star being the pivot. Each planet has its orbit fixed but the sun is moving up and down, north and south.”

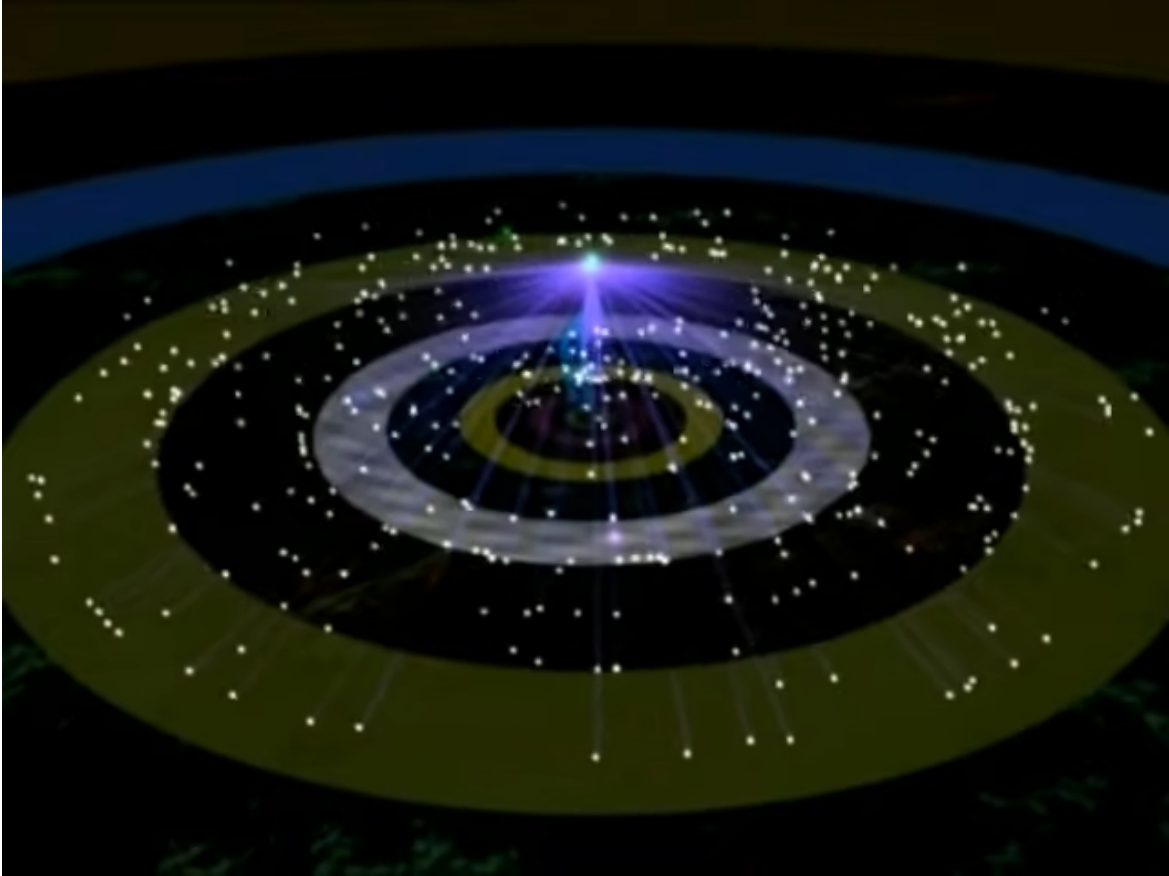
In modern cosmology, the days and nights and the passage of the seasons are explained by the rotation of the earth combined with the annual orbit of our planet around the sun. This explanation is based on a heliocentric model of the universe.

As discussed previously, Vedic Cosmology is based on a geocentric model, where the earth is fixed in space, as part of Bhu-Mandala. In this model, the sun, as well as the stars and planets, move around the whole structure.

Srila Prabhupada uses the example of a chandelier that rotates. We can imagine all the stars and planets as components of a gigantic chandelier. All the parts of this cosmic chandelier are kept together by ropes of subtle wind.

As the whole chandelier rotates, all the parts move together as part of the chandelier, but at the same time, each part has its own motion relative to the other parts. The combination of both motions when observed from our

planet result in the movements of the sun, planets, and stars that we see when we look into the sky.



Model of the universal chandelier made by Sadaputa Prabhu

We can imagine something like many particles of dust caught in a whirlwind. All the particles are moving with the whirlwind, but at the same time, each particle is moving independently in relation to the others. In other words, all the particles are moving in relation to the ground, following the general flow of the wind, but each particle moves in a subtly different way and thus the particles also move in relation to each other.

In this model, the sun circles around our planet every 24 hours, following the rotation of the whole sky. This is its clockwise rotation around Druvaloka, connected with the vertical axis.

However, there is also the counterclockwise rotation around Mount Sumeru, which takes one full year to complete. This second movement is connected with the horizontal axis connected to Mount Sumeru.

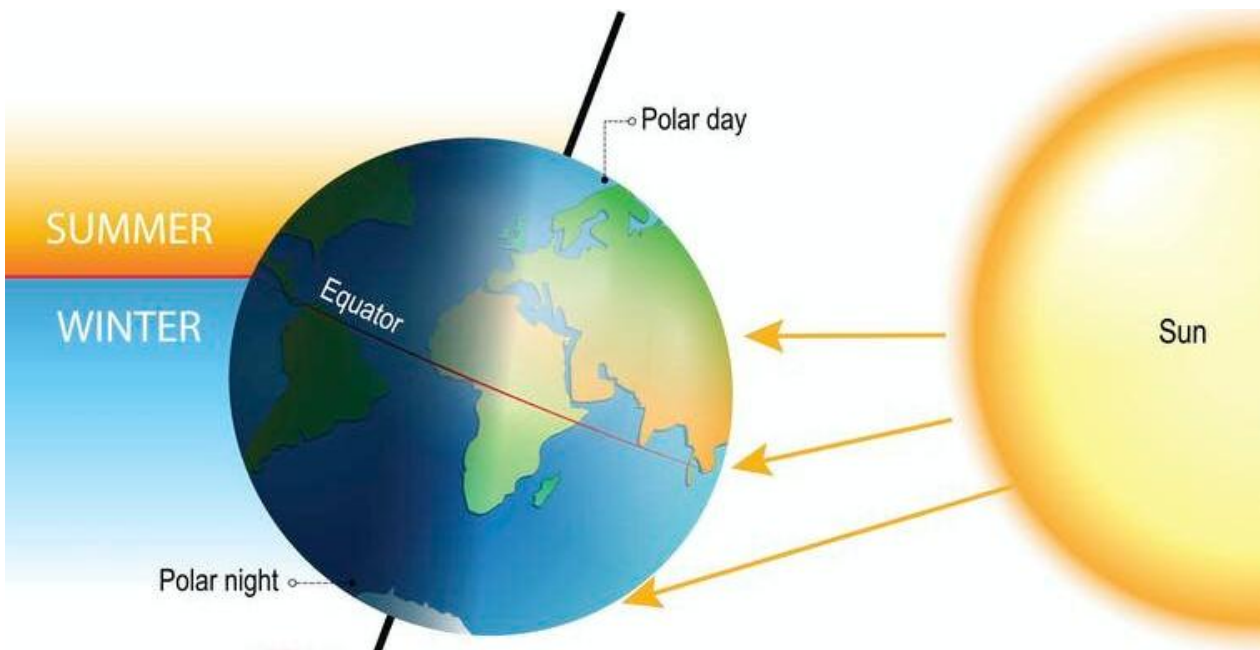
The inhabitants of Bhu-mandala live on a flat surface. As a result, for them, the sun is always overhead. Because the sun is always circling their plane, they never experience complete darkness. Due to the rotation of the sun around Druvaloka, there is some variation in the amount of light received, which they perceive as the passing of days and nights, and at the same time, the annual movement of the sun around Mount Sumeru results in additional variations they perceive as the passage of the seasons.

For the demigods, things work differently. Because their planets are also circling around Druvaloka as part of the universal chandelier (in other words, because they are moving alongside the sun around Druvaloka), the only movement of the sun noticed by them is the annual counterclockwise rotation of the sun around Mount Sumeru. They perceive this space of time (which is one year for us) as a very long day, during which they have the opportunity to enjoy the heavenly delights that surround them.

When we come down to our plane, things again work differently. Because our planet in the gross dimension is a globe, only half of the planet receives direct light from the sun at a time and we have a clear distinction between days and nights. This is confirmed on SB 5.21.9 (as quoted previously): *“People living in countries at points diametrically opposite to where the sun is first seen rising will see the sun setting, and if a straight line were drawn from a point where the sun is at midday, the people in countries at the opposite end of the line would be experiencing midnight. Similarly, if people residing where the sun is setting were to go to countries diametrically opposite, they would not see the sun in the same condition.”*

The cycles of days and nights described in this verse are connected with the clockwise rotation of the sun (when it orbits around Druvaloka). This makes the sun rise in the east and set in the west every 24 hours, resulting in the passages of our days and nights.

At the same time, there is the counterclockwise rotation of the sun around Mount Sumeru that takes one year to complete. It happens that because our planet is tilted, this movement is perceived as the sun going from south to north and then from north to south as the year passes, following the line of the ecliptic. This movement results in the passage of the seasons. It works quite similarly to what is believed in modern cosmology, but the model works from a geocentric perspective, with the earth fixed and the sun and other luminaries moving around it.



This is explained in SB 5.21.3-6, where is stated:

“While passing toward the north, toward the south or through the equator, in accordance with the order of the Supreme Personality of Godhead, it is said to move slowly, swiftly or moderately. According to its movements in rising above, going beneath or passing through the

equator — and correspondingly coming in touch with various signs of the zodiac, headed by Makara [Capricorn] — days and nights are short, long or equal to one another.

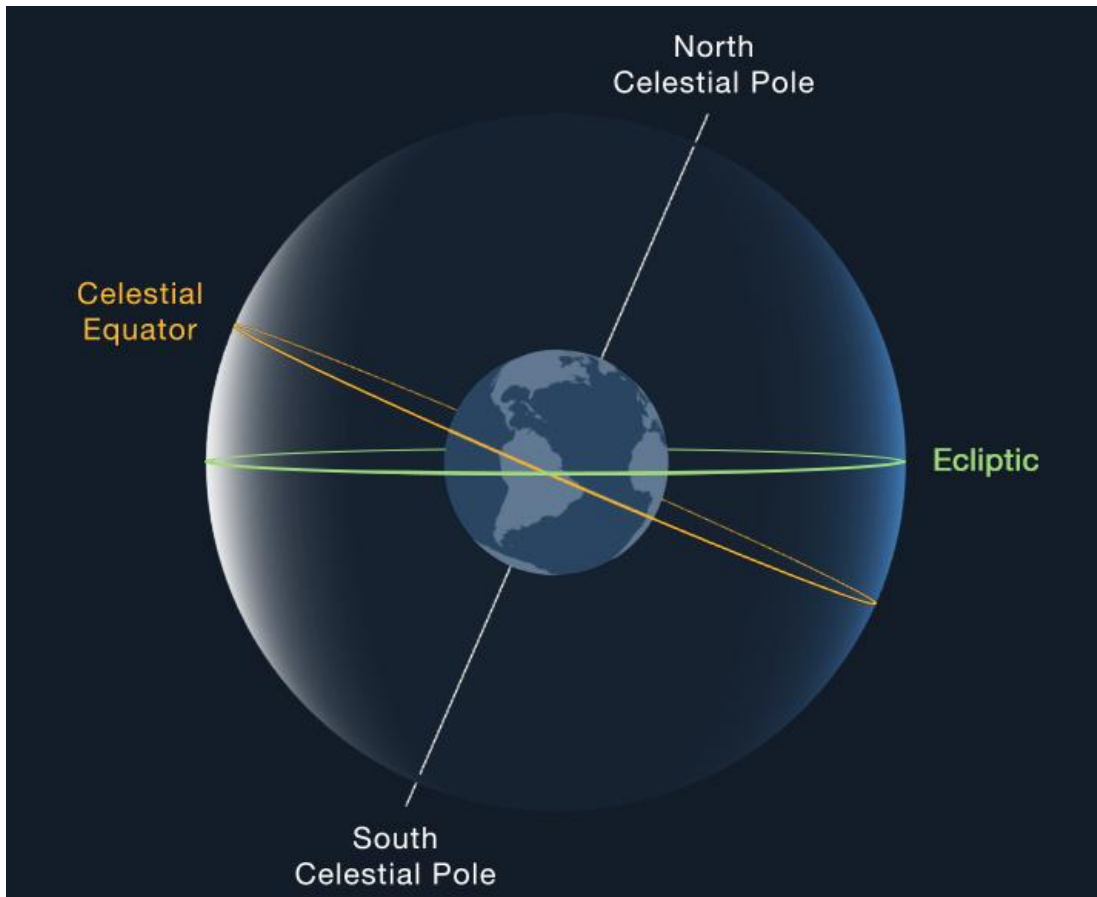
When the sun passes through Mesa [Aries] and Tula [Libra], the durations of day and night are equal. When it passes through the five signs headed by Vrsabha [Taurus], the duration of the days increases [until Cancer], and then it gradually decreases by half an hour each month, until day and night again become equal [in Libra].

When the sun passes through the five signs beginning with Vrscika [Scorpio], the duration of the days decreases [until Capricorn], and then gradually it increases month after month, until day and night become equal [in Aries].

Until the sun travels to the south the days grow longer, and until it travels to the north the nights grow longer.” (SB 5.21.3-6)

In other words, the daily rotation of the sun around Druvaloka makes it circle around our planet, resulting in the passage of days and nights, and the annual rotation of the sun around Mount Sumeru is perceived on our planet as it gradually going up and down, moving from north to south and from south to north, and passing through the different signs of the zodiac. This vertical movement explains the passing of the seasons.

This illustration can help to better understand this concept:



As previously mentioned, our planet is tilted in relation to Bhu-Mandala. As a result, the sun doesn't circle the planet around the equator, but on a slightly different path that we call the ecliptic. We can see that this path corresponds to the path of the sun around Bhu-Mandala.

The daily rotation of the sun happens around the path of the equator, while the annual movement of the sun happens on the path of the ecliptic. Because of this difference, we see the sun rising in the east and setting in the west every day (the daily rotation around the equator) and we see the sun gradually moving from north to south, or south to north as the days pass, resulting in the passage of the seasons and the variations in the length of days and nights. These two movements go on simultaneously.

Other visible planets also have a daily rotation around Druvaloka, as part of the universal chandelier, and at the same time have their own independent

orbits relative to the sun and to each other. The combination of both movements results in the motions we can observe when we look into the sky. Similarly, different stars also appear to be moving in the sky due to different particularities of their own orbits.

In Srimad Bhagavatam, Srila Sukadeva Goswami uses the example of ants moving in a potter's wheel. A potter's wheel is always rotating in the same direction, but ants on top of it may move simultaneously in different directions, and in this way, the ants simultaneously move alongside the wheel and follow their own motions relative to each other. As a result, they will appear sometimes on one part of the wheel and sometimes on another. One who is observing the scene would see that the ants rotating with the wheel would sometimes appear closer to the outer extremity and sometimes closer to the inner axle, or appear to be closer or more distant from each other.

If we would slightly tilt the wheel, we would see the ants sometimes more to the south and sometimes more to the north, as they continuously rotate with the wheel and simultaneously go on with their independent movements.

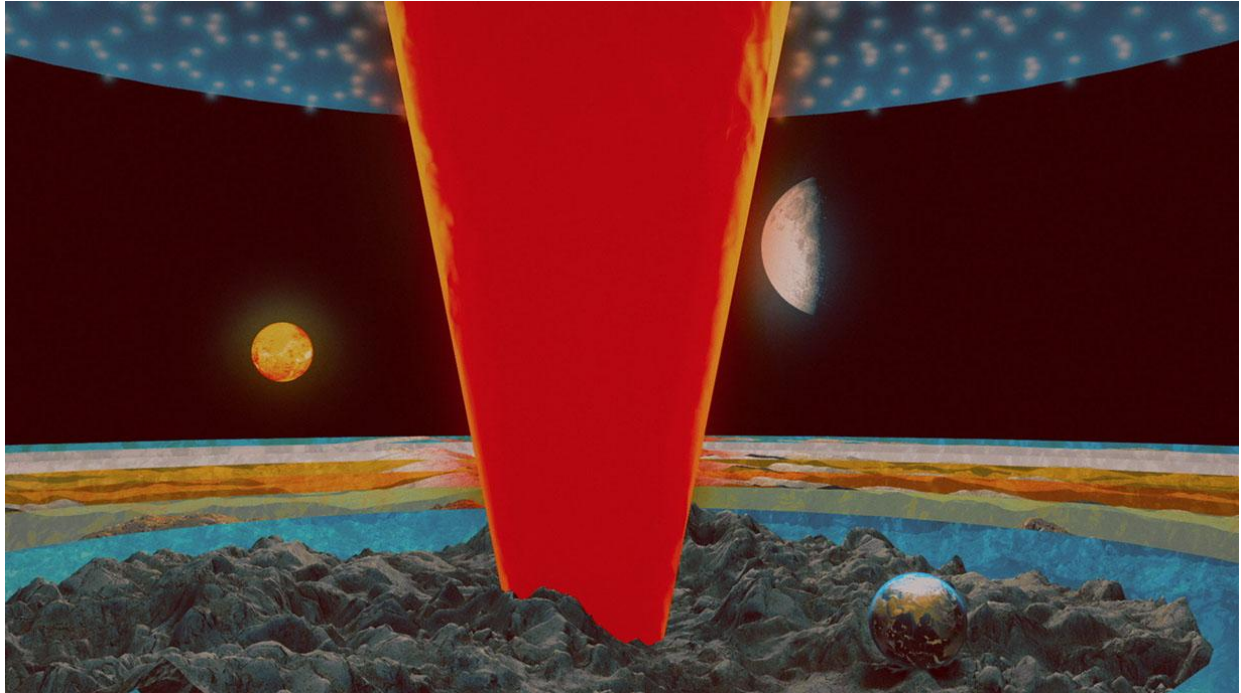


Potter's wheel

Accepting that our planet is a sphere and it is tilted in relation to Bhu-Mandala (which corresponds to the line of the ecliptic), from our point of view the annual movement of the sun is almost exactly on the same perspective as the potter's wheel in the photo. As the sun moves around mount Sumeru, it actually goes to the north or to the south according to our perspective, and this results in the sun appearing higher or lower in the sky and the days becoming longer or shorter. This movement is described in SB 5.21.3-6 that I quoted earlier.

It's important to also consider that in the gross dimension we live, Mount Sumeru as well as the rest of Bhu-Mandala is not visible, therefore it doesn't block the passage of the light in any way, just like the rest of Bhu-Mandala. All we can see in our dimension is the sun circling around, illuminating the two halves of the planet at different times, and gradually moving to the north or to the south with the passage of the seasons.

I again invite you to have an attentive look at the same illustration I included before to get a better idea of how the model looks from the perspective of someone who could simultaneously see Bhu-Mandala and the gross Earth:



When we take things in this perspective, we can see that the model of the universe given in the 5th canto Srimad Bhagavatam explains both how the universe is experienced by the demigods and how it's experienced in our gross dimension. However, because both explanations are given simultaneously, it appears that different verses are describing two different models that are contradictory to each other, while actually these are just different features of the same multidimensional model.

When we take things under this perspective we can see that the 5th canto of Srimad Bhagavatam actually harmonizes the models of the universe from the Puranas (which describe the subtle dimension of the demigods) and the model of the Surya Siddhanta (which describes our gross dimension). It appears that actually both models are not contradictory, but the explanation of how exactly they fit together was lost with the passage

of the centuries. The 5th canto of Srimad Bhagavatam gives thus some insight of how they fit together.

Chapter 8: The different planetary systems

Apart from our immediate surroundings, Srimad Bhagavatam describes other planetary systems that comprise our universe. This hierarchical view of the universe illustrates the different levels of consciousness of inhabitants of different levels.



Goloka Chart

The Asuras, races that have a consciousness too much focussed on matter, live under the ground, without access to the light of the sun. In the Vedic

Universe, their abodes are organized in the lower planetary systems, below our plane. Many of these are described as heavenly realms, where the inhabitants live in great material opulence and try to enjoy their senses to the fullest extent, while others are not so desirable. At the bottom are the hellish planets, where souls that committed serious crimes go to pay for their debts before they can take their next births. To fall into these lower realms can lead to a very difficult and painful time, therefore the Puranas alert us to the existence of such places so we may avoid the course of actions that leads there. Modern people tend to reject the idea of hell, preferring to believe that there is no life after death, or that everyone they care about will go to paradise, but just putting one's head inside the earth like this can lead to serious risks. One who ignores the advice of the sastras and leads a sinful life can face a very unpleasant reality after death.



In any case, what is more interesting are the higher planetary systems, to which one can ascend to the degree he can purify and elevate his consciousness through the practice of a spiritual process.

The closest planetary system to us is Bhuvarloka, where different subtle beings live, notably the Yaksas and Rakshasas. It's described that their realm starts in the upper atmosphere, very close to us, but despite this, we can't see it, since they live in a subtle dimension. Due to this proximity, however, they can easily contact human beings, which leads to many mystical experiences narrated through history. They are a mixed bag, including benevolent and malevolent entities.

These beings from Bhuvarloka are however different from ghosts (disembodied human beings living in our plane) because they live on a plane where they have different sense objects and can thus enjoy life just as we do, different from ghosts that are subtle beings stuck in a gross plane, where they can't interact with people or objects. This plane of Bhuvarloka is described as a beautiful place with lakes and forests, controlled by Kuvera, who possesses great material opulence.

In the model of the Universe described in the Srimad Bhagavatam, this abode is around mount Sumeru, immediately above our plane. During their exile, the Pandavas went there using the mystical passages through the Himalayas, and Bhima even fought the army of Yaksas of Kuvera.

Higher is the planetary system of Swargaloka, where the Devas live in great delight. What is one year for us equals just one set of day and night in their abode, and consequently one year for them equals 360 years in our plane. On many planets, the inhabitants live for 10,000 such celestial years, and some of them live for even longer periods. Indra reigns for a manvantara, which equals more than 300 million years of our time.

The main difference between the Devas and Asuras is that the first group has a subtle consciousness, focused on subtle material enjoyment, connected with music, dance, and arts, while the second group has a gross consciousness, focused on material objects and gross enjoyment thorough tact, vision, hearing, smelling and taste. One group is interested in the subtle aspects of matter, while the other is interested in the gross aspects (this difference is explained in the book "*Mystic Universe*", by Ashish Dalela). The main difference however is that the demigods are devotees of the Lord and cooperate with Him in the conduct of universal affairs, while the demons are envious of God and desire to just exploit the material nature.

Higher still are the higher planetary systems of Maharloka, Janaloka, and Tapoloka, inhabited by pure souls who are very serious about the path of self-realization. These realms are described in detail by Sanatana Goswami in the *Brihad Bhagavatamrta*. The souls in Maharloka live in great serenity, living in a pristine environment and dedicating their time to chant mantras and offer oblations to the fire, while souls in Janaloka and Tapoloka practice meditation.

There are other abodes described in Srimad Bhagavatam, including the abodes of the Saptarishi and Druvaloka, which is a spiritual planet appearing inside our universe, as well as others. These different abodes can be observed from Earth as the numerous stars we see in the night sky.

Above all, there is Brahmaloaka, the abode of Brahma, the architect of this particular Universe. Brahmaloaka is a very subtle abode, which is not observable from earth. Hierarchically, it is situated at the very top. During the existence of the Universe, many pious souls gradually elevate themselves through the different planetary systems, up to this level, where they can continue living until the end of the Universe. When the Universe

reaches its end, all these pious souls go alongside Brahma to the spiritual realm.



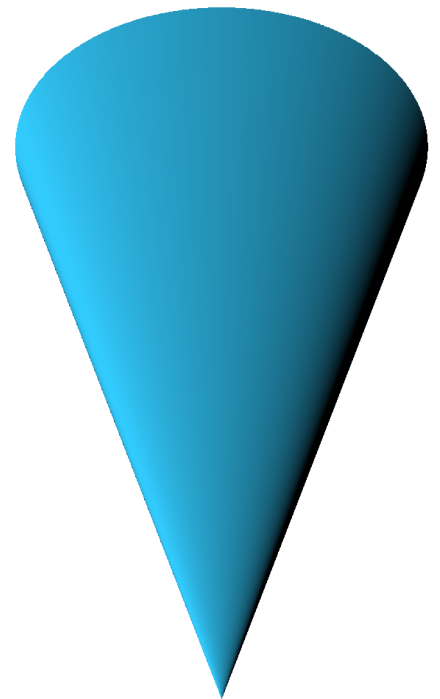
One important point when we study the Vedic Universe is the distances. All the measurements of the universe given in the Puranas are based on a unit called yojana. This is a measure of distance based on the characteristics of the human body, much like the inches and feet used in the imperial system.

One definition is that a yojana equals 8,000 times the height of a man. Another is that it equals 32,000 sets of 24 finger widths. Yet another definition states that a yojana equals four times the maximum distance a healthy man can shout and still be heard. That's one of the reasons the length of the yojana varies through different sources, sometimes as 5 miles, 8 miles, etc.

Similarly, there is reason to contemplate the possibility that the yojana may vary across the cosmos, reflecting the perception of distance of the inhabitants in different planetary systems. As food for thought we can mention that according to the description of the Srimad Bhagavatam and other Puranas, the demigods are gigantic. It's described that Lord Shiva is almost as big as Great Britain, for example.

Therefore, although Bhu-Mandala is only 500,000,000 yojanas from one extreme to the other (roughly the size of our solar system), the vertical dimension could be extraordinarily bigger, since the size of the yojana would become exponentially bigger as one advances to higher planetary systems.

If one accepts this idea, the Universe starts to look more like a cone, where the narrow side represents the lower levels of consciousness of human beings and Asuras, and the large side represents the higher states of consciousness of more elevated beings. In this model, Bhu-Mandala is on the narrow side of the universe, and thus its dimensions are relatively modest on a cosmic scale, while higher planetary systems are on the wide side, which is practically infinitely big. This view is capable of harmonizing the descriptions of the Puranas with the huge cosmic distances that can be observed in modern astronomy. The main point is that although we are limited by such distances, higher beings are not.



Chapter 9: The realms of the Devas and Asuras

The Vedas explain that the Universe is divided into the planetary systems inhabited by the Suras (or Devas), and the planetary systems inhabited by the Asuras. The Suras are evolved beings who are advanced in terms of knowledge, culture, piety, and spirituality. They are in charge of maintaining the universal order and are in direct contact with the divine. The Asuras on the other hand are atheists who are more interested in satisfying their carnal desires. Many Asuras are quite pious and charitable, but their idea is to evolve economically and not spiritually. They are more interested in matter than in what is beyond it.

The Vedic Universe is thus divided between these two categories of beings. The Devas live in the higher planetary systems, where the light of the sun can be seen. The movements of the sun according to the Vedas are more complex than described in modern astronomy, involving annual ascending and descending cycles. These cycles correspond to the days and nights for the Devas on the higher planets.

Our days and nights are connected with the movements of the sun and the earth, and thus our days and nights have only 24 hours, but the days and nights of the Devas are connected with these larger cycles, and thus a day and night for the Devas have a total of 360 days of our time (a full lunar year). Similarly, 360 of such days correspond to one year for them, and they live for 10,000 of such years. Their lifespan is thus calculated as 3.6 million years of our time. Extraordinarily long.

As Srila Prabhupada mentions on SB 3.32.3: *"Life on the moon is said to last ten thousand years according to the calculation of the demigods. The*

demigods' time is calculated in such a way that one day (twelve hours) is equal to six months on this planet."

Just like there is a gradation in the superior planetary systems, with the most spiritually advanced groups living in the upper levels and the ones who are more engrossed with matter living on the lower floors, the realm of the Asuras is also divided into several levels. The higher levels are paradisiacal places called Bila-svarga, where pious demons live. They are good-mannered and charitable, but they are not interested in spirituality at all. Because they are self-centered, many are propense to become angry when upset. The lower levels however are the home of races of envious and violent beings who abandon all kinds of moral values.

These descriptions of different levels of planetary systems described in the Vedas are based on the levels of consciousness of the inhabitants of different planets of the universe. In our dimension, planets inhabited by Suras and Asuras are spread over the cosmos, therefore we can't see any clear division when we look at the sky. Srila Prabhupada explains this point in a letter to Rupanuga from 20 December, 1968:

"Regarding your question of the planetary systems, the planets are arranged in each universe in layers like the petals of a lotus. But in each layer there is mixed both heavenly, hellish and middle planets. On the outside layer there are these three kinds of planets, on the middle layers there are the three kinds of planets and on the inner-most layer there are found these three kinds of planets. Above these layers, in the center, is the Brahmaloaka where Lord Brahma, the creator is residing. So the earth planet and the moon planet are both on the same layer but the earth is middle planet and the moon is heavenly planet."

However, in the dimension where the demigods live, the realms inhabited by beings of similar levels of consciousness appear to be close together. The model of the universe described in the Vedas is based on how the universe appears from their point of view, that's why it looks different from the universe we observe when we look at the sky.

Our planet is located exactly in the middle of the realms of the Devas and Asuras. Just like smaller countries are frequently the stage of proxy wars between bigger countries fighting for hegemony, our planet is also the stage of a perpetual dispute between the two sides.

In Satya-yuga, the first era of the cosmic cycle, there is a greater influence of the Devas, and our planet is almost exclusively inhabited by pious and enlightened souls. This is a time when everyone lives in peace and disease, wars and famine are unheard of. During the ages of Treta-yuga and Dwapara-yuga things gradually decline and in Kali-yuga, the age we live, the influence of the Asuras is much stronger. In this age, many Asuras take the opportunity to take birth on our planet and advance their exploitative agendas, while others try to influence us by subtle means.

It's said that in Satya-yuga Devas and Asuras live on different planets. In Treta-yuga they live in different continents (like Bharata and Lanka, as described in the Ramayana), in Dwapara-yuga they live in different cities, but in Kali-yuga, our age, the same person may act like a Deva or an Asura in different situations. There is a constant struggle between these two frequencies of consciousness inside our own heads.

The influence of the Devas can be felt like a push in the direction of spirituality, pious life, non-violence, living a natural life, etc. while the Asuras push humanity to the other extreme, in direction of a materialistic and artificial lifestyle, consumerism, environmental degradation, etc.

Usually, persons more in sync with the Devas tend to be spiritualists, who try to live a simple and pious life, while persons more influenced by the Asuras want to live a more artificial lifestyle, in the direction of consumerism and materialism. The first group tends to evolve in the direction of the higher planetary systems or go to the transcendental realm, while the second group tends to slide down to the planets of the Asuras in the lower realms, or to animal life.

As mentioned before, the Asuras live in subterranean realms, where there is no sun. All the light in their realms comes from other sources, like different types of artificial lights, fire, or special jewels. Naturally, in our plane jewels simply reflect light from other sources, but it's described that in their plane special jewels are used for illumination.

The fact they live under the ground doesn't mean that their lives are miserable though. Asuras are quite intelligent and they are experts in manipulating matter. Since they are interested only in matter, and not in developing higher consciousness, like the Devas, their attention is entirely focused on economic development, and thus their standard of living is actually even higher. It's described that the higher Asuras live in celestial abodes, with palaces, parks, fountains, and so on. They have an incredible ability in terms of handcraft, and thus they can create the most intricate objects and possess all kinds of mystical perfections, just like advanced yogis.

Although also living in very comfortable positions, the Asuras in the Bila-svarga constantly resent the Devas because they live in the higher abodes, and sometimes there are great wars between the two groups. Such cosmic wars normally happen on the higher planets, with the Asuras attacking and the Devas defending. Subtle and mystical weapons are used in such disputes, including Brahmastras, a subtle type of nuclear weapon

described in the Vedas, where the sound of mantras is used to break the structure of matter and convert it into energy.



Most of the time the Devas defeat the Asuras, but sometimes the Asuras win and the Devas are forced to flee from their abodes. Thus the cosmic order is inverted for some time, with impiety being rewarded and piety being punished until Lord Vishnu comes as an avatar to help the Devas to expel the Asuras back to their realm, reestablishing thus the cosmic order.

It may be difficult to understand how the Devas and Asuras can interact in such ways since the Asuras live in the lower planetary systems, which are lower than our planet. Since we can't see or interact with the Devas, who live in a higher dimension, how can the Asuras?

Normally, the Vedic Universe is depicted with the planetary systems of the Devas on top, the intermediary planets (like our own) in the middle, and the abodes of the Asuras at the bottom. This describes the different levels

of spiritual evolution of the inhabitants. However, if we classify in terms of gross or subtle, the asuras in the Bila-swarga or the higher amongst the lower planetary system actually live in a subtle dimension, while the inhabitants of the lowest amongst the lower planetary systems live in a gross dimension, similar to us.

The words “gross” and “subtle” may not precisely convey the idea, but I use them here due to the absence of better terms. For the demigods and Asuras the type of “subtle” matter they have around them looks as solid as the matter we have on our planet looks for us. However, the type of matter that constitutes their worlds is fundamentally different from the type of matter that makes our planet. Just like water is subtler than earth, in the sense that it’s liquid and transparent, and air is subtler than water in the sense that it is much lighter and more compressible, the type of matter that constitutes the abodes of the devas and asuras is subtle in the sense that we can’t detect or interact with it in any way. It is similar in principle to the idea of dark matter present in modern cosmology. One meaning of the word “subtle” is something that is mysterious and not easily understood, and another is as something refined, while “gross” applies to something lower, that lacks such refinement. I use these words here in these senses.

In any case, the relationship between the Devas and Asuras becomes easy to understand if we imagine the higher and lower planetary systems side by side, instead of on top and bottom. When we see it in this way, the relationship becomes more obvious.

When observed from this perspective, the highest amongst the lower planets fit in a similar level to Swargaloka, the abode of the Devas, and the lowest in a similar level to us. In other words, the higher Asuras live in the same subtle dimension inhabited by the Devas, and this explains the interactions between the two groups.

In the previous ages, Satya-Yuga, Treta-Yuga, and Dvapara-Yuga, human beings also lived in a subtler dimension, therefore interactions between human beings, Devas, and Asuras are also possible. In the Mahabharata, it's described how Arjuna was capable of traveling to the higher planetary systems and assisting the Devas in their fight against the Asuras, and how during their exile Bhima fought and defeated a powerful rakshasa from Bhuvanloka. However, in our age, Kali-Yuga, we live in a gross dimension and thus such interactions are not possible. We just live on a different frequency from both groups.

In our age, Devas and Asuras influence humanity by subtle means, or sometimes by taking birth here. It's believed that the powerful Madhvacharya, who appeared in India in the 13th century, was an incarnation of the Deva Vayu, for example.

Another interesting point is that we live in the same gross dimension as the lower Asuras. These are Asuras who are impious and more absorbed in gross matter. Instead of mystical perfections, they use technology to maintain an artificial lifestyle. Due to their advanced technology, these races are capable of traveling in spaceships. Books like *"The War of the Words"* and *"Ender's Game"* depict scenarios where our world is invaded by hostile, more advanced civilizations. In reality, however, if the lower Asuras would try to invade us with their advanced technology, there would be little we could do to protect ourselves. Fortunately, there are higher forces in the Universe that prevent this.

Another example of beings of the lower planets who can sometimes interact with human beings are the Nagas. Some Nagas are pious like Udupi who kidnapped Arjuna to marry him, but others are not very good people to hang out with.

Although both the Devas and the high Asuras live in great material opulence, there is a great difference in the path chalked by both groups. The high Asuras are exhausting the good karma they accumulated by doing good deeds in previous lives, thus paving their way to a gradual descent into the lower realms, while the Devas are following an upward path, that leads to the upper planetary systems and gradually to transcendence.

After Swargaloka, the heavenly realms where the Devas live, there is a sequence of highly evolved planets inhabited by great sages, including the realms of Marloka, Janaloka, Tapaloka, and Brahmaloaka. The inhabitants of these planetary systems live for extremely long periods and have almost complete knowledge about the workings of the Universe. Different from the Devas and Asuras, however, they are solely interested in transcendence, and therefore rarely get involved in their affairs.

In other words, the high Asuras are in a comfortable position now but they are on a descending path, while the Devas are exhausting their previous karma, satisfying their remaining material desires and preparing to go higher into the subtler realms.

Human beings are essentially in the middle and we choose which path to follow according to our actions in this life. The Vedas are knowledge transmitted by transcendental sources to help humanity to progress on the upward path. For the ones interested in joining the Devas in the celestial planets there is the path of karma-kanda, which consists of pious life and religious rituals, and for the ones who are interested in ascending to the transcendental realm, there are the paths of Karma-yoga, Jnana-yoga, and Bhakti-yoga, explained in the Bhagavad-Gita.

The path of materialism and hedonistic life, however, leads to nothing but suffering in the realms of the lower Asuras or the animal kingdom. This may be a tempting path of instant gratification, but the ones who take it

just go down into further ignorance, creating a descending spiral that leads to dangerous consequences.

Different from animals, human beings are gifted with a higher intelligence that can be used to find the best path and to progress spiritually. One who misuses this higher intelligence for just achieving immediate gratification is a very unfortunate person.

Chapter 10: Time and space in the Vedic Universe

In this material world, we live under the limitation of time, space, and physical laws. Time acts as an oppressive force, making us hostage to its influence. Sometimes there is not enough time, and sometimes time drags forever.

Another restriction is space. We may hear about some distant place that looks particularly interesting, but we can't go there easily: It requires money, effort, time, and patience to do the trip. In other situations, the problem is the opposite: lack of space. Most of us would like to get a bigger apartment, a bigger car and so on.

We can see how both time and space are constricting forces. They seem just like inexorable forces that we can't avoid, right? Not really. Actually, both can be bent. This is another interesting subject explained in the Vedic literature.

Let's start with time.

Not only does time work differently in different parts of the cosmos, but time is also relative: It can be stretched or contracted practically infinitely. That's a point where modern science and Vedic literature agree.

According to the theory of special relativity by Einstein, the flow of time can change due to the influence of speed or gravity. Someone traveling near the speed of light, or living very close to a strong gravitational field (like a black hole) would age much slower than someone living here on earth. For him, time would pass at a much slower rate. This can be empirically tested

by sending clocks to space: a clock installed in a satellite orbiting the planet (and thus subjected to a weaker gravitational pull) runs at a faster pace than an identical clock on the ground. This is a phenomenon that is well studied by physicists and had to be taken into account during the development of the GPS.

Similarly, the Vedic literature explains that the flow of time is different in gross planetary systems and in subtle planetary systems. The practical implication of this is that beings on the higher planets don't become old like us and things don't degrade quickly like here.

For example, what is 360 days for us, is just one day for the demigods in swargaloka, which is part of the subtle dimension. There, people live for 10,000 such years, therefore their lifespan equals 3.6 million earthly years!

Similarly, what is 8.6 billion years for us, is just a day for the inhabitants of Brahmaloaka, the highest and most subtle planet of this universe, which is the abode of Lord Brahma, who acts as the architect of this particular universe. Their lifespan equals trillions of years of our time. Because their bodies and consciousness are so subtle, they live for a span of time that is, by our calculation, practically limitless.

On the other hand, time passes faster on the hellish planets. In this way, the souls that fall there pay their debts in a time frame that doesn't interfere with their transmigration to their next body. One may stay for a very long time in hell, according to his perception, while just a few days may pass for us here on Earth.

The position of a living entity in the Universe is determined by his consciousness, therefore souls with higher consciousness are promoted to the higher planets, where they not only have access to better material facilities but are also less subject to the passage of time, while souls with

lower consciousness are forced to live in the lower planets under stringent laws.

We can see thus that according to one's level of consciousness, one is constricted by material laws to a higher or lesser degree. However, everyone who lives inside the material sphere is constricted, from Brahma to the smallest organisms.

There is only one place where people are not constricted by time: the spiritual realm. This is the place where there is no time. Everything is eternal, all Krsna's pastimes exist eternally and one has access to them according to his meditation, or according to the influence of the internal divine potency. This is a place where there is no past or future. Everyone just lives in an eternal present, centered on their relationships with Krsna. This is the place we can attain as soon as our consciousness is sufficiently purified.

The most interesting point is that life in the spiritual realm doesn't necessarily imply a change in the physical location. It's not so much about reaching a particular location, but a state of consciousness. The inhabitants of the spiritual world are continuously absorbed in this eternal present, constantly meditating on Krsna's names and activities. As we become absorbed in a similar mentality through the practice of the bhakti-yoga process, we have the opportunity of connecting with this eternal present, even while still technically living in this material world.

Time brings fear since we fear losing what we have. Even if we attain a comfortable situation in this world, we can't really be happy, because we will be fearful of losing it. We can't have peace and, as Krsna mentions in the Bhagavad-Gita, there is no question of happiness without peace. In the spiritual world there is no fear: everyone lives a life of bliss and knowledge,

without fear of loss. That's why the spiritual world is called Vaikunta: the place without anxiety.

So, we understand that time is relative. It flows at different rates in different parts of the cosmos, and there is a place where time does not exist at all. If time is relative, what about space? It happens that space is also relative.

Higher beings are not only affected by time differently, but they also perceive space differently from us. For them, the Universe is a beautiful place, thriving with life, and everything is very accessible. What is thousands of light-years away for us, is just a vimana drive away for the demigods. They can go from one planetary system to the other just like we go to the beach. For them, space works in a completely different way than it does for us. Not only are the demigods less constricted by time and space, but they are less constricted by physical laws. They can fly, create material objects, produce subtle nuclear explosions using mantras, and control the forces of nature at will, just to mention a few examples.

We can explore this point about space from the perspective of higher beings from two perspectives: How Krsna, as the Supreme Personality of Godhead, can manipulate space, time, and physical laws, and how the same laws can be manipulated by ordinary mortals, like yogis and ascetics.

Let's start with Krsna. As he mentions in the Bhagavad-Gita: *kalo 'smi, "time I am"*. Time is one of His energies, and just like all the other energies, time is completely under his control. In his pastimes, we can find many instances where he manipulates time and space.

In the Srimad Bhagavatam it is mentioned that when the gopis came to him at night, attracted by the sound of His flute, desirous of dancing with

Him, Krsna made the night extend for the equivalent of a whole day of Brahma, which equals to billions of years!

Conversely, when he assumes the gigantic form of Maha-Vishnu to create the material universes, he makes the whole period of the life of Brahma as short as a breath for him. To properly appreciate that, it's worth mentioning that this is a period of time equivalent to 311.04 trillion years!

He can also manipulate physical laws at will, like when He lifted the Govardhana hill, nullifying the law of gravity. In this pastime, he lifted a huge mountain using just His small finger, with the purpose of using it as an umbrella to protect the inhabitants of Vrindavana from the rain. Ordinarily, it's not possible for someone to lift a mountain (even if one would be sufficiently strong to do that, the mountain would crumble under its weight), but by nullifying the law of gravity, Krsna could do it in the most elegant way.

Not only can He manipulate time and physical laws, but he can also manipulate space. For example, when Krsna was present on this planet, he manifested the whole Vrindavana, the whole spiritual sky inside the boundaries of the earthly Vrindavana, which has a circumference of a few dozen miles. It's difficult for us to understand how an infinite space can fit into a finite space, but by Krsna's will, it became possible. As he says in the Gita: *pasya me yogam aisvaram: "Behold my mystic opulence!"*.

Similarly, the city of Dwaraka created by Krsna in the midst of the ocean to shelter the Yadu dynasty was a manifestation of the Dwaraka in the spiritual sky. Just as in the case of Vrindavana, an unlimited space with trillions of inhabitants living in palaces was manifested inside the boundaries of a certain geographical location of our planet.

Both Dwaraka and Vrindavana (as well as Mayapur and other sacred places) work as a kind of spiritual portals, where the material and spiritual spheres come in touch. From the outside, one could see the material Vrindavana, which had a limited circumference, but as soon as one entered the area, he would have access to the unlimited spiritual sky. Even nowadays this connection remains, and people who are advanced spiritually can see the spiritual reality when they enter Vrindavana.

Krsna's bending of space was also shown in the pastime of Brahma stealing the calves, described in the 10th canto of Srimad Bhagavatam. At a certain point, he summoned the Brahmas of all material universes. Every Brahma was present in his own universe, just like our Brahma was situated in our universe, and in the Vedic literature, we get the information that the different material universes are trillions of yojanas apart. Still, all the Brahmas were put together in the same place by Krsna's mystic potency. Somehow, Krsna created an extra dimension, where all the Brahmas could be together, despite being separated by trillions of yojanas in the ordinary subtle dimension and an incalculable distance in the gross dimension.

Another example is Krsna showing the whole creation inside his mouth to mother Yashoda. To a mundane observer, Krsna was situated on our planet, which is part of a particular material universe. If Krsna was situated inside one particular universe, how could the whole creation be situated in his mouth? It's described that mother Yashoda could see herself and Krsna inside Krsna's mouth. Therefore, not only the whole creation was situated inside Krsna's mouth, but Krsna Himself was situated inside His own mouth! That's definitely a feat that our material brains have a hard time conceiving.

Apart from Krsna, even mundane yogis can manipulate space to a certain extent. These are ordinary mortals, like you and me, who attain supernatural powers due to their practice of Astanga-yoga or by other

means. A yogi can stretch his hand and grab something that is thousands of miles away by accessing higher dimensional passages that bridge locations that are far away. Similarly, a yogi can become very big or very small by accessing features of reality that are unknown to us.

Such mystical feats are called Ashta Siddhis (the eight mystic perfections) and become available when an advanced yogi is capable of connecting with the divine energy, becoming thus a conductor for it. Just like a bar of iron becomes red hot due to contact with fire (and can thus burn, just like fire), or a piece of wire becomes electrified due to a connection with the power grid, a yogi becomes surcharged with mystical potency when he can successfully connect with the source of such potency.

These are examples that can be observed in this material world. If we go to the spiritual world, things become even more amazing. In the spiritual world, space (as a limiting factor) doesn't exist at all. All the inhabitants can freely go from one place to the other simply by their meditation. Everything is just one remembrance away.

Similarly, in the spiritual sky, there is no matter to be manipulated and consequently no physical laws. Anything can be created simply through one's meditation, out of one's consciousness. The gopis don't have to spend hours cooking in front of the fire manipulating different substances to make a preparation for Krsna. Whatever they want to cook, is created simply by their meditation.

We can understand that, just like matter, both time and space are phenomena that affect only the inhabitants of this material universe. Although time and space can be defined as real in the sense that someone created and someone is experiencing them, both are ephemeral, not much more real than a game running on a computer.

We are not products of this material world: We are spiritual beings entrapped in a material experience. Our existence here in this material plane had a beginning when at some point in eternity we desired to come here. Becoming attached to the material energy, we have been forcing ourselves to remain here ever since. Self-realized souls are capable of seeing things in the proper perspective, and thus they become indifferent to this phenomenal world.

All the experiences that are there to be experienced in this material world are already created and happen cyclically. It's just like a computer game, where all the events in the game are individually created by the developer and displayed in a certain order to the player, creating an illusion of continuity. The player can't change the order or speed of the events, but the developer has complete control. Similarly, Krsna is not under the control of space, time, or any physical law. Just the opposite: he is the one who calls the shots. Just like the demigods see the universe differently from us, Krsna has a much higher perception of reality than even the demigods, just like he displayed when he evoked all the Brahmas of different universes in the presence of the Brahma of our universe. As the creator and controller of the whole material creation, Krsna has complete control over it, just like a programmer has complete control over his own software.

As long as we are in this material world, we are not only under the influence of time but also constricted in other ways. For example, our planet is spherical, so we can't leave it easily. If one tries to escape the planet by walking, he will just end up going back to the same place. Even when we send probes or astronauts to other planets of the universe, we can't find anything interesting there, because we don't have access to the higher dimensional realms. We may go to the moon or mars, but we will find only rocks, radiation, extremes of temperature, and other inhospitable conditions. In other words, even if we leave our planet, we still can't leave

our prison. Ultimately, not only are we imprisoned by these different forces, but our knowledge of reality is very limited.

So, accepting the idea that both time and space are relative, and thus illusory, what is real? Actually, the only thing that is real is consciousness. Reality is simply a manifestation of consciousness. By changing our consciousness we can change our reality. One with the appropriate consciousness can travel all around the universe, like Narada Muni. Having a spiritual body, he is not affected by material conditions, or even by distance, and thus he can freely move around the universe according to his will.

From this, we can see that although expressed in simple language, the Vedic literature brings us ideas that go much further than the most far-out science fiction. The universe is much bigger and more mysterious than we can imagine, and the key to unlocking its mysteries is the purification and expansion of our consciousness.

Chapter 11: Cycles that affect our planet

Apart from cosmology and metaphysical aspects of the Universe, another important component of Vedic cosmology is the cycles our planet and other parts of the universe go through. These cycles affect different parts of the Universe in different ways. Our planet is directly affected by such cycles, while inhabitants of the higher planets are less perceptible. Understanding these cycles is fundamental to understanding our history.

The modern conception of history is that humanity is evolving, coming from the caveman to the industrial revolution. However, our understanding of the past is limited. The oldest artifacts that can be accepted as recorded history date from about 5000 years ago. Most of the theories about what happened before are based on indirect evidence, like fossils and artifacts. Paleontologists use whatever they find to try to create a coherent view of the human past, but it's very difficult to find the truth without direct information from people who lived there.

Many cultures from the past had a conception of a forgotten golden age. The Greeks for example believed that humanity went through a sequence of four ages before the present times. In the first, the Golden Age, humans lived almost like gods, living a long and opulent life without having to work and never experiencing suffering. In the next age, called the Silver Age, humans became vastly inferior in appearance and wisdom and had to work to make a living. However, they still lived very long lives, with children playing for 100 years before growing up. In the third age, called the Bronze Age, or the Age of Heroes, men were strong and warlike and had shorter lives. Greeks believed to live in the last age of the cycle, an Iron Age where humans are evil and selfish, burdened with weariness and sorrow.

According to them, in this age piety and other virtues disappeared and the gods abandoned Earth.

In the Vedas, the Greeks are described as the Pulindas (SB 2.4.18), people close to Vedic culture who, although not a direct part of it, shared much of its values and knowledge. It's not a wonder thus that the concept of the Golden, Silver, Bronze, and Iron ages of the Greeks is also described in the Vedas, but in this case with more detail.

According to the Vedas, our planet goes through a sequence of four ages. Just like we have four seasons in a year and these seasons repeat, similarly, these cosmic cycles also go on cyclically.

Different from modern theories that conclude that modern human beings are the result of a long evolutive process that ultimately happened by chance, the Vedas explain that modern humans are actually the fruit of a devolutive process. The idea given in the Vedas is that humanity is originally created by higher beings in a state close to perfection and slowly degrades up to a point of complete barbarism.

This actually makes a lot of sense once we understand that successive copies of the DNA result in errors and mutations. Modern theories are based on the idea that such mistakes, combined with natural selection, lead to improvements in the species, an explanation that makes sense when one tries to explain the existence of intelligent human beings starting from the belief that life comes from matter. The Vedas however offer a different explanation, based on the idea that human beings were created by higher beings. When we start from this principle, the idea of a gradual devolution starts to make sense.

According to the Vedas, the first of the four ages is called Satya-yuga, the Golden Age. That's the age of purity, where enlightened souls chalking up

an ascending path towards the transcendental platform, take birth on this planet to practice self-realization. In Satya-yuga humans live almost like the inhabitants of higher planetary systems: they live in a subtle dimension and have bodies that are free of diseases. Through the practice of meditation, they can extend their lives, and thus most are capable of living for incredible 100,000 years. At this age all necessities of human beings are supplied by nature, nobody has to work on farms or factories to make a living. By living such natural and pure lives, people of this age are completely free of anxiety and are thus capable of reaching spiritual perfection through the practice of Astanga-Yoga.

Satya-yuga lasts for 4,800 celestial years. Each celestial year corresponds to 360 years of our time, and therefore Satya-yuga lasts for a total of 1,728,000 years. During this period there is a gradual decline in the level of consciousness, which in time leads humanity to the second age in the cycle: Treta-Yuga, or the Silver Age.

During this period, people become interested in economic development. Agriculture becomes very prominent and society is divided into different classes, with pious kings watching over the well-being of the general population. Most people in this age are still quite pious, and their level of consciousness is sufficient to award them bodies capable of living up to 10,000 years. The preferred method of self-realization in this age is the performance of elaborate ceremonies with the perfect chanting of Vedic mantras.

Treta-yuga lasts for 3,600 celestial years, or 1,296,000 years of our time. Again, there is a gradual deterioration of collective consciousness, and slowly bad habits and lower qualities become more prominent, leading humanity to the third age: Dwapara-yuga, or the Bronze Age.

In this age, about half of humanity is dominated by lust, greed, and other bad qualities. At the start of Dwapara-yuga people live for 1,000 years, but life expectancy diminishes gradually and by the end of the period it's close to 100 years.

There is also an acute division between groups that continue to follow the path of piety and spirituality, and groups that succumb to the influence of lower qualities, and therefore wars become frequent. Still, wars in this period were conducted in a chivalrous way, where warriors would fight one-on-one following certain rules until one side would surrender. Typically, the two sides would previously agree on a certain place and the battles would happen away from the general population. We can see that this martial code was still followed to a certain extent in ancient Greece and more recently in Japan amongst the Samurai.

The battle of Kurukshetra that took place right after the Bhagavad-Gita happened in the final years of Dwapara-yuga, events that are described in detail in the Mahabharata. We can see how at those times there was a strong polarization around the virtuous Pandavas and the impious Kauravas, and that the group that supported the Kauravas was bigger. The Pandavas managed to assemble seven divisions of soldiers in their army, while the Kauravas amassed eleven divisions. Things became better for some time under the rule of the Pandavas, followed by Pariksit Maharaja, but after that things started to become darker.

Dwapara-yuga lasts for 2,400 celestial years, or 864,000 years of our time. It's followed by Kali-yuga, the last era of the cycle, the era we are currently living. This age started 5,123 years ago, exactly at the time Krsna left this world. In the Surya Siddhanta is described a particular alignment of planets (very inauspicious according to astrology) that happens at the start of this era, a piece of information confirmed by modern calculations.

There is a great shift in consciousness after the end of Dwapara-yuga. With the beginning of Kali-yuga, humanity descends to a gross dimension, where we don't have contact with higher beings (more about that in chapter 15). During this age, our planet is basically quarantined. This idea explains why we can't find much evidence of evolved civilizations from the past: these were evolved humans, who were living in the subtle dimension, to which we don't have access in our time. As a result, when we dig the ground we can find only bones and stone artifacts from aboriginal humans that were living in the same gross dimension as ourselves.

During Kali-yuga, humanity slowly degrades, as beings from the lower realms get the opportunity of taking birth on our planet to accumulate a new set of Karma. This is also the shortest of the four eras, lasting for just 1,200 celestial years, or 432,000 years of our time.

An easy way to remember the length of the four eras is to remember that Dwapara-Yuga lasts for 2 times the period of Kali-Yuga, Treta-Yuga for 3 times, and Satya-Yuga for 4 times as long. Combined, the four eras last for 10 times as long as Kali-Yuga.

At the beginning of the age of Kali, people live for about 100 years, but just as before the life expectancy gradually diminishes as time goes on. As people from this age have short lifespans and are not capable of concentrating for long periods, the recommended process for self-realization is the path of Bhakti-yoga, and especially the process of sankirtana.

As Kali-yuga progresses, good qualities such as truthfulness, self-control, simplicity, nonviolence, freedom from anger, tranquility, compassion, gentleness, and forgiveness gradually decrease, and bad qualities such as lust, anger, greed, illusion, and enviousness increase, creating a difficult

condition, especially for persons trying to follow a spiritually progressive path.

As Kali-yuga progresses, humanity degrades to such an extent that people gradually lose their humanity and descend into complete barbarism. It's described in the Srimad Bhagavatam that by the end of Kali-yuga the planet's ecosystem will be polluted and destroyed to such an extent that agriculture will become impossible. Animals will become much smaller and people will live for no more than 20 years. People will live mainly on meat and cannibalism will be rampant. People will have to work very hard to get just a few morsels of food. Moral principles will completely disappear and people will be prepared to kill for the slightest gain.

It's narrated that by the end of this period the Avatara Kalki comes. Aniquilating the oppressive kings and soldiers that by the time will be no more than plunderers of the poor citizens, he creates the conditions for the beginning of a new Golden Age. Under the guidance of superior beings, humanity is restored to its original state, and a new Satya-yuga starts, marking the beginning of a new cycle.

Chapter 12: Dawn of a new Golden Age

In the previous chapter, we studied the cycles of four eras explained in the Vedas, as well as the progression of events in Kali-yuga, the age we live in. Kali-yuga lasts for 432,000 years from which only 5,123 years have passed. In other words, there's still a long way to go.

By studying recent history, we can see that Kali-yuga is not a very bright period for humanity, with constant wars, degradation, and examples of inhuman cruelty. According to the Vedas, all of this happens as a predicted cosmic cycle of events, which is connected with the spiritual level of the souls allowed to take birth on our planet in each part of the cycle.

Being part of the intermediary planetary system, our planet is a place where souls from all over the cosmos come to perform activities, make their choices, and thus create a new set of karma that is going to determine their future destinations. In this sense, we can imagine our planet as a universal airport, where people can decide where to go next. Souls who perform pious activities take their next birth on higher planets, where they can have the association of evolved beings and thus get the chance of progressing further, while souls who cultivate bad habits and commit violence to others go to the lower planets, where they take birth amongst similarly inclined souls.

Similarly, souls take birth at one of the four ages according to their previous karma and their level of consciousness. In Satya-yuga, only highly elevated souls can take birth on this planet, and therefore the spiritual level is quite high. The entrance barrier is progressively lower on Treta and Dwapara Yuga, and thus the spiritual level of the society is similarly lesser.

In Kali-yuga there is practically no entrance barrier, and therefore we have all kinds of problems.

Since our situation in this age is so complicated, there is also a great opportunity for spiritual advancement through the process of sankirtana. What would take thousands of years of practice of Ashtanga-yoga in Satya-yuga to achieve can be quickly obtained in our age. This opportunity makes this era actually quite fortunate, to the extent that beings from higher planetary systems desire to take birth on our planet during this age.

Is exactly this possibility of quick spiritual progression, combined with the presence of souls coming from higher realms that leads to the predictions of a Golden Age amid our modern age, a glimmer of hope for the ones that are not interested in experiencing the rigors of the later stages of this age.

In the Brahma Vaivarta Purana, it's predicted that the first 5,000 thousand years of Kali-yuga, would be a period of darkness. Studying history we can see that it was indeed so, with the dark ages, slavery, wars, and so on. Fortunately, this period is passing. Now we are in the second part of the predictions. The Brahma Vaivarta Purana (4.90.32-33) states that after this period, an age of spiritual progress would emerge. During half of this period, the river Ganges will be present, alongside temples and the study of the sacred scriptures, and in the second half, spiritual knowledge will be propagated by enlightened spiritual teachers traveling through the planet.

Similarly, the Bhavishya Purana (20.71-73) states that persons born in western countries will practice this spiritual knowledge, becoming Brahmanas by initiation and qualification, and will propagate this knowledge around the world. Through their efforts, humanity will change in a course of just a few generations, leading to an ascending period of spiritual prosperity.

The conditions for this Golden Age were set by the appearance of Caitanya Mahaprabhu in the 15th century. Although geographically limited to India, the spiritual movement started by Him created the conditions for this gradual shift.

Just like other acaryas who lived in the past centuries, Srila Bhaktivinoda Thakura made a few predictions about the appearance of this golden age. In fact, many of them already materialized, like the one that the sankirtana movement of Mahaprabhu would spread in the western countries, and English, French, Russian, German, and American people would join forces to push it further forward.

Another prophecy is that a magnificent temple built in Mayapur, West Bengal, the birth site of Caitanya Mahaprabhu would be a milestone in the appearance of this golden age, serving as a catalyst for the growing spiritual wave. This temple, the ToVP, is going to be inaugurated soon, so we may see some expressive changes still in our lifetimes.



In the Srimad Bhagavatam (SB 11.5.38) it's mentioned how enlightened souls who lived in other eras, as well as inhabitants of higher planetary systems, take advantage of the opportunity to take birth on this planet and thus conclude their spiritual practice and ascend to the transcendental realm. While here, they act as enlightened teachers, helping the rest of humanity to reach the same higher goal. This combination of people from this age that attain enlightenment through spiritual practice and elevated souls from previous eras and higher planetary systems has the potential to gradually turn the tide of materialism, leading to a revival of spiritual values, combined with growing material prosperity. This is a trend that tends to continue for some time as the Golden Age takes hold, a global spiritual awakening that can lead to a very fortunate period.

It may seem hard to believe, but sometimes global changes can happen quite fast. Who could predict, in 1970, that in 50 years 11% of the population of the United States would be vegetarian or vegan, and that a global network would connect the whole world population? This process of gradual spiritual growth will continue until most of humanity will become spiritually advanced. The progression may not be linear, there may be periods with difficulties or even a few global catastrophes, but the general tendency during this period will be of improvement. As these fortunate souls conclude their spiritual advancement and move towards the transcendental realm or the higher planetary systems, the percentage of the population not interested in spiritual cultivation will again gradually increase, leading to a descending period.

You can imagine this in the form of two lines in a graph. In the ascending period, the line representing spiritually advanced people slowly increases, while the line representing materialistic people gradually declines. This continues until most people become spiritually advanced, leading to the blossoming years of the Golden Age. However, as these souls leave the planet, going toward higher realms, new souls take birth here and thus the

percentage of materialists starts to increase again, leading to a descending period, where the spiritual level of society will slowly decay over a period of a few thousand years.

Again, people will gradually become materialistic and hedonistic, and humanity will slowly degrade, both culturally and spiritually. People will become angry and cruel, and life will again become difficult and full of anxieties. As the last advanced souls leave the planet, the stage will be set for the remaining 417,000 years of Kali-Yuga, which will not be a very good period to be born into.

However, instead of being concerned about the dark times ahead, the best for us is to dedicate our time to cultivating self-realization now. These events of Kali-yuga take place because many adopt a selfish and exploitative nature, polluting and exploiting the natural resources, as well as fellow human beings, and thus eventually have to face the karmic consequences. By following a different path, we become eligible for going back to Godhead, or at least for taking our next birth in the higher planetary systems, creating a much brighter future for ourselves. Part of it is to also enlighten others, spreading the message so others can also benefit from it.

Chapter 13: Cosmic cycles

In the previous chapters, we studied the cycles of four eras that affect our planet. The cycles of Satya-yuga, Treta-yuga, Dwapara-yuga, and Kali-yuga go on cyclically like the seasons of the year.

Each complete cycle of four eras is called chatur-yuga, or divya-yuga, and it lasts for a total of 12,000 celestial years or 4.32 million years. It may seem like a very long period, but it's just a moment in the cosmic scale of time.

It's described, for example, that inhabitants of Indraloka live for 10,000 celestial years. From there, we can see that not only the living standard but also the perception of time on different planets of the cosmos differ. What's almost a complete universal cycle for us, is just a lifetime for such higher beings.

The cycle that affects the inhabitants of the higher planetary systems more directly is the Manvantara. To understand this next cycle we need to understand how our universe is managed.

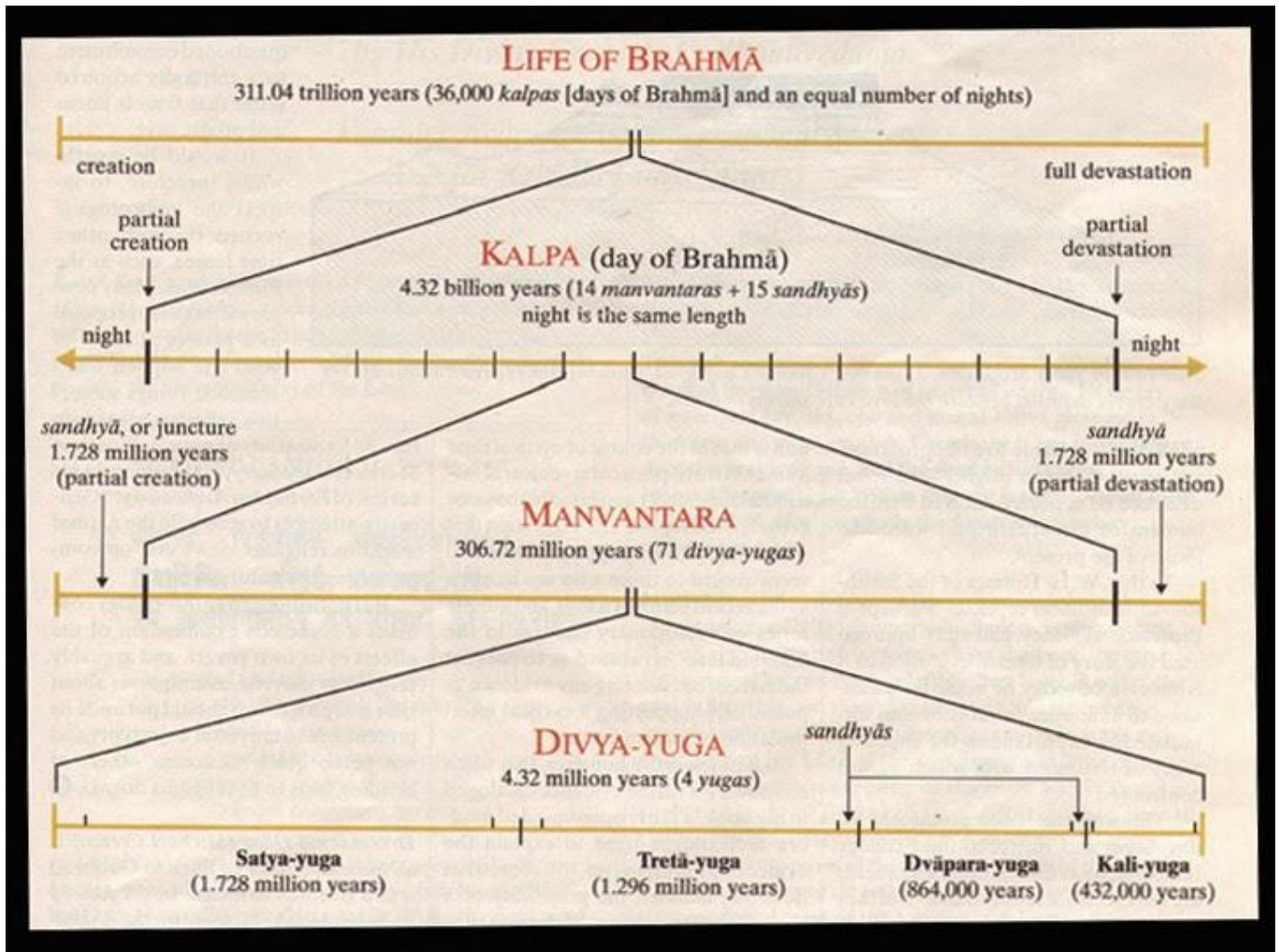
Although the modern understanding is that everything works by just the combination of physical laws, the Vedas explain that the different forces that control the universe are under the supervision of the Devas, like Indra, Surya, Vayu, etc. Although the term "Deva" is usually translated as "demigod", the Devas are also mortal beings. It's just that because of their high qualification they receive positions of trust where they become responsible for controlling the forces of nature. Their positions can be compared with those of ministers, who although regular human beings, receive the power and responsibility of looking over certain aspects of the

state. The names attributed to them are actually posts that are occupied at different times by different personalities. The current Indra, for example, is called Purandara, and the next will be Bali.

A manvantara is composed of 71 chatur-yugas and lasts for a total of 852,000 celestial years or 306,720,000 years in Jambudvipa. The events at the end of a Manvantara are much more dramatic than the events of the end of kali-yuga, resonating all over the cosmos.

All the Devas, led by Manu, live for the period of a single Manvantara. When the period is concluded, they pass away and a new generation of Devas has to take their places. During this time there are many disturbances in the universe and it takes some time until things get back on track. During this period, life on most planets ceases almost completely, and everything starts again with the advent of a new Manu, who receives the mission of repopulating the universe with all the different species of life. This period of transition is called Sandhya, and it lasts for 1.728 million years.

The next cosmic cycle is called a Kalpa, and it lasts for a total of 4.32 billion years. At the end of this period, all the gross planets and other structures of the universe are destroyed, and only the material elements remain. All the lower planets, as well as the terrestrial realms of Bhu-Mandala and Swargaloka, are completely destroyed. It's narrated in the Brhad-Bhagavatamrta that only the higher realms of Jana-Loka, Tapa-Loka, and Brahmaloaka remain. Even the powerful sages of Maharloka are forced to emigrate to Jana-Loka at this time, since their planetary system becomes too hot, even for them. After the end of the cycle, there is a long period of darkness that persists for another 4.32 billion years.



The Kalpa cycles correspond to the days and nights of Lord Brahma. During the 4.32 billion years of his day, the different cycles of the Universe go on, and the Universe remains dormant during the 4.32 billion years of his night.

Although very powerful, Brahma is a mortal being, just like us. However, due to his great qualification, he receives the responsibility of administering the Universe, like a king or president. It may look like a prestigious position, but in reality it's a quite difficult job. Most of us already have trouble maintaining a small family with a few children. Imagine having a whole Universe depending on you. It's narrated, for example, that long ago, Brahma fell asleep during his day, which triggered

a partial devastation of the Universe! This illustrates how things can go wrong with Brahma's slightest inattentiveness.

When the Universe is destroyed, all the souls who take part in it enter into a state of deep sleep. Just like we have to sleep at the end of a busy day, everyone has to sleep during this period, it's just that this slumber lasts much longer. When Brahma finally wakes up, he has to recreate the Universe from the material elements left from the previous cycle, allowing all the souls to get new bodies and start again their activities from where they stopped last time.

As part of this process, Brahma has to re-create all the planets, as well as repopulate the Universe, starting from the most elevated beings. One personality who has a pivotal role in this is Manu, who is in charge of creating the first representatives of each species on each planet, as well as supervising the universal affairs. Just like in the case of the Devas, "Manu" is not a name, but a post that is occupied by different personalities at different times. As mentioned, Manu works in cooperation with the demigods to maintain the order of the cosmos. Each team of a Manu and different demigods lives for a Manvantara, and there is a succession of 14 different teams during a Kalpa.

If you try to do the calculation, the numbers at first will not add up. Each Manvantara corresponds to 71 chatur-yugas, and thus 14 Manvantaras correspond to just 994 chatur-yugas instead of 1000. This difference corresponds to the duration of the initial creation, as well as the sandhyas at the end of each Manvantara. We can say that each Manvantara includes 71 complete cycles of chatur-yugas and there are a few other fragments left over, corresponding to the sandhyas. Including these fragments, the number adds up to exactly 4.32 billion years.

According to the Vedas, we are in the 28th Kali-yuga of the 7th manvantara of the current day of Brahma. In other words, we are close to the middle of his day. We can thus calculate that the Universe already went through about 2.281 billion years of this particular cycle of creation. It may sound like a very long time, but this is nothing compared to the total age of the Universe.

According to the Vedas, we are on the first day of the 51st year of the life of Brahma. This means that our Brahma already lived half of his life, which equals 18,000 cycles of creation and destruction. In total, our Universe is more than 155 trillion years old.

Brahma lives for a total of 311.04 trillion years, an extremely long time. During this period the universe goes through 36,000 cycles of creation and destruction, corresponding to the passage of his days and nights. After this period, Brahma finally reaches the end of his life. With his death, the universe is completely destroyed.

Here we come to another difference. We measure time by solar years, which have 365 days, but the Vedas inform us that years in all the high planetary systems have 360 days. This includes the realms of Bhuvan-Loka, Swarga-Loka, Mahar-Loka, Jana-Loka, Tapa-Loka and Brahma-Loka. We also have years with 360 days on our planet when the lunar calendar is used, which was done in many ancient cultures, including the Vedic cultures of India.

In any case, even the mind-boggling 311.04 trillion years of the life of Brahma are not the end. After an equally long period, the universe is created again by Maha-Visnu. There is a new Brahma and a new cycle of 311.04 trillion years starts. Again, all the different cycles repeat.



That's the secret behind these detailed descriptions of the future offered in the Vedas. Time in our plane works in a circular way, with the same general events repeating cyclically, just like a theatrical performance that is staged again and again, with the same script but different actors. The higher beings that transmitted this knowledge can see the circular nature of time, and they share this knowledge with us in the form of the Vedas, so we can understand how the cycles work and make the best out of it. We tend to think that our everyday events are so important, but they are just an imperceptible blip in the vast scale of universal affairs.

Chapter 14: How the cosmic dates given in the Vedas match modern science

One question I always had about the dates of the creation of our planet and other cosmic dates given in the Puranas is that they are quite close to the dates given in modern science, but the numbers are always about half of the results found by modern methods.

To put it in context, we should keep in mind that except for the Vedas, all the dates for the creation of the cosmos from ancient civilizations are radically different from modern science. Or no specific dates are given (like in Greek Mythology), or the creation of the Universe is dated to just a few thousand years back. Orthodox Christians in Russia believed the world was created in 5508 B.C., the Hebrew Calendar starts at 3760 B.C. (the date they believe the world was created), while the Mayas believed the world was created in 3641 B.C. As far as I know, the Vedas are the only ancient branch of knowledge that offers dates for the creation of the solar system, as well as dates for mass extinction events that are in the same scale of time as modern calculations.

Nowadays different scientific dating methods are used, such as radiometric dating with potassium-argon, rubidium-strontium, and uranium, sclerochronometry, cosmic background radiation, baryon acoustic oscillations, and so on. These different methods give slightly different dates for the creation of the Solar System and other events, but the dates are all close together. They all put the date of the creation of the Solar System at about 4.5 billion years ago. Similarly, different dating methods put the Permian–Triassic extinction at about 250 million years ago.

Although all scientific methods based on sense perception are fallible, when radically different methods lead to very similar results, the chance of all being completely wrong simultaneously becomes quite small. Science should not be followed blindly, but it can't be completely dismissed either.

The interesting point is that the Puranas mention both events. The creation of the solar system equals the creation at the beginning of the day of Brahma, while the Permian–Triassic extinction matches the description of the extinction that happened at the end of the last Manu (which led to the pastime of Matsya Avatara). However, the dates given by the Puranas to both are about half of the dates given by modern studies, at respectively 2.281 billion years and 125.576 million years. We can see that the numbers diverge by a factor of two.

The key to solving this mystery came with the work of Madhavendra Puri das and Siddharth Chhabra, published in the book "*The Big Bang and The Sages*". In their research, they discovered a commentary by Sridhar Swami (the original commentator of Srimad Bhagavatam) on Vishnu Purana (1.3.7) which led to the conclusion that a day in Bhu-Mandala equals two days of our time. This discovery was named "*Sridhara Swami's factor of two*".

All the dates given in the Puranas are given in accordance with the time in Bhu-Mandala, but time in other parts of the cosmos goes at different rates. Historically, Puranic scholars believe that time on our planet flows at the same rate as time in Bhu-Mandala, but the discovery that time here actually goes faster has several implications.

The first implication is that since two years here equals one year in Bhu-Mandala, we need to multiply all the cosmic dates given in the Puranas per two to get the actual dates of events according to the time on our planet. With this adjustment, we come to the staggering realization that the

dates given in the Puranas almost exactly match the dates given in modern science!

The date of the creation of the solar system given in the Puranas is thus 4.562 billion earthly years ago (2.281 billion x 2), and the date for the great mass extinction at the end of the reign of the last Manu began 251.15 million earthly years ago (107.575 million x 2). These numbers almost exactly match the 4.567 billion years and 251.9 million years given by modern studies.

As the dating processes used by modern researchers are not 100% accurate (especially in such large scales of time) and the methods and techniques can still be refined, it's quite possible that in the future they will come to numbers that will be even closer to the numbers given in the Puranas, proving that the knowledge of the Puranas is correct.

What is even more interesting is that when Sridhara Swami's factor of two is taken into account, the Puranas give the correct date for the beginning of the Universe. It's mentioned that we are living on the first day of the second half of the life of Brahma. In other words, Brahma already completed 50 years of his life and we are precisely on the first day after that.

As mentioned in Srimad Bhagavatam 3.11.34, as well as in other references, the life of Brahma is divided into two parardhas, each corresponding to 50 years of his life. What is more interesting, however, is that the Vayu Purana (2.38.240) mentions that all the constituents of the Universe last for a single parardha, and at the end of this period they are completely dissolved.

At the end of each day of Brahma, the universe is partially destroyed, but all the material elements, as well as the higher planets of the universe,

remain. However, at the end of the first half of his life complete destruction takes place, and all the planets, as well as the material elements, are fully disintegrated and the universe is created anew.

This is confirmed in the commentary of Srila Visvanatha Cakravarti Thakura on SB 3.11.37, where he mentions that all the high planetary systems, including Mahar-loka, Jana-loka, Tapa-loka and Satya-loka were dissolved at the end of the first half of Brahma's life, and all the sages living in these lokas entered the body of Maha-Vishnu and had to wait until the next creation at the beginning of the current day of Brahma. Still according to Srila Visvanatha Cakravarti Thakura, the current Kalpa is called Padma-kalpa, which indicates that in this Kalpa all the planetary systems are created anew from the material elements deposited in the steam of Brahma's lotus flower.

By this description, we can understand that such complete devastation happened at the end of the previous day of Brahma. After this event, there were 8.64 billion years (4.32 billion x 2) of the night of Brahma. After this, there were 616 million years of the Manvantara Sandhya (308 million x 2), plus 4.562 billion years (2.281 x 2) since the creation of our solar system. This brings the total since the total annihilation to 13.819 billion years of the time on our planet.

It happens that the most widespread estimation of the date of the beginning of the universe in scientific circles is 13.801 billion years ago. Again, we can see that the modern date almost perfectly matches the date given in the Puranas!

It's important to note that Brahma is not the direct creator of everything we see in the sky. It's mentioned that Brahma creates the solar system as well as a number of stars and planets. Considering the multidimensional nature of our Universe, it's difficult to understand how exactly the creation

of Brahma matches what we see when we look into the sky, but taking into consideration the staggering dimensions of the observable Universe, it would not be a huge leap of faith to speculate that most of our galaxy, as well as other galaxies we see in the sky, are other features of our universe created by material nature. If it's so, it's not strange that this work could go on while the Brahma of our universe was sleeping.

In the description given in the Puranas, the creation of Brahma is relatively small. Bhu-Mandala, which spreads horizontally inside the shell of the universe, has just 500 million yojanas (4 billion miles) in diameter, which roughly corresponds to the size of the solar system. The vertical dimension is more difficult to measure because there is the possibility that the length of the yojana may change as we go higher (following the change in the perception of distance of the inhabitants of higher planets) but if we would not take this into consideration, then the universe would also measure roughly 4 billion miles in the vertical dimension.

Outside of Brahma's creation, there are the seven coverings of the universe, composed of primordial matter. The first covering is composed of primordial earth, and is 10 times bigger than the universe itself, with a diameter of 5 billion yojanas. The second covering is composed of primordial water, and extends for 10 times the length of the first covering, a total of 50 billion yojanas. In this way, each of the other coverings (fire, air, sky, the total material energy, and false ego) is 10 times larger than the previous. According to the Brhad Bhagavatamrta, not only all these coverings are inhabited, but souls living there have access to a level of sense enjoyment that we can't even conceive. It's described that elevated souls have the opportunity of stopping on these different coverings and satisfying any remaining material desires before leaving for the transcendental realm.

When taking into account all the coverings, the size of the Vedic Universe is on a similar scale to what modern scientists believe to be the size of our Milky Way Galaxy. Apart from our tiny universe, there are other universes created by other Brahmas, as well as the vastness of the causal ocean, and all of this combined corresponds to just one-quarter of the total creation (the other three quarters being the spiritual planets).

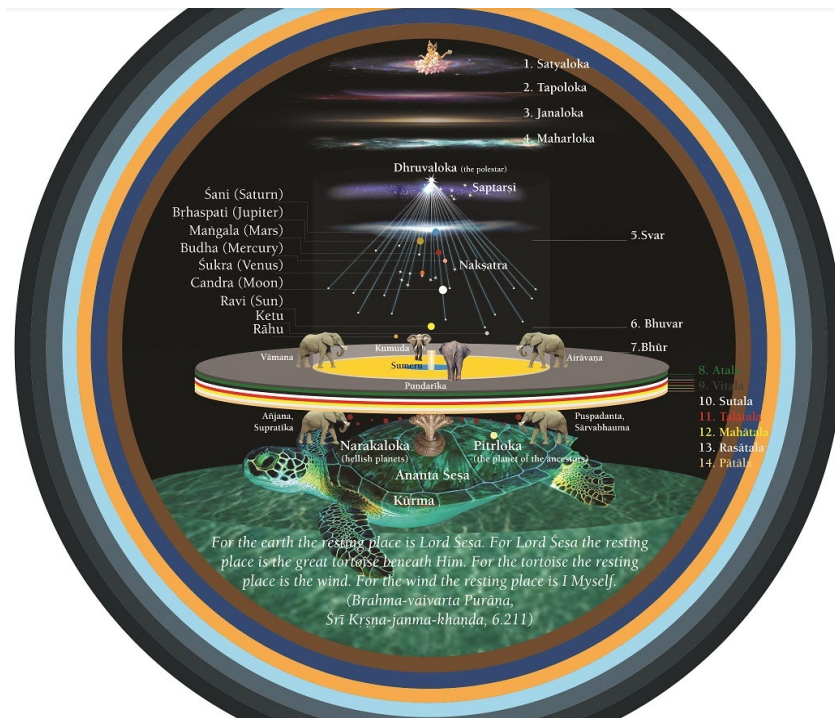
One may be inclined to conclude that the solar system is the creation of Brahma, the rest of the Milky Way galaxy corresponds to the seven coverings of the universe and other galaxies correspond to the creation of other Brahmas. While this would be a logical conclusion, it's probably not correct. Sadaputa Prabhu, for example, argues that we are not supposed to be able to see outside of the seven coverings, and that's also the conclusion of Srila Prabhupada on SB 5.21.11p.

It could very well be that the length of the yojana changes as we go up in the vertical dimension and thus our universe is practically infinite. In this case, it would not be very difficult to imagine that everything we see in the sky is part of our own universe, and the universes created by other Brahmas are completely separated from ours. The image below may help to understand this concept:



This image is an artistic representation of the modern understanding of the observable universe with our solar system in the middle and the rest of the structures of our Milky Way galaxy, as well as other galaxies positioned around it, with the distances increasing at a logarithmic scale. This means that everything becomes exponentially smaller as we move away from the center of the image. In this way, we have our solar system in the center, surrounded by the other stars of the Milky Way galaxy and by other galaxies.

We can notice that it's actually very similar to artistic representations of the Vedic Universe where the seven coverings are also depicted on a logarithmic scale. In reality, each one of the coverings is 10 times the circumference of the previous, with the first covering being 10 times the circumference of the Universe itself. However, to keep things in a manageable size, these illustrations depict a big Universe and narrow coverings around it, similar to the previous illustration. When we see from this perspective, these two views of the Universe are actually not so different:



Goloka Chart

Another point to consider is that in modern astronomy it's believed that all stars we see in the sky are similar in nature to our sun, emitting enormous quantities of light. All the distances are thus calculated under this assumption, which leads to the gigantic distances mentioned in modern observations.

The Vedas, however, insist that the stars we see in the sky are fundamentally different in nature from our sun, emitting rather modest amounts of light. For someone observing from Earth, it's very difficult to understand if it's one or the other, because all stars appear as just small dots of light in the sky. There is thus the possibility that our Universe may actually be much smaller than believed by modern science, with the stars being much smaller and much closer together. Even if it would not be the case in our gross dimension, we can't tell how things work in higher dimensions.

In the end, we just need to accept that the material cosmos is much more complex than we can conceive and there are many structures that we just

don't understand. The knowledge given in the Vedas helps us to understand the general structure of the Universe and presents us with an opportunity to find our way out of it, but we should not expect that we will ever be able to fully understand everything we can see in the sky.

In any case, the current cycle of creation of the universe started when Brahma went to sleep at the end of his previous day, a date that almost exactly matches the estimates of modern studies.

The Puranas also describe the process of destruction of our solar system, which will happen in a little over 4 billion years (one can actually calculate the exact number based on the information given, but I prefer to give an approximate number since we don't understand exactly for how long these events take place, but, in any case, the destruction starts some time before the end of the day of Brahma and is concluded by the time he goes to sleep).

It's described (Vayu Purana 2.38) that the sun will become red, like an incandescent ball of iron and its size will increase seven times, scorching Bhu-Mandala and the heavenly planetary systems, destroying all forms of life in these places. Only great sages living in the planetary systems of Maharloka and upwards will survive this devastation and continue living during the night of Brahma.

This description also matches the current theory that our sun will become a red giant in the future, destroying most of the planets in our solar system. Modern estimates calculate that this process will start in between 3.5 and 5 billion years. Again, we can see that the date given in the Puranas fits this range given by modern studies.

The Vayu Purana also mentions that after this process the sun will disintegrate, ejecting gigantic luminous clouds in all directions. This also

matches the modern theory that after about 150 million years of the red giant phase the sun will explode into a large planetary nebula, ejecting clouds of hot plasma in all directions and becoming a white dwarf. Again, this matches the description of darkness during the night of Brahma.

The main difference between modern theories and the Puranas is that modern theories predict that the universe will continue indefinitely until the sun and all stars exhaust their fuel and the universe just becomes a dark and cold wasteland. The Puranas give a more optimistic revelation, showing how not only the stars will continue shining for a much longer period (311,032 trillion earthly years, until the next complete devastation), but our solar system will be re-created at the start of the next day of Brahma.

All these numbers and details are very strong proof of the superior nature of the knowledge of the Vedas. How could it be that sages living in the forest could come to numbers so close to modern estimates without access to any kind of modern equipment? The only possible explanation is that the knowledge of the Puranas was received from superior sources.

Chapter 15: Are we living in a different dimension than people from other eras?

The Universe described in the Puranas is clearly multi-dimensional. It's easy to understand that we don't live in the same dimension as the demigods for example. The moon is described as a paradisiacal place, where the inhabitants live extremely long lives in great opulence, but when we go there in our rockets we see only rocks and dust.

However, one interesting ramification of the idea that two days on our planet equals one day in Jambudvipa is that since time flows at a faster rate for us, it means we are not exactly living in Bhu-Mandala, but in a gross representation of it, that is lower in the cosmical hierarchy. In other words, we are currently living in a lower dimension than people from previous ages.

It's important to remember in this connection that time flows at a faster rate in the lower planetary systems and at a slower rate in the higher planetary systems. If time is flowing at a faster rate for us, it proves we are actually living in a lower position relative to Bhu-Mandala in the scale based on levels of consciousness described in the Puranas. This also helps to explain many other incongruences we can find between the world we can observe and the descriptions of the scriptures.

For example, based on the descriptions, we know for sure that people of previous ages lived in Jambudvipa. There are many descriptions of the geographical features of their land. The trouble is that these descriptions don't match our current geography. It's mentioned that India was 72,000

miles (9000 yojanas) from north to south, and the Himalayas were 80,000 miles high, for example.

People from Vedic times were not stupid, they were used to walking from north to south of India and many would climb the Himalayas. They would not take the current 3,214 km from one extreme to the other of India for 72,000 miles, nor the 8,848 meters of the Himalayas for 80,000 miles. The only explanation is that they indeed lived in a higher dimension where things are indeed bigger.

Something similar happens with the moon. The celestial moon is described as being much further away and much bigger. However, the four-dimensional projection of the moon we can see in the sky has a diameter of just 3,474 km.

Another point is that the population in previous eras was much bigger than nowadays. It's mentioned that King Citraketu had 10,000,000 wives, all of them princesses. If there were 10 million princesses at that time, the total population must have been in the trillions. It would not be possible for such a huge population to live on the same planet we live on, but if in their dimension the earth is so much bigger, as described, then it would be perfectly feasible.

It's also described that people in previous ages were much taller. Some references speak about people being 6+ meters tall. If they were living in the same dimension as us, it would be difficult to miss all the bones and other artifacts left by such giants. It would be all over the place. However, that's not what is found in archeological excavations. Many bones are found, but these are bones from animals and primates, not from human beings similar to us. Even in Kuruksetra, where millions of people died and so many weapons were fired, very little is found.

This idea of advanced human beings from previous ages living in a different dimension also matches other descriptions from the Puranas. It's mentioned, for example, that there are currently a number of sages from previous eras living in Badarikasrama, including Vyasadeva and potentially even Uddhava. However, no one was ever able to find such a place. It's usually concluded that this is so because these sages live in a subtle dimension, and only qualified persons can contact them (like in the case of Srila Madvacarya, who was able to personally meet Srila Vyasadeva).



If such sages from previous ages live in a subtle dimension, would it not make sense to believe that other people like the Pandavas also similarly lived in a subtle dimension? Arjuna went to Swargaloka after all, how could a human being with a gross body do so? If the Pandavas had subtle bodies, and they were interacting with all kinds of people, it would imply that most people at their time lived in a similar subtle dimension.

By all these different details we can speculate that we currently live in a gross representation of Bharata Varsa, which is much smaller than the "real" Bharata Varsa where people lived in previous eras. Because we live in

a gross dimension, we don't find bones and other artifacts when we dig the ground and time flows at a faster rate for us. We can't access (or even see) the other parts of Jambudvipa, and so on.

It's worth mentioning that there is little archeological evidence of advanced human civilizations in the distant past on our planet. If people from previous ages were living in a different dimension, it's perfectly feasible that our gross planet was previously inhabited only by animals and primitive human beings who lived in the same gross dimension we do.

When we consider all these details, the explanations given in the Puranas make perfect sense, both in the light of our sense perception and modern studies. As mentioned, this is proof of the divine nature of Vedic knowledge.

Chapter 16: The journey of a soul through the Universe

In the previous chapters, we studied the structure of the Universe, as well as the concept of space and time according to the Vedas.

This chapter is dedicated to describing the journey of a soul through the Universe. This is our story: how we came to the place we are now, and where we can go from here.

The model of the universe described in the Puranas is focused on describing the different planetary systems, giving us a map of the different realms of the cosmos and the standard of consciousness one has to develop to access each of them. Although described as disks, these different planetary systems are more like different levels of consciousness that one has access to according to his purity and advancement in spiritual knowledge.

In other words, the Vedas give us a map that helps us to understand where we are, and what is the path to reach the desired destination. The material universe is incredibly big and complex, and a soul can follow innumerable different paths, transmigrating from one body to the next in the wheel of samsara. By understanding this process, we can chalk a brighter path for ourselves, and help others. The secret to understanding this explanation is to not try to match these different locations with different stars and galaxies, but to try to understand the different levels of consciousness of the inhabitants there.

We understand that we are not the body, nor the mind, but a spiritual particle of pure consciousness, who is independent of the body. Just as one may change his clothes, abandoning the previous ones that are old or damaged, a soul changes to another body when it becomes too old or damaged. When a soul abandons one particular body, we call it “death”, and when he accepts a new body, we call it “birth”. This is a cycle that is going on for a very long time.

The Vedas explain that there are 8,400,000 forms of life in this universe, amongst which there are 400,000 species of intelligent life, spread through different planets. Different from the modern scientific definition, which classifies species according to their capacity of generating viable offspring, the species described in the Vedas describe different levels of consciousness. A dog living on a different planet may have a different type of body, and thus not be able to mate with a she-dog from the Earth, but still, they are considered one species according to the Vedas, since they have the same level of consciousness.

The souls transmigrate through these different species of life according to their consciousness, actions, and desires in the cycle of samsara. But when did this start? When is it going to end? How does the spiritual soul enter into this material universe, and how can he leave?

It's explained that every soul has an eternal relationship with Krsna, a spiritual identity that is eternal and unbreakable. This identity is the true ego or the real identity of the soul. How the soul can go from this position of eternal bliss to the perpetual struggle in the material world is a mystery. However, when this happens, the journey of the soul inside the material realm starts in the Karana Ocean, on the border between the spiritual plane and the material energy. Just like to enter a country one has to pass through its border, similarly, the Karana ocean is a border between the two worlds, a borderline position between the spiritual and the material.

The Karana ocean contains the sum of the material energy but at an unmanifested state. One way to see it is as an ocean as it is described in poetic language. Another is as a cloud, an unmanifested mass that covers part of the spiritual sky, and yet another way to see it is as a river, that acts as a frontier between the spiritual and material worlds. The same thing is described in these three different ways in the scriptures, according to the idea being emphasized.

To create the material universes, Krsna expands Himself as Maha-Vishnu, Who lays down in the Karana ocean, creating the material universes and impregnating the material energy with the innumerable souls who desire to take part in the material creation.

In the Karana ocean, the soul is still in an almost pure state and enjoys a degree of spiritual bliss. However, desiring variety the soul assumes the covering of the false ego, which brings him to material designations. False ego means to accept an identity that is not one's original spiritual position. Under the influence of the false ego, the soul accepts the identity of human beings, demigods, animals, and other species.

The false ego leads to the other coverings of the soul: intelligence and mind (that form the subtle body), the senses, and finally the gross body.

The Karana ocean is the ultimate destination for followers of the sunyavada doctrine (Buddhists), who call it Nirvana. This is a place where one is free from material duality but doesn't have access to the varieties of the spiritual kingdom. Souls can stay for a long time there, in perfect peace, but the desire for variety makes them eventually fall into the material universes.

Descending from an almost pure state, the soul takes his first birth in Satyaloka (or Brahmaloaka), the most elevated planet inside this material

universe. There he lives a very long life, full of knowledge and free of miseries. In fact, it's described that the only suffering the inhabitants living there experience is compassion for the inhabitants of the lower planets, who don't enjoy the same standard of living. Due to this, some of these inhabitants take birth on the lower planets, as philosophers and spiritual teachers to share their knowledge and thus help others to progress on the spiritual path.

The point is that although very long, the life of the inhabitants of Brahmaloka is limited. Time ticks for them the same way it ticks for us. When the time comes, they need to move out. The problem is that being Brahmaloka the most elevated planet in the universe, there are only two possibilities: To get out, and go back to the spiritual realm, or to go down, to some of the lower planets.

The souls who become further entangled with matter go down on the second path and take birth in one of the upper planetary systems situated directly below Brahmaloka: Tapoloka, Janaloka, or Maharloka. These are subtle planetary systems where high pious souls live. The ones that are very pure and attracted to meditation live in the first two, while the ones that are attracted to discipline and pious deeds live in the third.

Again, the soul has the choice of going up or down. The ones that are serious about self-realization may attain liberation and go back to the spiritual planets, or even take another birth in Brahmaloka, but others that become yet more entangled with matter go down, taking birth in Swargaloka, the celestial planets.

Pious souls live on these planets in great delight, having the opportunity of satisfying their sensual desires. The women there are called apsaras, and are just like angels, with exquisite beauty and irresistible feminine charms, while the men are extremely strong, intelligent, and handsome. Being

pious, people are good-natured and innocent, there is very little anger or envy there. This planetary system matches very well the descriptions of paradise we have in other religious scriptures.

A common characteristic of all the upper planets, down to Swargaloka, is that the inhabitants there live a completely natural lifestyle, in harmony with nature. They have mystic perfections that allow them to manipulate matter at will, and thus they don't require machines.

Each of the celestial planets in swargaloka is presided by a particular demigod, who apart from taking part in the maintenance of the Universe, maintains the inhabitants of his own planet.

The problem with Swargaloka is that because of the practically unlimited opportunity for sense gratification, most souls use their time there to simply enjoy heavenly delights instead of pursuing the path of self-realization. Therefore, after a long life there (10,000 celestial years, or 3,600,000 years of our time) the soul falls again.

The ones who have a little bit of pious credit left, take a last birth in heavenly conditions in one of the earthly kingdoms of Bhu-mandala. The inhabitants there have lower standards of body, but they still enjoy a comfortable living, not as good as the inhabitants of Swargaloka but still quite comfortable.

These celestial locations are just like vacation resorts where the ones that are falling from higher realms, or who performed pious deeds in the past are allowed to stay for some time to enjoy their remaining good karma. Instead of dollars or euros, the stay there is paid for by one's pious deeds. However, just as one has to leave a resort when his money finishes, one has to leave these heavenly locations when his past merits are exhausted.

Having exhausted his pious credits, the soul takes his next birth on this earthly planet. It's described that the souls fall to this realm with the rain. They get thus transferred to different plants that grow grains. Taking shelter in these grains, the soul is transferred to the semen of a man, and finally to a fetus when there is conception. This is the place we are now.

Planet Earth or Bharatha Varsa is one of the planets in the intermediary system. This is a place where the inhabitants experience a mixture of conditions from higher and lower planets. There is heat, but there is also cold. There is happiness, but there is also suffering. There is goodness, but also cruelty. There is love, and there is hate. There is peace, but there is also war. This is a world of extremes, where we have contact with both good and bad. A place of duality.

The soul is originally pure, but as one goes downwards inside the material universe he becomes progressively more involved with lower qualities, like lust, anger, and greed. This degrades one's consciousness and makes one go progressively deep in the sequence of different planetary systems. This continues to a certain point, where he again comes in contact with spiritual knowledge, be it through a book, a friend, or a spiritual teacher, and decides to start his way back, this time progressing back to higher levels of consciousness.

Our planet is described in the Vedas as Karma-ksetra, a place where souls who exhaust their past karma go to execute different activities and thus create a new baggage of Karma which will determine their next destination. In other words, this planet is a kind of a cosmic crossroads, and the decisions we make here are going to have long-lasting implications.

Being a place where we have a difficult life, where we need to work very hard for any small amount of material success, this planet is considered an

ideal place to cultivate spiritual knowledge and follow the path of self-realization.

Different from the heavenly planets, where there is too much distraction, from the Earth a soul can go to any other material planet (from the heavenly Swargaloka all the way to Brahmaloaka, the topmost planet of the material universe), or attain liberation, going back home, and re-attaining his original position in the spiritual planets.

However, there is also a great danger: the ones that misuse the opportunity become more and more materialistic. They continue the way down, going thus to the lower planets, where people are just after material comforts and there is little opportunity for self-realization. This part of the Universe is described in the Srimad Bhagavatam as a dark hole because once one enters there, it's difficult to come out.

The lower planets are subterranean realms where the natural light of the sun doesn't enter. The inhabitants live underground on a perpetual night, depending on different arrangements of artificial lights. Materialists who are very pious have the opportunity of taking birth in the Bila-Svarga, heavenly lower planets, where the inhabitants live in comfort, surrounded by material facilities, in cities created by the great architect Maya Danava. In terms of standard of living, the inhabitants of these planets don't live much differently from the inhabitants of Swargaloka. The main difference is that in Swargaloka the inhabitants are God-conscious and thus have the opportunity of progressing to higher realms, be it directly or after a stop on Earth. The inhabitants of the lower heavenly planets, however, are atheists. The law of Karma doesn't discriminate between the two classes, and thus the demons can enjoy a similar standard of living compared to the demigods, as long as they remain pious. The problem is that without good association, they tend to gradually lose their piety, and thus sink into the lower levels.

Materialists that are less pious take birth at the lower levels. These are technologically advanced realms and, different from the Bila-Svarga, there is a lot of anxiety in these places, with lots of pressure and competition. Not all have the same opportunities and everyone struggles to be on top of the other. It's a standard of life that is similar to the way people live in most big cities nowadays. In these realms, the inhabitants live completely artificial lives, disconnected from nature. On some of these planets, people are very much addicted to sex, and the ones that fall there are exploited for this purpose. Not exactly a good place to go, despite the material facilities.

Materialists who are impious, and too much affected by lower qualities take birth on the lowest planets. There's where things start to become quite dark. These planets offer progressively poorer living standards, more anxiety, and less peace of mind. The mentality of the inhabitants is progressively lower, and more lust, anger, and violence are present. The lowest of these planets are dark places, where gigantic intelligent snakes live in holes. Envious and violent, they live disturbed lives, where the weaker serpents fear the stronger and they all fear Garuda who regularly devours them.

Finally, there are the hellish planets, places where people who commit serious crimes go specifically to pay for the violence they committed to other living beings. Souls who arrive there listen while all their wrongdoings are described by Chandragupta, a servant of Yamaraja, and are sentenced to different levels of punishment according to the severity of their crimes.

It's described that one who lives by killing animals, for example, has his body pierced by the horns and teeth of the same animals he killed, and the ones who had lives centered around promiscuous sexual relationships have to embrace red-hot metal forms of the opposite sex. Persons who

imprison and torture animals have to live in caves where they are tortured by hellish beings. It's not a place one would like to go.

The hellish planets are at the bottom of the universe. From there, there is no further way down. A soul who reaches this level has, after paying for his crimes, the opportunity to again take birth on this Earth or other intermediary planet, usually as a plant or animal, and from there slowly progress in the karmic evolutive process until he again can take birth as a human being, a position where he again has the choice of going up or going down.

To take birth as a human being on Earth is considered very fortunate, because here one has the chance of meeting spiritual teachers who propagate transcendental knowledge, and thus start his way up, back to the spiritual realm.

However, it's easier to make the wrong choices and follow the path of materialism and sense indulgence, instead of taking the path of self-realization, which demands discipline. That's why most souls end up staying in the material sphere for a very long time, going up and down in the cycle of samsara.

It's like investing money. One who has a certain capital, may invest his money and multiply it by making the right choices. This is going to bring him yet more money, which will multiply his investment opportunities, up to the point he may become a billionaire. However, one who just spends his money on a decadent life will eventually spend everything. He may then keep his artificial living standard for some more time by making debts, but eventually, his credit will dry out and he will not have other alternatives apart from doing hard work to pay his debts, and from there start again from the bottom.

Similarly, in our current life, we have the choice of cultivating spiritual knowledge and self-control and thus create a brilliant path for ourselves by following the spiritual path, which will allow us to take birth on the higher planets or to attain liberation, or we may surrender to carnal desires and abuse the opportunity, creating a path that may not be so pleasant. That's the beauty, and the danger, of human life.

In the Bhagavad-Gita, it is mentioned that *"That which in the beginning may be just like poison but at the end is just like nectar and which awakens one to self-realization is said to be happiness in the mode of goodness."*

The material path involves instant gratification of one's senses, thus it is a path that is pleasurable in the beginning, but painful in the long run. The path of progress on the other hand involves discipline and restraint. One who is studying to pass a test and enter a good university has to renounce many things he would otherwise want to do, and instead spend days and nights immersed in his studies. However, this allows him to achieve a much better position in the future. Similarly, the path of self-realization involves working on our bad habits, vices, and lower qualities, therefore it is a path that may present certain challenges in the beginning, but will bring us to the most sublime results in the end.

Chapter 17: Prabhupada explains the material Universe

In the Sri Isopanisad, mantra 14, Srila Prabhupada gives a simple and concise explanation of the workings of the material universe that summarizes many aspects of the universe I tried to explain in the previous chapters.

"From the Visnu Purana (6.7.61) we receive the following information:

*visnu-saktih para prokta
ksetrajñakhya tatha para
avidya-karma-samjñanya
trtiya saktir isyate*

Lord Visnu, the Personality of Godhead, possesses different energies, known as para (superior) and apara (inferior). The living entities belong to the superior energy. The material energy, in which we are presently entangled, is the inferior energy. The material creation is made possible by this energy, which covers the living entities with ignorance (avidya) and induces them to perform fruitive activities. Yet there is another part of the Lord's superior energy that is different from both this material, inferior energy and the living entities. That superior energy constitutes the eternal, deathless abode of the Lord. This is confirmed in the Bhagavad-gita (8.20):

*paras tasmāt tu bhavo 'nyo
'vyakto 'vyaktat sanatanah*

*yah sa sarvesu bhutesu
nasyatsu na vinasyati*

All the material planets – upper, lower and intermediate, including the sun, moon and Venus – are scattered throughout the universe. These planets exist only during the lifetime of Brahma. Some lower planets, however, are vanquished after the end of one day of Brahma and are again created during the next day of Brahma. On the upper planets, time is calculated differently. One of our years is equal to only twenty-four hours, or one day and night, on many of the upper planets. The four ages of earth (Satya, Treta, Dvapara and Kali) last only twelve thousand years according to the time scale of the upper planets. Such a length of time multiplied by one thousand constitutes one day of Brahma, and one night of Brahma is the same. Such days and nights accumulate into months and years, and Brahma lives for one hundred such years. At the end of Brahma's life, the complete universal manifestation is vanquished.

Those living beings who reside on higher planets like the sun and the moon, as well as those on Martyaloka, this earth planet, and also those who live on lower planets – all are merged into the waters of devastation during the night of Brahma. During this time no living beings or species remain manifest, although spiritually they continue to exist. This unmanifested stage is called avyakta. Again, when the entire universe is vanquished at the end of Brahma's lifetime, there is another avyakta state. But beyond these two unmanifested states is another unmanifested state, the spiritual atmosphere, or nature. There are a great number of spiritual planets in this atmosphere, and these planets exist eternally, even when all the planets within this material universe are vanquished at the end of Brahma's life. There are many material universes, each under the jurisdiction of a Brahma, and this cosmic manifestation within the jurisdiction of the various

Brahmās is but a display of one fourth of the energy of the Lord (ekapad-vibhuti). This is the inferior energy. Beyond the jurisdiction of Brahma is the spiritual nature, which is called tripad-vibhuti, three fourths of the Lord's energy. This is the superior energy, or para-prakṛti."

This is a lot of information condensed into just three paragraphs. Let's try to break it down into simple ideas:

- 1- Kṛṣṇa possesses two energies: The superior energy (para) and the inferior energy (apara). The souls are part of the superior energy, and the material nature is part of the inferior energy.
- 2- The material energy covers the souls with ignorance (avidya), and this ignorance makes the souls acquire material bodies and perform different material activities, forgetting their original spiritual nature.
- 3- Apart from the souls, there is another part of Kṛṣṇa's superior energy, which constitutes the spiritual universe. Kṛṣṇa's energy has thus three main components: The spiritual creation, the material creation, and the souls, who can choose between being part of the spiritual or material creation.
- 4- The material universes are repeatedly created and destroyed, but the spiritual creation is eternal. In the material universes there is repeated birth and death, but in the spiritual creation there is no death.
- 5- There are many planets scattered throughout the universe. These planets exist only during the lifetime of Brahma. When Brahma dies, all the planets of the universe are destroyed.
- 6- At the end of each day of Brahma, lower planets are destroyed (up to Swargaloka) and only the higher planets (Maharloka and higher) remain.

The planets that are destroyed are created again on the next day of Brahma.

7- Time on the upper planets is calculated differently from our planet. One of our years is equal to just twenty-four hours (one day and night), on many of the upper planets. Similarly, the four ages of the earth (Satya, Treta, Dvapara, and Kali) last only twelve thousand years according to the time scale of the upper planets.

8- One day of Brahma (12 hours) corresponds to 1,000 sequences of Satya, Treta, Dvapara, and Kali-Yugas. There is also the night of Brahma (the other 12 hours of his day) that lasts for the same period. Such days and nights accumulate into months and years, and Brahma lives for one hundred such years. At the end of Brahma's life, the complete universal manifestation is vanquished.

9- During the night of Brahma, all the living beings from the planets that are destroyed, such as this planet, the sun, and the moon (which are part of Swargaloka) as well as the lower planets, are merged into the waters of devastation during the night of Brahma.

10- During this period, these living entities remain materially unmanifest, although spiritually they continue to exist. This unmanifested stage is called avyakta and lasts for the period of the night of Brahma.

11- When Brahma finally dies, there is another avyakta state, when all the living beings who didn't achieve liberation are merged into the body of Maha-Vishnu and have to wait for a very long period until a new cycle of creation starts.

12- Both the materially unmanifested state that occurs at the end of the day of Brahma, as well as at the end of his life are called avyakta. There is

another avyakta that is the spiritual world. There, all beings are also materially unmanifested, but there they are spiritually active.

13- In the spiritual world (the spiritual atmosphere, or nature) there are a great number of spiritual planets that exist eternally.

14- All the planets in the spiritual sphere continue to exist even at the end of Brahma's life. They are not affected by the cycles of creation and destruction that happen in the material universes.

15- There are many material universes, each one under the jurisdiction of a particular Brahma. The combination of all the different material universes constitutes just one-quarter of the energy of the Lord (ekapad-vibhuti). This is the inferior energy.

16- Beyond this inferior material energy there is the spiritual nature, which is called tripad-vibhuti, three-quarters of the Lord's energy. This is the superior energy or para-prakrti.

Appendix 1: Why space exploration is a waste of time and money

Nowadays much is spoken about manned missions to Mars, and maybe even a future colony on the red planet. Authors of science fiction have been pushing the idea of space exploration for a long time, and the most recent push is the idea of creating a colony on Mars.

The idea of visiting other places of the cosmos is a natural inclination. Srila Prabhupada explains that in his natural condition, the soul is free to wander around the spiritual and material universes. One example is Narada Muni, who, being a liberated soul, is completely free to travel as he likes. To be jailed on a particular planet is thus an unnatural condition for the soul. The question is that there is a proper way to travel through the universe. Without following the rules one can't attain a good result.

In 1960 Srila Prabhupada wrote his famous book *Easy Journey to Other Planets*, explaining the idea of space exploration through subtle means. That's the way to visit other planets: to purify our consciousness, so in our next life we can take our next birth there, receiving a body adapted to live in their environment. If one tries to force his entrance by mechanical means, he will end up floating in space without shelter like Trishanku. That's precisely the mistake of modern astronauts.

When I was small, I used to read books by Isaac Asimov. He wrote many stories about how the advancement of technology would allow humanity to explore and colonize space in just a few decades. It was not just me. Since the 1950s, generations grew up believing that humanity would soon be able to colonize space. Many books were written on the subject but it never

really happened. Apart from a few manned missions to our closest satellite and the construction of a small space station in lower orbit, not much happened. It doesn't seem we are much closer to exploring space than we were in the 1960s.

Nasa was selling this idea for a long time, and now we have private companies selling it. Elon Musk has been promoting the idea of building a self-sustainable colony on Mars with 1.000.000 inhabitants in the next few decades. It looks very amazing, but it will never work. Why?

The first problem with colonizing space is that we don't have access to the higher dimensions where more evolved beings live. According to the Vedas, there are living beings living comfortably in most places of the Universe, but they have bodies adapted to the conditions there.

We have bodies adapted to the environment we find on our planet, and it's very difficult for us to live anywhere else. Not only is it very difficult to leave our planet, due to gravity, but even when we finally get into space we see only inhospitable environments, extremes of temperature, and other hazards. Unless one is capable of elevating his consciousness to gain access to the higher dimensions of the universe, he will find only dangers and misery outside our planet.

Apart from the philosophical aspects of the celestial status of the different planets of our universe and the existence of different dimensions, there is another very simple, logical, and down-to-earth question: Economics. Why don't we build colonies at the bottom of the ocean? It's not because it's not technically possible, but it's just because it is too expensive.

Science fiction novels are always based on leaps of faith. Some new revolutionary technology, like an inexhaustible source of fuel, a cheap way to lift materials to space, or some easy way to build giant space stations

with materials produced from thin air. However, when one examines the real challenges of sending materials to space and creating liveable conditions for humans in space or on other planets one sees that although it is not an unsolvable problem, it is just too problematic and too expensive.

The International Space Station, which started being built in 1993, cost a total of about 160 billion dollars. And this is just for a very small station, built-in low orbit, very close to our planet. The same station built in an orbit around Mars, for example, would cost several times more. If it would be built on the surface of the red planet, it would cost even more.

Some speculate that the cost of spaceships and space stations can drop dramatically with the economy of scale. According to these sources, if we would start producing them in mass they could cost as little as a commercial jet. Well, not really. Maybe one could build a space probe at the cost of a small plane, but the real problem is the enormous amount of fuel necessary to put it into space and transport it to distant planets. The cost of the probe may go down if one mass-produces it, but the fuel to put it in orbit, as well as the rockets and other disposable materials will not become any less expensive.

The Mars Curiosity Rover, for example, weighs about 889 kilos. It did cost 2.47 billion dollars to send it to Mars, which equals 2.78 million dollars per kilogram. Just imagine, if you would be living on Mars and your mother would want to send you a small package with some presents, it would cost 2.78 million dollars to send it there!

After solving the initial problem of sending a few humans to Mars, together with some small habitat and supplies, another problem would be how to maintain them there.

Imagine the amount of food, water, clothes, and other products you use during your life. An average human eats about 35 tons of food during his life. He also needs water, clothes, and other supplies. To live in an inhospitable environment like Mars one would also need space suits, radiation shields, sources of energy, vehicles, and many specialized tools, apart from the habitat he lives on.

Unfortunately, there is no Walmart or Amazon on Mars, therefore all of this would need to be sent from earth, at a cost of 2.78 million dollars per kg! Most of us don't make so much money in our entire lifetimes. How many people on the planet would be rich enough to live on Mars at such a cost? I don't think many. The cost of maintaining a small colony on Mars would be on the scale of trillions of dollars.

Worse than that: colonies in space will always have to be supplied from the earth at an exorbitant cost. One may be able to recycle water and produce some food on Mars by bringing some soil and tools from Earth. It may also be possible to produce some water from gasses in the atmosphere or mine it from underground sources, but what about everything else? How to produce a computer or a hover on Mars? These things will always have to be brought from Earth at an exorbitant cost. The colony would never be self-sufficient and as soon as the interest in it would start to wane people would not want to continue spending so much money on it and the project would have to be abandoned. What would happen to the people struggling to live there at this point would be a good question.

Apart from that, there is another problem: Life in space will always be miserable. Just like in the ISS, people living in space or in space colonies will always be forced to live in cramped and uncomfortable conditions, drinking their own urine in the form of recycled water, cultivating vegetables in their own stool, suffering the harmful effects of solar

radiation and other hazards and living in constant alert in inhospitable conditions.

The record of permanence in space was set in 2016 by Valery Polyakov, who spent a total of 437 days in the ISS. However, the environment is so harsh that most astronauts are not capable of staying nearly as much in space, and these are people who are rigorously selected and trained for this kind of mission. To think that a normal person would be able to live all his life in such harsh conditions is a great leap of faith. Even if it would be possible, only a crazy fellow would voluntarily choose to do so.

Human bodies are just not made to survive in outer space. We have bodies that are capable of living in the environment we were made to live in, on our own planet. A human being who would try to live on Mars or any other planet would just condemn himself to a very short and miserable life.

The only viable process to travel in outer space and visit other planets is to elevate one's consciousness and use the appropriate process to acquire a suitable type of body to live there. One who does so will attain a body capable of not only living in a different atmosphere but able to experience the environment and interact with the inhabitants there. This is what it really means to travel to other planets. Compared to that, the harsh conditions in cramped, unsafe space probes constructed at an exorbitant cost look very childish.

Appendix 2: Satya, Treta, Dwapara and Kali, or Satya, Dwapara, Treta and Kali?

Everyone knows that there are four eras: Satya-Yuga, Treta-Yuga, Dwapara-Yuga and Kali-Yuga.

We also know that Satya-Yuga lasts for 1,728,000 years and the process for self-realization is meditation, Treta-Yuga lasts 1,296,000 years and the process of self-realization are fire sacrifices, Dwapara-Yuga lasts for 864,000 years and the Dharma is elaborate temple worship, and finally, there are the 432,000 years Kali-Yuga, during which the process for self-realization is to chant the holy names.

Right? Well, not so fast. In Srimad Bhagavatam 1.4.14 we find an enigmatic purport by Srila Prabhupada:

"There is a chronological order of the four millenniums, namely Satya, Dvapara, Treta and Kali. But sometimes there is overlapping. During the regime of Vaivasvata Manu, there was an overlapping of the twenty-eighth round of the four millenniums, and the third millennium appeared prior to the second. In that particular millennium, Lord Sri Krsna also descends, and because of this there was some particular alteration."

At first, this purport doesn't appear to make much sense. Prabhupada himself tells us in numerous other passages that the sequence of eras is Satya, Treta, Dwapara, and Kali, and only in this purport does he appear to tell us something different. However, if we go to the verse itself, the

meaning is unequivocal: "*Suta Gosvami said: When the second millennium overlapped the third, the great sage [Vyasadeva] was born to Parasara in the womb of Satyavati, the daughter of Vasu.*"

Both the verse and the purport are speaking about the change in the order of the millenniums. We know that in this present Divya-Yuga we are, the order was indeed Satya, Treta, Dwapara, and Kali, but this verse and purport tell us that it's not always like that.

This is consistent with other references from the Srimad Bhagavatam itself (like 7.14.39) and passages from other Puranas. In most references, we find the order of the yugas mentioned as Satya, Treta, Dwapara, and Kali, but there are a few references, like this one, mentioning that actually, the usual order is Satya, Dwapara, Treta, and Kali, and sometimes (the special Divya-Yuga where Lord Krsna appears) the order is changed to the familiar Satya, Treta, Dwapara, and Kali. How does it work?

These references suggest that the normal order of the yugas is Satya, Dvapara, Treta, and Kali. Everyone agrees that Satya-Yuga lasts for 1,728,000 years and the process for self-realization is meditation, up to here there is nothing to be confused about. The confusing part is that normally the next is Dwapara-Yuga (and not Treta), which lasts for 1,296,000 years and where the process of self-realization are fire sacrifices. The third is Treta-Yuga, which lasts for 864,000 years and where the process of self-realization is temple worship, and finally, Kali-Yuga, where the process is the chanting of the holy names.

However, in the special Divya-Yuga when Krsna appears (the one we are in) the order changes and the order becomes Satya, Treta, Dvapara, and Kali. In this particular Divya-Yuga, the order of the yugas is switched. Treta-Yuga comes first, and Dwapara-Yuga comes after it.

In this special Divya-Yuga, Treta-Yuga lasts for 1,296,000 years and the Dharma for the age is temple worship. Dwapara-Yuga in its turn lasts for 864,000 years, and the Dharma is fire sacrifices.

This is further corroborated by the Mahabharata. We can see that during the whole book the Pandavas and others are doing fire sacrifices. Temple worship is mentioned just in a few passages (like in the marriage ceremony of Rukmini), and not as something very central. This clearly shows that in this particular Dwapara-Yuga the Dharma was indeed fire sacrifices and not temple worship as usual. It appears that in this particular age, large-scale temple worship was introduced only a few thousand years ago.

This change happened to facilitate Krsna's pastimes since He comes in the age of the Ksatriyas to annihilate the demons and protect the devotees. In the normal course of Yugas, the age of the Ksatriyas would come earlier, right after Satya-Yuga, and the next age would be an age where people would do temple worship. Both eras would be relatively peaceful since there would be powerful Ksatriyas in Dwapara-Yuga, but they would be virtuous, and in Treta-Yuga when people would have more vices there would not be powerful Ksatriyas anymore and thus not so many conflicts.

However, when Krsna comes the order is switched, and we have the explosive combination of the vices of the third age combined with the presence of powerful Ksatriyas, setting the stage for all the conflicts that Krsna uses as a pretext for His pastimes involving the Pandavas, the battle of Kuruksetra and so on.



With this, we come to the end of the book. I hope this work was able to give you some food for thought about the complexities of the way our Universe is described in the Vedas. Thank you for coming all the way here.

This is a free book, so if you think it can be useful for others, you are free to share it.

If you have any thoughts or questions about the contents of the book, you can drop me a line on:

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You servant,
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Hare Krishna
Hare Krishna
Krishna Krishna
Hare Hare
Hare Rama
Hare Rama
Rama Rama
Hare Hare