

COSMOLOGY ACCORDING TO NANAKIAN PHILOSOPHY*

ARTICLE

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INTRODUCTION

The most salient question is whether the relation between religion and science is characterized by *conflict* or by *concord*. The *theistic* religions: Christianity, Judaism, Islam and theistic varieties of Hinduism and Buddhism, believe that there is an all-powerful, all-knowing, perfectly good, immaterial person who has created the world, created human beings 'in His own image,' and to whom we owe worship, obedience and allegiance. On the other hand, science deals with reasoning and experimentations to find the truth. Controversy between religion and science starts when some religious concepts are found contrary to the scientific facts.

Most of the time discussion on religion and science is confined within Christianity, Judaism, Islam and theistic varieties of Hinduism and Buddhism, but Sikhism is rarely included in such discussions. This is so because Sikh theologians and scholars have failed to portray Sikhi (Sikhism) as a distinct and independent philosophy from Hinduism or any other religion. Moreover, they have also failed to represent the originality and uniqueness of Guru Nanak's philosophy to the philosophers and theologians of other world religions.

Now, however, scientific and logical study of gurbani in the Aad Guru Granth Sahib (AGGS) [1] is becoming very popular with some Sikh scientists as well as with Sikh theologians. For example, Chahal [2-10] and Virk [11-13], a Microbiologist and Physicist, respectively, have contributed a lot during the last two to three decades. Now some theologians, without having any background in any Science, are also writing about cosmology and science in gurbani.

ABSTRACT

The relationship between religion and science has always been a conflicted one. Earlier, pioneer philosophers were punished for their discoveries by the Church, since such discoveries were found against the concepts in the Bible. This paper discusses the study of two contemporaries of the period of the Renaissance: when Copernicus was studying Astronomy in Europe and Guru Nanak was studying Cosmology in South Asia. It also discusses the discovery of the Heliocentric System (the Earth revolves around the Sun) by Copernicus and its confirmation by Galileo. Both were punished because their discovery refuted the Church's concept that it is the Sun which revolves around the Earth. It also discusses that the study of cosmology by Guru Nanak is very much comparable to the origin of the Universe according to the Big Bang Theory.

On the other hand, many theologians doubt there can be any science or scientific fact in gurbani since there was no science at the time of Guru Nanak (1469-1539). They consider him as a mystic, spiritual, religious Guru, a reformer or a socialist, but never a philosopher or a scientist. They are right to a great extent, since what we call science today was being studied as philosophy during the period of the Renaissance (14th to 16th centuries) in Europe. Chahal [4] reported Guru Nanak laid the foundation of "Sikhi" during the 15th century when the philosophers were challenging some of the concepts of the Church in Europe. During this period, Guru Nanak was busy challenging the ancient mythology and religious rituals to which the people of South Asia were shackled for centuries. These people were unable to express their free will in any aspect of their lives because their lives were controlled by their religious mentors.

However, when I looked deeply into 'Sikhi', as it is being preached, I found it is being promoted as a mystical, esoteric, enigmatic, and ritualistic religion. In fact, the word 'Sikhi' is derived from the bani of Guru Nanak:

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ਸਿਖੀ¹ ਸਿਖਿਆ² ਗੁਰ³ ਵੀਚਾਰਿ⁴ ॥

Sikhī sikhī=ā gur vīchār.

Sikhī¹ is those teachings² which are based on the enlightening³ philosophy⁴.

AGGS, M 1, p 465.

In other words, 'Sikhī' means the enlightening philosophy/teachings promulgated by Guru Nanak. Now the word, 'Sikhī', has been anglicized into "Sikhism" by adding '-ism' to make it a religion. By and by scholars started to justify that 'Sikhism is derived not from the word "Sikhī" used by Guru Nanak, but rather from Sanskrit word, 'shish' (disciple). In the text, 'Sikhī' and 'Sikhism' have been used as interchangeable words for the philosophy of Guru Nanak. However, many Sikh historians and theologians consider 'Sikhism' to be a religion.

COSMOLOGY IN BRIEF

Cosmology is the scientific study to understand the origin, evolution and ultimate fate of the entire Universe (Cosmos). It involves the formation of theories or hypotheses about the Universe that make specific predictions for phenomena that can be tested with observations. Depending on the outcome of the observations, theories will need to be abandoned, revised or extended to accommodate the data. The prevailing theory about the origin and evolution of our Universe is based on the so-called "Big Bang theory" [14]. However, there are some questions which are not answered by this theory, and some alternative theories have risen.

According to the Big Bang Theory, the Universe is composed of protons, neutrons, electrons and neutrinos. Protons and neutrons are bound together into nuclei, which are surrounded by a full complement of electrons. For example, Hydrogen is composed of one proton and one electron. Helium is composed of two protons, two neutrons and two electrons. Carbon is composed of six protons, six neutrons and six electrons. Heavier elements, such as iron, lead and uranium, contain even larger numbers of protons,

neutrons and electrons. All material made up of protons, neutrons and electrons are called "baryonic matter".

About thirty years ago, the Universe was considered composed of only "baryonic matter". Now some evidence suggests that there is something in the Universe that we cannot see by current means [15].

The Wilkinson Microwave Anisotropy Probe (WMAP) is a NASA Explorer mission that has made some measurements of cosmology [16]:

COSMOLOGY IN NANAKLIAN PHILOSOPHY

The Origin of Universe

There are many theories about the origin of the Universe (Cosmos), but so far, the Big Bang Theory is most widely accepted by many scientists. According to this theory, our Universe sprang into existence from a **single point** around 13.77 billion years ago. What is this point and where does it come from? This point is called **Singularity**. It is defined as the center of a black hole at which matter is crushed to an infinite density, the pull of gravity is infinitely strong, and the space-time curvature becomes infinitely large [21, 22]. One must keep in mind that the term 'Singularity' is also used to represent other things. Our Universe is thought to have begun as an infinitesimally small, infinitely hot, and infinitely dense point. According to the Big Bang Theory, our Universe sprang into existence from a single point, Singularity, around 13.77 billion years ago. This Singularity has been represented by Guru Nanak in a logo, ੴ. In fact, this logo stands for the Eternal Entity, which is ONE AND ONLY: ਸਾਹਿਬੁ ਮੇਰਾ ਏਕੈ ਹੈ ॥ ਏਕੈ ਹੈ ਭਾਈ ਏਕੈ ਹੈ ॥੧॥ ਰਹਾਉ ॥

Sāhib merā eko hai. Éko hai bhāī eko hai. ||1|| rahāo.

That Entity¹ is One and Only^{2,3,4}, Hey brother!

AGGS, M 1, p 350.

ਏਕੈ ਮਹਿ ਸਰਬ ਸਰਬ ਮਹਿ ਏਕੈ ਏਹ ਸਤਿ ਗੁਰਿ ਦੇਖਿ ਦਿਖਾਈ ॥੫॥

Ēk mēh sarab sarab mēh ekā eh satgur dēkh dikhāī. ||5||

The True⁴ Enlightener⁵ has given⁷ (me) the vision⁶ that the One¹ is in everything² and everything² is in that One³.

AGGS, M 1, p 907.

The above phrase represents exactly the same idea as the modern concept of One (ੴ) in ੴ as Singularity or Nothingness (SUNN) explained by Kaup [23] discussed later.

What Does This Logo, ੴ, Stand for?

The logo, ੴ, has been dissembled for explanation as follows:

ੴ = ੴ + ੴ + ੴ

'ੴ' (Ek – One) represents Oneness (Singularity) – the state of the Eternal Entity (God).

'ੴ' (open oora) represents 'ੴ' (Oh - That) for ੴ (One) since there is no descriptive/specific name for the ੴ (One).

ੴ (Extended end of the open oora) represents infinity (ਬੇਅੰਤ - beant) for ੴ (That), i.e. for ੴ (One).

Therefore, ੴ is Singularity that is Infinite.

If it is so, then we can infer that the 'ੴ' (Ek – One) in ੴ, is That (ੴ – Oh), where space/time –matter/Energy is in an infinitely small unit (Singularity), which looks like Nothingness, ਸੁੰਨੁ (Sunn), but sprang into the Universe after the Big Bang. The above analysis clearly indicates that the logo ੴ designed by Guru Nanak, can be pronounced as ਇਕੁ ਓ ਬੇਅੰਤ (Ek Oh Beant) in Punjabi. It can be pronounced as 'The One and Only That is Infinite' in English. This is based on the following explanation by Guru Nanak:

ੴ (One) in ੴ :

The one in this logo represents the 'One and Only' according to Guru Nanak:

ਸਾਹਿਬੁ ਮੇਰਾ ਏਕੈ ਹੈ ॥ ਏਕੈ ਹੈ ਭਾਈ ਏਕੈ ਹੈ
॥੧॥ ਰਹਾਉ ॥

Sāhib merā eko hai. Ēko hai bhāī eko hai.
||1|| rahā=ō.

My that Entity¹ is One and Only^{2,3,4}, Hey brother!

AGGS, M 1, p 350.

ਏਕੈ ਮਹਿ ਸਰਬ ਸਰਬ ਮਹਿ ਏਕੈ ਏਹ ਸਤਿ ਗੁਰਿ ਦੇਖਿ ਦਿਖਾਈ ॥੫॥

Ēk mēh sarab sarab mēh ekā eh satgur
ḍekh dikhāī. ||5||

The True⁴ Enlightener⁵ has given⁷ (me)
the vision⁶ that the One¹ is in everything²

and everything² is that One³.

AGGS, M 1, p 907.

ੴ (Open oora) in ੴ : According to Mahan Kosh of Bhai Kahn Singh [24], the letter ੴ (open oora) means ੴ (Oh - That):

ਨਾ ਓਹੁ ਮਰੈ ਨ ਹੋਵੈ ਸੋਗੁ ॥

Nā oh marai na hovai sog

Oh (That - One) does not die; thus there is no reason to mourn.

AGGS, M 1, p 9.

Note: Here ੴ (ੴ - Oh) stands for 'One' since Guru Nanak does not like to use any descriptive or specific names for God.

() The extended End of Open Oora in ੴ represents the infinity of the One (Eternal Entity):

ਤਾ ਕੇ ਅੰਤ ਨ ਪਾਏ ਜਾਹਿ ॥ ਏਹੁ ਅੰਤੁ ਨ ਜਾਣੈ ਕੋਇ ॥

Fā ke ant na pāe jāhi. Ēhu ant na jānai ko=e.

The infiniteness² of that One¹ cannot be comprehended³.

(In fact) Nobody⁶ knows⁵ Its infiniteness⁴.

AGGS, Jap 24, p 5.

If we examine the above phrases, it

becomes clear that in Nanakian Philosophy, the Eternal Entity (God) has been addressed as ੴ, which represents the modern concept of the '1' (Ek - One) in ੴ as 'Singularity' or as

ਸੁੰਨੁ (Sunn) or ਨਿਗੁਣ (nirgun) as 'Nothingness' which burst as the Universe or ਸਰਗੁਣ (sargun) state.

It is also important to understand the contents of the Universe. Kaup [23] defines the Universe as follows: "The Universe is anything that has been or ever will be detectable by humans. It is the manifestation of temporal existence - composed of matter, energy, space, and time, and is the macro-system of which all natural systems are a sub-set."

Cosmology of Guru Nanak

The cosmology of Guru Nanak starts with the understanding of ੴ as ੴ

ਬੇਅੰਤ (Ek Oh Beant) in Punjabi and as 'The One and Only, The One (Singularity)' with an infinite amount of Energy:

Is It the Big Bang?

Guru Nanak has very clearly stated that the Universe sprang into existence with the bursting of 'One' in ੴ, which is an infinite amount of energy as follows:

ਕੀਤਾ ਪਸਾਉ ਏਕੈ ਕਵਾਉ³

Kīṭā pasā=ō eko kavā=ō.

ਤਿਸ ਤੇ ਹੋਏ ਲਖ ਦਰੀਆਉ⁵ ॥

Fis tē ho=e lakh ḍarī=ā=ō.

This phrase has been interpreted very literally by many scholars as follows:

You (God) created the vast expanse of the Universe with one word!

Hundreds of thousands of rivers began to flow.

AGGS, Jap 16, p 3.

Using present day science and the methodology of Guru Nanak, remembering that he would express his philosophy allegorically, metaphorically and symbolically, my interpretation is quite different from that of all other writers. My interpretation is as follows:

The Universe exploded with one² source of energy³ and started to expand¹, thereafter, appeared many⁴ things⁵, Jap 16, p 3.

Note:

ਪਸਾਉ¹ (pasao) means to expand.

ਏਕੈ² (eko) is the 'One' in ੴ, which is an infinite amount of energy

ਦਰੀਆਉ⁵ (daryao) has been literally interpreted as rivers by many scholars. Keeping in view the methodology used by Guru Nanak, 'ਦਰੀਆਉ⁵' (daryao) has been used as a metaphor for the word "things".

What are those things?

The word, 'ਲਖ ਦਰੀਆਉ³' (lakh dariao), has been used to mean many things because of the limited vocabulary available at the time. However, one must understand that no water was formed immediately after the Big Bang. It took billions of years to form water on the Earth. Therefore, 'ਲਖ ਦਰੀਆਉ³' (lakh dariao), is a metaphoric expression of many things (that means starting from elementary particles to protons, electrons, neutrons, neutrinos which formed various elements. The first element formed was Hydrogen with one proton encircled with one electron. Then Helium was formed joining two protons and two neutrons in nucleus encircled by two electrons. Thereafter, many more elements appeared to give rise to many galaxies contain many stars and planets.)

ਕਵਾਉ³ (kavao) represents ਕਵਾਵੈ²

(kavavai) means "energy" in the following phrase of Guru Arjun, and

ਦਰੀਆਉ³ (dariao), in the above phrase of

Guru Nanak has been explained with a new word, ਸਭਿ (sabh - everything) by Guru Arjun:

ਏਕੈ ਕਵਾਵੈ ਤੇ ਸਭਿ ਹੋਆ ॥੧॥ ਏਕ ਕਵਾਵੈ
tē sabh ho=ā. ||1||

From one¹ source of energy² everything³ appeared⁴. AGGS, M 5, p 1003.

Guru Nanak's concept of the origin of the Universe in the 15th century is very similar to the widely accepted theory of the Big

Bang in the 20th century. Although teachings of the formation of the Universe with one ‘word’ of God can be found in other religious scriptures, Guru Nanak has given a more in-depth explanation of its origin from the ‘ੴ’ (Ek – One) in ੴ – the source of energy, which is called ‘Singularity’ in science.

Infiniteness of the Universe

The Universe continues to expand after the Big Bang occurred. No limit to its future expansion has been established according to present day scientific knowledge. Guru Nanak explains the infiniteness of the Universe as follows:

ਪਾਤਾਲ¹ ਪਾਤਾਲ¹ ਲਖ ਆਗਾਸ² ਆਗਾਸ² ॥

Pātālā pātāl lakh āgāsā āgās.

ਉੜਕ ਉੜਕ ਭਾਲਿ ਥਕੇ

ਵੇਦ ਕਹਨਿ ਇਕ ਵਾਤ ॥

Oṛak oṛak bhāl thake ved kahan ik vāt.

ਸਹਸ ਅਠਾਰਹ³ ਕਹਨਿ ਕਤੇਬਾ

ਅਸੁਲੁ ਇਕੁ ਧਾਤੁ⁴ ॥

Sahas aṭhārah kahan kaṭebā asulū ik dhāt.

ਲੇਖਾ⁵ ਹੋਇ ਤ ਲਿਖੀਐ ਲੇਖੇ ਹੋਇ ਵਿਣਾਸੁ ॥

Lekhā ho-e ṭa likhī-ai lekhai ho-e viṇās.

ਨਾਨਕ ਵਡਾ ਆਖੀਐ ਆਪੇ⁶ ਜਾਣੈ ਆਪੁ ॥੨੨॥

Nānak vadā ākhī-ai āpe jāṇai āp. ||22||

There are hundreds of thousands of nether worlds¹, and hundreds of thousands of skies².

After great research, the Vedas have said it definitely as above.

The Semitic books say that there are eighteen thousand³ worlds and that is the fact⁴.

However, Nanak says:

It cannot be possible to count⁵ (number of the celestial bodies in the Universe) because the accounting person may reach the end of his life during counting and it will still be incomplete.

Guru Nanak further says:

That Eternal Entity (God)⁶ is great, who knows the account (of the celestial bodies in the Universe).22.

AGGS, Jap 22, p 5.

In the first two lines of this stanza, Guru Nanak refers to the Vedas which say that

there are hundreds of thousands of *patal* (nether worlds) and hundreds of thousands of skies; on the other hand, in the third line, the Semitic books say that there are 18,000 worlds. This information of the Vedas and the Semitic books is not the views of Guru Nanak. However, some theologians and preachers erroneously interpret that it is Guru Nanak saying that there are *lacs* (hundreds of thousands) of *patal* (nether worlds) and *lacs* of skies. They also claim that Guru Nanak was a great scientist to say so. They ignore the fact that this information is in Vedas and Semitic books.

Scientifically, there is no nether world in this Universe; it is an ancient myth. Similarly, there is no sky. The color of the sky on a clear cloudless day is because blue light is scattered in all directions by the tiny molecules of air in Earth's atmosphere. In fact, it is a void or space or Dark Energy.

After quoting the information available or the accepted concept of that time, Guru Nanak gives his own observations in the final two lines. He says that the Cosmos (Universe) contains countless celestial bodies; the real number would be known only to the Eternal Entity (God).

According to present scientific information, there are billions of galaxies, and each galaxy is composed of billions of stars and their planets and Moons. Our Sun, having eight planets revolving around it, is one of the billions of stars of our galaxy, Milky Way.

Time of the Origin of the Universe

When did the Universe come into existence? As already discussed, now we know the time of origin of the Universe is approximately 13.77 billion years ago. However, about 550 years ago, Guru Nanak said that it was difficult to estimate the time of the origin of Universe in the following stanza:

ਕਵਣੁ ਸੁ ਵੇਲਾ¹ ਵਖਤੁ² ਕਵਣੁ ਕਵਣੁ ਥਿਤਿ³

ਕਵਣੁ ਵਾਰੁ⁴ ॥

Kavaṇ so velā vakhaṭ kavaṇ kavaṇ thiṭ kavaṇ vār.

ਕਵਣਿ ਸਿ ਰੁਤੀ⁵ ਮਾਹੁ⁶ ਕਵਣੁ ਜਿਤੁ ਹੋਆ ਆਕਾਰੁ⁷ ॥

Kavaṇ sē ruṭī māhu kavaṇ jīṭ ho-ā ākār.

Guru Nanak first poses a question:

What was that time¹; and what was that moment²;

What was that date³ (according to Lunar Calendar) and what was that day⁴;

What was that season⁵; and what was that month⁶: when the Universe was created⁷?

AGGS, Jap 21, p 4.

Then he answers as follows:

ਵੇਲਾ¹ ਨ ਪਾਈਆ ਪੰਡਤੀ ਜਿ ਹੋਵੈ ਲੇਖੁ ਪੁਰਾਣੁ ॥

vel na pā-ī-ā pandṭī jī hovai lekḥ purāṇ.

ਵਖਤੁ² ਨ ਪਾਇਓ ਕਾਦੀਆ ਜਿ ਲਿਖਨਿ ਲੇਖੁ

ਕੁਰਾਣੁ ॥

vakhaṭ na pā-i-o kāḍī-ā jī likḥan lekḥ kurāṇ.

ਥਿਤਿ³ ਵਾਰੁ⁴ ਨਾ ਜੋਗੀ ਜਾਣੈ

ਰੁਤਿ⁵ ਮਾਹੁ⁶ ਨਾ ਕੋਈ ॥

Thiṭ vār nā jogī jāṇai ruṭ māhu nā ko-ī.

The pundits could not find that time¹, whether it was written in the Puranas.

That time/moment² is not known to the qazis either, if it were written in the Koran.

Nor the date³ (according to Lunar Calendar), nor the day⁴ nor the season⁵ nor the month⁶ is known to the yogis. [8]

AGGS, Jap 21, p 4.

Note: ਥਿਤਿ (tith) means date according to the lunar calendar.

ਮਾਹੁ (mah) means month according to the solar calendar.

Then who knows the answer?

Guru Nanak answers it as follows:

ਜਾ ਕਰਤਾ¹ ਸਿਰਠੀ² ਕਉ ਸਾਜੇ³

ਆਪੇ⁴ ਜਾਣੈ ਸੇਈ ॥

Jā kartā sirṭhī ka-o sāje āpe jāṇai so-ī.

Only the Creator^{1,4}, Who created³ the Universe², knows it (the time of creation).

[8]

AGGS, Jap 21, p 4.

Note: Who is ‘Creator’ and what does ‘creation’ mean here? This phrase will become clear after reading the whole article and understanding ੴ.

Origin of Our Solar System

Earlier, it was discussed that the origin of the Universe was not known to the pundits, *kazis*, and *jogis*. Guru Nanak says it is known only to the Entity (God). In the following verse, Guru Nanak explains the formation of our solar system, and the date of formation goes back more than a billion years (today it is known as 4.6 billion years ago). He describes the primordial state of our solar system as a mass of gases in our galaxy:

ਅਰਬਦ ਨਰਬਦ¹ ਯੁੰਧੁਕਾਰਾ² ॥

Arbaḍ narbaḍ ḍḥundḥūkārā.

ਧਰਣਿ³ ਨ ਗਗਨਾ⁴ ਹੁਕਮੁ⁵ ਅਪਾਰਾ⁶ ॥

Dḥaraṇ na gagna hukam apārā.

ਨਾ ਦਿਨੁ ਰੈਨਿ⁷ ਨ ਚੰਦੁ ਨ ਸੂਰਜੁ ਸੁੰਨੁ⁸ ਸਮਾਧਿ

ਲਗਾਇਦਾ ॥੧॥

Nā ḍin rain na chand na sūraj Sunn samāḍḥ lagā'idā. ||1||

ਜਾ ਤਿਸੁ ਭਾਣਾ⁹ ਤਾ ਜਗਤੁ¹⁰ ਉਪਾਇਆ¹¹ ॥

Jā tis bhāṇā tā jagat upā'ia.

More than a billion years ago¹,
There was only a mass of gases².

There was no Earth³ or sky⁴, but only the laws⁵ of the Infinite⁶ (God).

There was no day, no night⁷, no Moon, no Sun, but Nothingness⁸ by itself.1...

After a long description of the absence of what is happening and about people living today on the Earth, Guru Nanak then says:

According to the Laws of Nature⁹ the mass of gases formed¹⁰ the world¹¹ (Solar System with eight planets including our Earth as our world.)...14.

AGGS, M 1, p 1035.

Here, Guru Nanak explains the primordial state of our Solar System as a mass of gases, but it is erroneously interpreted by some theologians to explain the primordial state of the creation of Universe. Actually, the Universe originated with the Big Bang from ਸੁੰਨੁ (Sunn) (Nothingness) or from the 'ੴ' (Ek – One) in ੴ as Singularity, whereas our Solar System originated from a mass of gasses already existing in our galaxy, the Milky Way.

Note: ਅਰਬਦ ਨਰਬਦ¹ (*arbad narbad*): *arbad* (a colloquial word for *arb*) means one billion and *narbad* means that which cannot be counted in *arbad*; therefore, *arbad narbad*, means more than one billion, and may be a period of tens of billions of years. The present estimation of the origin of the Universe is 13.77 billion years and that of the Solar System is about 4.6 billion years.

3. ਹੁਕਮੁ (*hukm*) Guru Nanak calls the Laws of Nature/Universe the Laws of the Eternal Entity (God) - (*hukm*)

8. ਸੁੰਨੁ (*Sunn*) has been interpreted as 'Nothingness', which has been explained as follows:

Sunn (ਸੁੰਨੁ) – Is It Nothingness?

The "Nothingness" has been described by Kaup [23] as Follows:

"Nothingness Theory defines nonexistence as being the absence of existence, the absence of Nothingness, and the absence of absence. It is what is not being referred to under any circumstances. Nonexistence by definition is that which cannot be referred-to, named, or defined. So referring to it in any way violates its strict definition. But this fundamental paradox is at the basis of Nothingness Theory and must be referred to anyway. Despite it's not being, absolute nonexistence exerts a detectable force.

We have proven through simple logic that the Universe has and always will exist. Therefore, the Universe must have existed before the "Big Bang" and will exist forever. This also means that the state of Nothingness from which the Universe burst into existence must have existed relative to absolute nonexistence given that absolute nonexistence is not achievable. So space/time – matter/energy can attain relative nonexistence by collapsing into infinite density, which is a uniform state of static equilibrium. Examples of this state of relative nonexistence can be seen throughout the Universe in the form of 'black holes'."

A **black hole** is created when matter and

space become concentrated so that there is no differentiation between them. To comprehend the full meaning of existence, nonexistence, energy, matter and force, one must embrace the paradox embodied in a black hole. The essence of a black hole is that it isn't there, but it has a location relative to existing systems upon which it exerts the most powerful cosmic force. It is an area of nonexistence that has no area. The so-called super-massive black holes, apparently at the center of every galaxy, swallow up entire solar systems and yet contain nothing inside of them because they have no inside to fill up. [21]

Nothingness does not mean, without anything. In fact, the thing is there but it is in such small volume that it appears to be Nothingness. This Nothingness, as described by Kaup [23], actually is the pinnacle of perfectly symmetrical uniformity of matter, energy, space and time. According to the Big Bang Theory, the energy was in such a small volume that has been termed as 'Nothingness' by some and as 'Singularity' by others. This Nothingness was termed ਸੁੰਨੁ (*Sunn*) by Guru Nanak during the 15th century. He also called it *jyot* (highly condensed energy). The following discussion will further strengthen it.

It is also important to understand the contents of the Universe. Kaup [23] defines the Universe (Cosmos) as follows: *"The Universe is anything that has been, or ever will be detectable by humans. It is the manifestation of temporal existence – composed of matter, energy, space, and time, and is the macro-system of which all natural systems are a sub-set."*

WHAT IS ਸੁੰਨੁ (SUNN)?

The ੴ (One) in ੴ, represents 'Singularity' as discussed earlier and it is also called 'Nothingness' or ਸੁੰਨੁ (*Sunn*) called by Guru Nanak as apparent from the following stanza:

The first three phrases are in the form of questions. Here *Sunn* has been interpreted as 'Nothingness':

ਸੁੰਨੇ¹ ਸੁੰਨੁ ਕਹੈ ਸਭੁ ਕੋਈ ॥

ਅਨਦਤ² ਸੁੰਨੁ³ ਕਹਾ ਤੇ ਹੋਈ⁴ ॥

ਅਨਦਤ⁵ ਸੁੰਨਿ⁶ ਰਤੇ⁷ ਸੇ ਕੈਸੇ⁸ ॥

Sunno Sunn kahai sabh koī.

Anhat̄ Sunn kahā te hoī.

Anhat̄ Sunn rat̄e se kaise.

Everyone speaks about the Nothingness¹.

How did the Infinite² Nothingness³ originate⁴?

How⁸ can one understand⁷ the Infinite⁵ Nothingness⁶?[9]

Then Guru Nanak answers it as follows:

ਜਿਸ⁹ ਤੇ ਉਪਜੇ¹⁰ ਤਿਸ¹¹ ਹੀ ਜੈਸੇ¹² ॥

Jis te upje tis hī jaise.

That (Nothingness)⁹ originated¹⁰ from the Universe¹¹, therefore, it is the same since it has everything of the Universe¹² (space/time – matter/energy but appears nothing) and it will become same as the Universe again.[9]

AGGS, M 1, p 943.

In other words, Sunn (Nothingness) became the Universe after the Big Bang. This is the same phenomenon that has already been discussed where the ‘One’ in **ੴ** became the Universe. Thereafter, this Universe will go back to ਸੁੰਨੁ (Sunn) (Nothingness) or Singularity and the cycle will go on. If it is so, then all theories trying to disprove the Big Bang will fall apart and the Singularity to Universe to Singularity cycle will continue as mentioned by Guru Arjun:

ਕਈ¹ ਬਾਰ² ਪਸਰਿਓ³ ਪਾਸਾਰ⁴ ॥

Kaī bār pasriō pāsār.

ਸਦਾ⁵ ਸਦਾ⁵ ਇਕੁ⁶ ਏਕੰਕਾਰ⁷ ॥

Sadā sadā ik ekankār.

The Universe⁴ came into existence³ many times².

Nevertheless, the One⁶ (Ekankaar – Singularity or Sunn/Nothingness) will remain One and Only⁷ all the time⁵.

AGGS, M 5, p 276.

The above two stanzas support the idea that the Sunn (Nothingness/Singularity) is the Entity which has been represented as

ੴ by Guru Nanak. Moreover, Guru Nanak also says that Sunn gave rise to the Universe (stars, planets, living, and non-livings)— very similar to the Big Bang Theory:

ਸੁੰਨੁਹੁ¹ ਚੰਦੁ² ਸੂਰਜੁ³ ਗੈਣਾਰੇ⁴ ॥

Sunnahu chand sūraj gaināre.

ਤਿਸ⁵ ਕੀ ਜੋਤਿ⁶ ਤ੍ਰਿਭਵਣ⁷ ਸਾਰੇ ॥

Fis kī jot̄ taribhvaṇ sāre.

ਸੁੰਨੇ⁸ ਅਲਖ⁹ ਅਪਾਰ¹⁰ ਨਿਰਾਲਮੁ¹¹ ਸੁੰਨੇ¹²

ਤਾੜੀ¹³ ਲਾਇਦਾ ॥੫॥

Sunne alakh apār nirālam Sunne tārī lāidā. ||5||

Moons² and Suns³ appeared⁴ from Sunn¹ and its⁵ energy⁶ pervades in the whole Universe⁷ (mythical three worlds).

The Ineffable⁹, Infinite¹⁰, without any flaw¹¹ (the Universe) originated from the Nothingness⁸ and is imbibed¹³ in the same Nothingness¹².5 [9]

AGGS, M 1, p 1037.

Guru Nanak has also explained that first elements were formed from the elementary particles from this Sunn (Nothingness or Singularity) which gave rise to stars (like our Sun) and planets and galaxies in this Universe:

ਪੰਚਾ¹ ਤਤੁ² ਸੁੰਨੁਹੁ³ ਪਰਗਾਸਾ⁴ ॥

Panch tat̄ Sunnahu pargāsā... 14

The five¹ elements² have originated³ from Nothingness⁴ (Sunn)...14. [9]

AGGS, M 1, p 1037-1038.

It can be concluded from the above discussion that the Sunn of Guru Nanak is Nothingness or Singularity as described by scientists in which space/time, matter/energy has attained relative nonexistence by collapsing into infinite density, which is a uniform state of static equilibrium. It is also called ਨਿਰਗੁਣ (nirgun)— state of the Eternal Entity (God). This Sunn (Nothingness or Singularity) after the Big Bang gave rise to elementary particles then to protons, neutrons, electrons, neutrinos, and anti-matter. The combination of one proton and one electron formed the first element, hydrogen. By the addition of one neutron with a proton in the

nucleus, one more electron (2) around it gave rise to the second element, helium. Therefore, with each addition of proton, neutron and electron, more elements were formed. These elements gave rise to the whole Universe. This Universe is the ਸਰਗੁਣ (sargun) state of the Eternal Entity (God).

The *panj tatt* (five elements), mentioned in the above phrase of Guru Nanak, are earth, water, air, fire, and aether or sky according to ancient and Vedantic philosophies. Scientifically, these are not elements. However, these are either compounds (water), mixtures (earth and air) or just void or Dark Energy (sky). These cannot form the Universe since they are the part of the Universe. These so-called elements are only parts of our Earth, not the parts of the whole Universe. For example, Stars (Suns) in this Universe are only Hydrogen and Helium.

I compare the *panj tatt* to Hydrogen, Carbon, Oxygen, Nitrogen, and Phosphorus, which gave rise to the DNA (Deoxyribonucleic Acid) molecule, which is called ‘Thread of Life’. There is no life on Earth without DNA. In addition, these five elements are the bases that form organic matter.

The above discussion of **ੴ** (One) of Guru Nanak in **ੴ** and ਸੁੰਨੁ (Sunn) represent the Singularity and Nothingness, respectively, in which space/time and matter/energy have attained relative nonexistence (Nothingness, ਸੁੰਨੁ - Sunn) by collapsing into infinite density, which is a uniform state of static equilibrium.

CONCLUSIONS

Guru Nanak and Copernicus were contemporaries during the Period of the Renaissance and both were 70 years old. Copernicus was four years younger than Guru Nanak.

Copernicus and Galileo were working on Astronomy by observations of Nature, use of Mathematics and the newly invented telescope in 1609 in Europe while Guru Nanak was studying Cosmology by observation of nature and its laws in

South Asia.

The discovery of the Heliocentric System (the Sun is the center and Earth revolves around it) by Copernicus and its confirmation by Galileo contradicted the Biblical concept that Earth is the center and the Sun revolves around the Earth. Both were condemned by the Church, their publications were banned, and they were declared heretics and punished.

On the other hand, it is my assumption that Guru Nanak's discovery about the Cosmos remained hidden for more than 135 years (from 1469 to 1604) until it was compiled in the Aad Guru Granth Sahib (holy scriptures of the Sikhs) by Guru Arjun. Thereafter, his philosophy in his bani was misinterpreted under the influence of Vedanta as observed by Taran Singh [25]. This is why he did not get any strong opposition—except that he was prisoned by Babar for a short time and he was called as ghost or demon by the opposition group. Thereafter, Guru Arjun and Guru Teg Bahadur were persecuted for preaching and practising the philosophy of Guru Nanak.

These incidences with Copernicus, Galileo and Sikh Gurus indicate that it is difficult to preach/teach the truth. However, it is also apparent that truth cannot be kept hidden for a long time.

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