

## Modern science, spiritual science and our life-8

Do hell and heaven exist ? -1

Dr. Paras Mal Agrawal;Ujjain

We intend to describe that modern scientists agree to the point that life exists at many many planets of different stars of different galaxies in this universe. Further, the scientists also suggest that at some planets the life may be very miserable and at some other planets the life may be very pleasant.

Before describing life at other parts of the universe let us first understand the present scientific description of the universe.

### **Solar system**

According to the present scientific description our earth which has oceans like Indian ocean, Pacific ocean, Atlantic ocean.....etc., and hundreds of countries like India, USA, Japan.....etc., is one planet of radius 4000 miles. It is 930 million miles away from the sun. The earth is spherical in the shape. Like earth, other planets of our solar system are: mercury, venus, mars, jupiter, saturn, uranus, naptune, and pluto. The scientific community knows very well that among these nine planets the advanced form of life such as human beings exists only on the earth. Similarly, it is also known that life does not exist on the moons (satellites) of our solar system. The scientists tell such results on the basis of the presence or absence of water, air, suitable temperature, gravity, etc.

Many persons think that it is the end of the story. They limit their attention to the above mentioned planets, moons and the sun (our solar system) only. What we want to convey to such persons is that even according to the modern scientific knowledge, as compared to the whole universe our

solar system is just like a drop in the ocean.

Before saying more about billions and billions of planets where life may exist according to the modern science, we would like to answer the following question which is frequently asked by many persons:

Question:

There is a lot of difference between the modern scientific description and the ancient description of earth, sun and moon. The modern science says that the earth is not flat and it revolves round the sun. The Jain literature or any ancient literature gives very different picture of these. Does it mean that the ancient books are no more valid ?

Answer:

To answer the question, we first consider one example. Suppose somebody wants to give to you and to your friend a cheque of rupees 10000/- each, drawn on a particular branch of the bank. Suppose, that person also describes the location and architectural details of the bank building. Further, he also suggests that you need not go to that bank but you simply give the cheque on any bank where you have your account so that by the bank clearing procedure your account would receive Rs. 10000/-. Further, suppose, your friend receives that cheque and gives it to his bank and his bank account receives Rs. 10000/-.

At this juncture we ask you that for the validity of the similar cheque, would you be interested in the location and the architectural details of the bank building or would you be satisfied if by clearing procedure you and your friend receive the money described on the cheque. ?

The answer is simple. The encashment power of the cheque is the main criterion for the validity of the cheque. The location and architectural details of the bank are not important. These details may change with time. There may be

communication gap. Such a communication gap regarding the location and architecture of the building is not a matter of concern so long as there is no communication gap regarding the amount described on the cheque.

Similarly, in the ancient literature or Jain literature the relevant points are soul, Karma theory, rebirth, the method of acquiring tranquility and peace etc. The geography of the universe is unimportant. In connection with the rebirth or karma theory or rewards and punishment for our actions the relevant question may be following:

"Do places other than our earth may exist in this universe where there can be highly miserable life or highly pleasant life. ?"

If answer of this question according to the modern science is 'yes' then we would say that the modern science agrees with the existence of the 'hell' and 'heaven'. We would continue discussion over this point in the next article.

**This completes part 1. There are three parts. For part 2 and part 3, please see next pages.**



## Modern science, spiritual science and our life - 9

### Do hell and heaven exist ? - 2

**Dr.Paras Mal Agrawal**

In the previous article we have described that in our solar system the earth is a planet. The radius of our earth is 4000 miles. Among all the nine planets in our solar system intelligent life exists only on this earth. This statement is true. But this statement is sometimes misleading . By such statement many persons form a wrong opinion that intelligent life exists only on this earth. We shall clarify this matter in the light of modern science in this article. We shall see that intelligent life exists at many many planets in this universe.

#### **Billions of billions planets like our earth :-**

If somebody says that cars are sold only from this shop in this town, then it does not mean that cars are not sold at other places. There are many towns and many car dealers. 'The intelligent life exists only on this earth in this solar system'- this statement is also to be understood in similar way because there are billions and billions of sytems like our solar system.

Prof. Stephen W. Hawking in his famous book, ' A brief history of time' , writes (on page 133) :

"....To the modern picture in which the earth is a medium-sized planet orbiting around an average star in the outer suburbs of an ordinary spiral galaxy, which is itself only one of about a million-million galaxies in the observable universe."

As a matter of fact our sun is one of the 100 billion stars in our galaxy known as spiral galaxy or Milky Way. Technically our sun is a star. Like nine planets of our sun, each star may be surrounded by planets. Thus there may be more than 100 billion planets like our earth in our galaxy.

It thus appears that as compared to our galaxy our earth is as small as a drop in the ocean. One can thus think that a galaxy is very very big. However, if we go further, the modern scientists say that there are million-million (or 1000 billion or 1 trillion) galaxies in our universe. Among these 1000 billion galaxies each galaxy has billions of stars and each star may have several planets like our



earth. Thus as compared to the whole universe our galaxy is also like a drop in the ocean.

The above figures show that in our universes there are about 100,000,000,000,000,000,000 (23 zeros after) stars like our sun and each star may be surrounded by several planets like our earth.

#### **The possibility of life:-**

After understanding the existence of so many stars and planets in this universe the question of the existence of life becomes important. The Nobel Prize winner scientist (medicine, 1967), Dr. Wald, in an article published in the book, 'Synthesis of science and religion' (Bhakti Vedant Institute, San Francisco, Bombay, 1987) writes following formula (on page 8 of the book):

"The smallest estimate we would consider of the fraction of stars in the Milky Way that should have a planet that could support life is one percent. That means a billion such places in our own home galaxy; and with a billion such galaxies within reach of our telescopes, the already observed universe should contain at least a billion-billion - 1000,000,000,000,000,000 - places that can support life."

#### **Intelligent life :-**

In the above para we saw that in our galaxy one billion planets may have life. But all planets may not have intelligent life. The scientists estimated that 1 among 10000 such planets may have intelligent life and advanced civilization. Dr. K.D. Abhyankar of Center of Advanced study in Astronomy, Osmonia University, Hyderabad in his article published in the book, 'Horizons of Physics' (Wiley Eastern, 1989) writes ( on page 336):

"Thus our earth is the only abode of life in the solar system. However, it is calculated that about one lakh stars in the Milky Way might have planets around them which would be capable of evolving advanced form of life and a technical civilization like ours."

The above figure of 1 lakh is for our galaxy. Thus by these data and the simple maths one may infer that in the whole universe there may be 100,000,000,000,000,000 (17 zeros after 1) planets where the advanced form of life such as ours may exist.

We shall further discuss and conclude this theme in the next article.

Now the final part is being presented here.



## Modern science, spiritual science and our life- 10 Do hell and heaven exist ? - 3

Dr.Paras Mal Agrawal;UJJAIN

In the previous article we have shown that according to the modern science there is a possibility that advanced forms of intelligent life such as ours may exist on 100 million times one billion (100,000,000,000,000,000) planets in this universe. In this article we shall explore the possibility of many universes and many forms of intelligent life.

### MANY KINDS OF INTELLIGENT BEINGS

Among so many planets where intelligent life exists there can be a variety of intelligent creatures. It is not necessary that everywhere persons having two hands, two ears....exist. The number of such organs may be more also and less also.

A renowned scientist of modern era, Stephen D. Hawking who is widely regarded as the most brilliant theoretical physicist since Einstein has described the possibility of many universes having different types of electrons/protons etc. So that forms of intelligent lives may be very different. In this famous book, 'A brief history of time', on p. 131-132 he writes:

"The laws of science, as we know them at present, contain many fundamental numbers, like the size of the electric charge of the electron and the ratio of masses of the proton and the electron. We cannot at the moment at least, predict the value of these numbers from theory. We have to find them by observation. It may be that one day we shall discover a complete unified theory that predicts them all, but it is also possible that some or all of them vary from universe to universe or within a single universe."

In continuation with the above words Hawking further adds the importance of these numbers (electric charge of electron, the mass ratio etc.) in following lines:

"The remarkable fact is that the values of these numbers seem to have been very finely adjusted to make possible the development of life. For example if the electric charge of the electron had only slightly been different, stars either would have been unable to burn hydrogen and



helium, or else they would not have exploded."

Having written these words Hawking points out the possibility of different forms of intelligent life by following words:

"Of course, there might be other forms of intelligent life, not dreamed of even by writers of science fiction, that did not require the light of a star like the sun or the heavier chemical elements that are made in stars and are flung back into space when the stars explode."

In the same book on p. 131 Hawking writes a following sentence that is based on the anthropic principle:

"In most of these universes the conditions would not be right for the development of complicated organism; only in the few universes that are like ours would intelligent beings develop and ask the question: 'Why is the universe the way we see it?' "

In the data mentioned in the first para of this article we have considered planets of our universe only. We have considered that out of about one million planets only one planet has intelligent advanced form of life. So far as our universe having 1000 billion galaxies is concerned we are in a position to say that the physical constants of electrons, protons, etc., are favourable for supporting the intelligent life. thus the possibility of 100 million times one billion planets having intelligent life is very reasonable. In addition to lives at so many planets in our universe Hawking also considers that there may be more universes having intelligent life.

### MEANING OF HELL/HEAVEN

In Tatvarthsutra Acharya Umaswami writes following sutras regarding hell:

**Naraka nityashubhtar leshya parinam deh vedana vikriyaha [3.3]**

**Parasparodirit dukhaha [3.5]**

The essence of these sutras is that in the hell the living beings always have very bad intentions and give pain to each other. Their bodies are such that they always suffer.

By the advancement of biological sciences we know that there is a correlation between the chemicals present inside the body and the thought pattern.

Thus if in a certain planet of a certain universe the form of intelligent life is such that it has such chemicals which create bad intentions, frustrating thoughts and painful body in almost every intelli-

gent creature then what can we say for such a planet ? Can it be a planet with sufferings, frustrations, and mutual conflicts only? Can we call such planet as a hell?

One can put forward a similar question as regards the possibility of existence of a heaven.

### CAN WE SEE OTHER CIVILIZATION

We have discussed that the possibility of intelligent life is very rare. Among millions of planets there may exist one planet with intelligent and technologically advanced life. However, there are 100 million times one billion planets in this universe where the advanced form of intelligent life may exist. The possibility of a planet having sufferings only is still very less, but not nil. Similarly, the possibility of a planet where physical discomforts do not exist is also very less but not zero. Now a question arises, can we see such planets? To seek the answer we must remember that among the nine planets of our solar system except on the earth the intelligent life does not exist on other eight planets. Thus the first question is to find the distance between the earth and a planet of the nearest-neighbour-star. Whether life exists or not on such planet? The answer of this question would be useful for the purpose of this article only when we are in a position to visit such planet in near future.

A star nearest to our sun is known as Alfa Centauri. The distance between our solar system and this nearest star is 4.3 light-years. It is such a large distance that if one travels with a speed of 1000 kilometers per hour it would require more than 4 million years to travel this distance. In terms of the fuel and cost if on the average one dollar is required in travelling one kilometer then the amount required for this travel would be more than forty trillion dollars. In other words, it would require more than forty thousand contributors each contributing one billion dollars.

By these figures it is clear that with the existing technology it is not possible to visit any other civilization on any other planet of any other star. Thus, for this topic the science says something which can not be demonstrated. The scientists, however, do not consider this as weakness of the science. The facts can not be ignored simply because of the limitations of the technology.



**Note: In the interest of more clarity, the contents of these articles are being rewritten.**

## **Do hell and heaven exist?**

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### **Largeness of the universe**

It is very well known that the earth is one of the planets of our solar system. It is also known that the possibility of life (not intelligent life) in our solar system may be in Mars. But there are many (~ 100 billion) stars like our sun in our own galaxy known as Milky way, and there are many (~ 1000 billion) galaxies in our universe. Further, there may be many Universe (How many? We do not know). Further, there may be many planets associated with each star, and in many planets there may be living beings. An estimate shows that there is a possibility of life in  $10^{23}$  planets, and among these  $10^{17}$  planets may have intelligent life in our own universe.

In this regard the following quotes of modern scientists are worth noting:

A renowned scientist of modern era, Stephen D. Hawking ( who is widely regarded as the most brilliant theoretical physicist since Einstein) in his famous book writes [1]:

**“... To the modern picture in which the earth is a medium sized planet orbiting around an average star in the outer suburbs of an ordinary spiral galaxy, which itself is only one of about a million-million galaxies in the observable universe.”**

Regarding the possibility of number of planets that could support the life, the Nobel Prize winner scientist (Medicine, 1967), Dr. Wald writes [2]:

**“The smallest estimate we would consider of the fraction of stars in the Milky Way that should have a planet that could support life is one percent. That means a billion such places in our own home galaxy: and with a billion such galaxies within reach of our telescopes, the already observed universe should contain at least a billion-billion- 1000,000,000,000,000,000- places that can support life.”**

Regarding the possibility of intelligent living beings, Dr. K. D. Abhyankar from the Center of Advanced study in Astronomy, Osmania University, Hyderabad writes [3]:

**“Thus our earth is the only abode of life in the solar system. However, it is calculated that about one lakh stars in the Milky Way might have planets around them which would be capable of evolving advanced form of life and a technical civilization like ours.”**

If we consider this average for each galaxy, then we can say that there is a possibility of advanced forms of intelligent life such as ours may on  $10^{17}$  planets (100 million times one billion or 100, 000, 000, 000, 000, 000 planets) in our universe.

## **Many kinds of intelligent beings**

Among so many planets where intelligent life exists, there can be a variety of intelligent creatures. It is not necessary that everywhere persons having two hands, two ears... exist. The number of such organs may be more or less.

Based on the possibility of existence of different kinds of electrons, protons, and chemicals on different galaxies/universes/, Professor Stephen Hawking writes that there is a possibility of different kinds of living beings at different places. To illustrate this point we shall here present four quotes from his book [4]:

**“ The laws of science, as we know them at present, contain many fundamental numbers, like the size of the electric charge of the electron and the ratio of masses of the proton and the electron. We cannot at the moment, at least, predict the value of these numbers from theory. We have to find them by observation. It may be that one day we shall discover a complete unified theory that predicts them all, but it is also possible that some or all of them vary from universe to universe or within a single universe.”**

In continuation with the above paragraph, Hawking further adds the importance of these numbers (electric charge of electron, the mass ratio etc.) in the following lines:

**“The remarkable fact is that the values of these numbers seem to have been very finely adjusted to make possible the development of life. For example, if the electric charge of the electron had only slightly been different, stars either would have been unable to burn hydrogen and helium or else they would not have exploded.”**

Having written these words, Hawking points out the possibility of different forms of intelligent life by following words:

**“Of course, there might be other forms of intelligent life, not dreamed of even by writers of science fiction, that did not require the light of a star like the sun or the heavier chemical elements that are made in stars and are flung back into space when stars explode.”**

In the same book on page 131, Hawking writes the following sentence that is based on the anthropic principle:

**“In most of these universes the conditions would not be right for the development of complicated organism; only in the few universes that are like ours would intelligent beings develop and ask the question: ‘why is the universe the way we see it?’ ”**

In short, out of about one million planets only one planet has intelligent advanced form of life. So far as our universe having 1000 billion galaxies is concerned we are in a position to say that the physical constants of electrons, protons, etc., are favorable for supporting the intelligent life, and there is a possibility of  $10^{17}$  (100 million times one billion) planets having intelligent life. In addition to lives at so many places in our universe, Hawking also considers that there may be more universes having intelligent life.

## **Meaning of hell/heaven**

In *Tattvarthsutra*, Acharya Umaswami writes [5] following sutras regarding hell:

*Narka nityashubhtar leshya parinam deh vedna vikriyaha [ 3.3].*

*Parasparodirit dukhaha [3.5]*

The essence of these sutras is that in the hell the living beings always have very bad intentions and give pain to each other. Their bodies are such that they always suffer.

By the advancement of biological sciences we know that there is a correlation between the chemicals present inside the body and the thought pattern. We have already noted through quotes of Stephen Hawking that there is a possibility of different kinds living beings due to the existence of different kinds of chemicals present in different planets. Among  $10^{17}$  planets, if on a certain planet of a certain universe the form of intelligent life is such that it has such chemicals which create bad intentions, frustrating thoughts and painful body in almost every intelligent creature then what can we say for such a planet? Can it be a planet with sufferings, frustrations, and mutual conflicts only? Can we call such planet as a hell?

One can put similar scientific arguments that lead to the possibility of the existence of a planet (or planets) having mutual love and lack of physical sufferings that would mean the existence of heaven.

## **Can we see other civilization? Can we travel to such hell/heaven?**

We have discussed that the possibility of intelligent life is very rare. Among millions of planets there may exist one planet with intelligent and technologically advanced life. However, there are 100 million times one billion planets ( $10^{17}$ ) in this universe where the advanced form of intelligent life may exist. The possibility of a planet having severe sufferings is still very less but not zero. Similarly, the possibility of a planet with mutual love and abundance of physical comforts is also very less but not zero. Now a question arises: Can we see such planets? To seek the answer we must remember that among the nine planets of our solar system, except on the earth the intelligent life does not exist on other eight planets. Thus the first question is to find the distance between the earth and a planet of the nearest neighbor-star.

A star nearest to our sun is known as **Alfa Centauri**. The distance between our solar system and this nearest star is 4.3 light-years. It is such a large distance that if we travel with a speed of 1000 kilometers per hour it would require more than 4 million years to travel this distance. In terms of the fuel and cost, if on the average one dollar is required in traveling one kilometer then the amount required for this travel would be more than forty trillion dollars. In



other words, it would require more than forty thousand contributors each contributing one billion dollars. By these figures, it is clear that with the existing technology it is not possible to visit any other civilization or any other planet of any other star.

**Summary:** We have seen that the science suggests the possibility of the existence of millions of billions of planets with intelligent life, the possibility of planets where the life may be very miserable, and the possibility of planets where the life may lack physical discomforts. We have also seen that due to the limitations of the technology, time, and resources, it is not possible to visit such planets. The scientists, however, do not consider this inability of visiting other civilizations as the absence of other civilization. The facts of the science cannot be ignored simply because of the limitations of the technology.

## References

- [1] Stephen W. Hawking, *A Brief History of Time*, page 133.
- [2] George Wald, 'The Cosmology of Life and Mind', in *Synthesis of Science and Religion*, (Bhakti Vedant Institute, San Francisco, Bombay, 1987) page 8
- [3]. K. D. Abhyankar, *Astrophysics*, in *Horizons of Physics* (Wiley Eastern, 1989), page 336.
- [4] Reference 1, page 131-132.
- [5] Acharya Umaswami, *Tattvarthsutra*, Sutra 3.3 and 3.5.