CHAPTER II

Pañcamahābhūtas: Their Ecological Importance

The word *Pañcamahābhūtas* signifies the great five elements i.e. earth, water, fire, air and ether. These are mentioned in the Vedas, Upanishads and other ancient literatures. These are the cause of creation of all beings in the world. In ancient time people were very much aware in this respect. They always feel a sort of respect towards these elements. Vedas, all Vedanta, Upanishads, epics etc. describe these five elements emphatically. Not only the brahmanical texts describe these elements but other religious traditions deal the five elements.

Vedas are the rich source of knowledge related to the nature, the relationship with the nature and awareness of human being towards nature. The idea of nature is gradually developed and its chief five constituents become the main centre for introspection.

There was the insight of the One behind the many in Vedic culture . The world is organic and the hidden One Invisible and Mysterious Force is inside the apparent world and control all the process; and almost every detail of human life and that of the sub-human beings are integrated to the wholeness of One Being. Hence, everything found some meaningful relationship with the One really real and the many ephemeral things[1]. Such that the Vedic people were one with the nature.

एक एवाग्निर्बहुधा समिद्ध एकः सूर्यो विश्वमनु प्रभूतः ।

एकैवोषाः सर्वमिदं विभात्येकं वा इदं वि बभूव सर्वम् ॥ Rigveda 8.58.2-3

"One is that which manifests in all", which in contemporary ecological terms is expressed as "everything is related to everything else"[2]. The Vedic people glorified, invoked and worshipped natural phenomena. In the beginning, the Rigvedic hymns were addressed to natural phenomena and not to gods and goddesses[3]. The mystery of the world around them deeply stirred their mind. The beauty and grandeur of nature awakened their profound enthusiasm and admiration[4]. In the glow of the morning sky, the sun across the blue vault of the heavens, the blaze of sacrificial fire, the periodical bursting of the thunderclouds and the downpour of rains and in the fury of the storm etc., the Vedic people recognized some mysterious unseen powers[5]. Thus the Vedic people felt before the natural forces their own littleness and 'in the faith of little children' they instinctively thought that action, movement, creation, change and destruction in nature were result of superhuman forces[6]. It is in this way, the mighty forces of nature were personified[7].

Gradually luminous natural phenomena such as the sun. moon, dawn sky or fire etc., are taken to symbolize the gods[8]. Transformation of natural phenomenon into gods

and goddesses like *Surya* (Sun), *Soma* (Moon), *Agni* (fire), *Dyaus* (Sky), *Maruts* (Storms), *Vayu* (Wind), *Apas* (Waters), *Usas* (Dawn) and *Prithivi* (Earth) were accomplished in the songs of the Rigveda[9].

In Rigveda (RV) and in other *Samhitas*, there are prominent references to the Bhutas in the sense of deities, for instance,

बलित्था पर्वतानां खिद्रं बिभर्षि पृथिवि ।

प्र या भूमिं प्रवत्वति मह्ना जिनोषि महिनि ॥ Rigveda.V.84

"Thou, of truth, O Prihvi (earth) bearest the tool that rends the hills. Thou rich in torrents who with might quickenest earth, O Mighty One";

या आपो दिव्या उत वा स्रवन्ति खनित्रिमा उत बा याः स्वयंजाः ।

समुद्रार्था याः शुचयः पावकास्ता आपो देवीरिह मामवन्तु ॥ Rigveda.VII.49

"Waters which come from heaven, or those from the earth, or flowing free by nature, bright, purifying. speeding to the ocean, here let those Waters, Goddesses, protect me".

वातस्य नु महिमानं रथस्य रुजन्नेति स्तनयन्नस्य घोषः ।

दिविस्पृग्यात्यरुणानि कृण्वन्नुतो एति पृथिव्या रेणुमस्यन् ॥ Rigveda. X.168

"O the Wind's chariot, O its power and glory! Crashing it goes and hath a voice of thunder. It makes the regions red and touches heaven, and as it moves the dust of earth is scattered. ...Germ of the world, the Deities' vital spirit, this God moves ever as his will inclines him. His voice is heard, his shape is ever viewless. Let us adore this Wind with our oblation". Some regard them as the prototypal gross elements, which are seen to be developed clearly in the Upanisads and in the later philosophical traditions. Nevertheless, ,even these deities (Bhutas) in its general sense are understood both in esoteric and exoteric sense each possessing spiritual as well as material functions. Perhaps one can say that the Vedic pantheon is a spiritual version of be nature[10]. One should note here that a deity in neither wholly divine nor wholly phenomenal, but represents both and therefore, the deities are described in the hymns of RigVeda in terms of both divine and phenomenal qualities[11].

In the Rig Veda, *Bhutas* in the form gross elements are also evident. Different verses of Rigveda.

यत्ते भूमिं चतुर्भृष्टिं मनो जगाम दूरकम् ।

यत्ते मरीचीः प्रवतो मनो जगाम दूरकम् ।

यत्ते अपो यदोषधीर्मनो जगाम दूरकरम् । Rigveda 10.58

उप सर्प मातरं भूमिमेतामुरुव्यचसं पृथिवीं सुशेवाम् ।

ऊर्णम्रदा युवतिर्दक्षिणावत एषा त्वा पातु निरृतेरुपस्थात् ॥ Rigveda 10.18. 10

सूर्यं चक्षुर्गच्छतु वातमात्मा द्यां च गच्छ पृथिवीं च धर्मणा

अपो वा गच्छ यदि तत्र ते हितमोषधीषु प्रति तिष्ठा शरीरैः ॥ Rigveda 10.16. 3

सूर्यं चक्षुर्गच्छतु वातमात्मा द्यां च गच्छ पृथिवीं च धर्मणा ।

अपो वा गच्छ यदि तत्र ते हितमोधीषु प्रति तिष्ठा शरीरैः ॥ Rigveda 10.16.3

prthvi (earth) and *apah* (water) are seen as a gross elements, "May thy eye go to the sun, the mind to the spirit (Atman), go you to the earth, or to the waters".

Man has two types of feelings. One is an attitude of identification or unification and other is an attitude of superiority. Man always identified with the source. The source is nothing but the surrounding environment i.e. earth, air, fire, water and sky. This sort of relation gives man the attitude of reverence and love. As if all environment is nothing but own family. The latter attitude is the attitude of selfishness and aggressive attitude which deviates man from his submissive standpoint and directs man to the feelings of domination. Man thinks that he is the supreme being in this earth and he can conquer the all nature through his power of supremacy. This attitude leads him to the destruction of environment. The ancient Human attitude towards nature is seen generally to be of two types namely; dominating and submissive. Language along with the brain is the basic differentiating faculty that man has, and animals or any other beings do not have. It perhaps makes the human being as the supreme being. and this is the very reason why a human being thinks that he is the enjoyer and everything that is there in the universe is meant for his enjoyment. He thinks that everything is meant for him only. This attitude which is a dominating one is the factor that is responding for the undue destruction of the nature, but there also has been another side to the coin. A man also has been aware of the fact in this part of the globe at least since centuries that he is just one of the elements of the nature. Not only this

but being so he also owes many a thing to the generous nature. Looking at the devastating attitude of modern man towards nature, one is promoted to look into man's attitude towards nature through ages. Were there same attitudes as that of modern man? In the ancient Indian literature, right from the Rig Vedic period down to very recent centuries, man had established various relationships with natural elements. Ancient people had treated them as their parents and siblings. They had as if personified and deified to these natural elements and had treated them as their own family members[12] .

The concept of the earth in the Rgveda is fascinating. It is mostly addressed along with the heaven. According to Macdonell (1976) "Heaven and Earth are the most frequently named pair of deities in the Rig Veda. They are so closely associated that they are invoked as a pair in six hymns……They are great parents being often called pitara, matara. janitara besides being separately addressed as 'father' and 'mother'. They have made and sustained all creatures; they are also the parents of gods. They never grow old. They are great and wide-extended; they are broad and vast abodes."

While pṛthvi.. Bhūmi and janitri terms have been used in the Vedas to address the Earth. some 28 names of the earth appear in the literature by the time of Amarasithha[13]. The Ṛig vedic sages believed that the heaven was wrapped up by the earth and they are held apart by Varuna. By the time of the Taittiriya Upanisad (Siksavalli, third anuvaka) the Earth is stated to be the earlier form, heaven the later form, and the space is noted to be their junction negotiated by air or atmosphere. In Anandavalli or Bhrguvalli, the evolution of the pancabhutas has been described in simple terms. The field of Brahman appears as atma in the space: from space evolves Vayu; from Vayu evolves Agni; from Agni evolves Apas; from Apas evolves Prthvi. This theory of evolution is described all other post Vedic literature. Modern science also holds the view that from space all the celestial bodies are evolved.

There are several mantras of the Rigveda where the enquiry regarding the origin of Earth is found in the following verses of Rigveda.

प्र द्यावा यज्ञैः पृथिवी ऋतावृधा मही स्तुषे विदथेषु प्रचेतसा ।

देवेभिर्ये देवपुत्रे सुदंससेत्थ धिया वार्याणि प्रभूषतः ॥ Rigveda 1.159.1

ते हि द्यावापृथिवी विश्वशंभुव ऋतावरी रजसो धारयत्कवी ।

सुजन्मनी धिषणे अन्तरीयते देवो देवी धर्मणा सूर्यः शुचिः ॥ Rigveda 1.160.1

कतरा पूर्वा कतरापरायोः कथा जाते कवयः को वि वेद ।

विश्वंत्मना बिभृतो यद्ध नाम विवर्तते अहनी चक्रियेव ॥ Rigveda 1.185.1

The Vedic attitude towards the earth has two dimensions. One side human considers as guest or stranger and other side considers as offspring or children of the earth. The earth is undoubtedly mother, the foundation, the basis out of which, emerges all that exists and on which everything rests[14]. The element earth also indicates the continuity of creation and existence.

उप सर्प मातरं भुमिमेतामुरुव्यचसं पृथिवीं सुशेवाम् ।

ऊर्णम्रदा युवतिर्दक्षिणावत एषा त्व पातु निर्ऋतेरुपस्थात् ॥ Rigveda 10.18.10

Betake thee to the lap of Earth the Mother, of Earth far-spreading, very kind and gracious.

By the time of the Atharvaveda, the sages appear to have advanced in their understanding of the earth. They were able to measure the time in terms of 12 suns in a year, and some 37 moons in three years. They understood that the cyclic rotation of day and night is due to the movement of the earth about its axis. A full sukta is devoted to bhami in this Veda. In kanda 12. the first sukta is Bhumi Sukta consisting of 63 verses.

Rta, Satya, Param-Brahrnan are all synonyms and by *rita* is meant the law of gravitation. The Earth is held in its position by gravitation. The Bhumi Sukta of the *Atharvaveda* also commences with the same idea[15]. Let that Earth bless us with plenty, it is observed. The Earth supporting varieties of herbs shall protect us. That Earth which is containing the oceans and rivers and by which is food grown shall protect us. By then, the Aryan sages had classified the directions into eight and so they prayed that the Earth with all her eight directions protect them. They had probably spread to the east and south of the Indian mainland. The Earth is addressed as *Visvambhara*, meaning that she is the representative of the Universe. She is called *Vasudha* for she contained all the 8 vasus. The Earth is also addressed as Hiranyavaksa meaning that the Earth has a gold bosom. The Earth is praised as jagato nivesani — one in whom the Whole Universe is present. She is described as holding

Agni — which has already been described as the geothermal field. She is also described as holding Indra. i.e., the geomagnetic field. The Earth is described then as being present in the middle of the oceans (sedimentary rocks) and as one having magical movements. She is one enveloped by the sky or space and causing the force of gravitation. She is stated to be like ambrosia. An earth with so much of strength is praised for making the nation strong. That Earth which is being served day and night by rivers is requested to bless them. That earth mothered by Asvins and tread upon by Visnu and possessed of Indra is requested to pour water on the worshipper. The Earth is then described as wide, supporting forests, hills and mountains. The Earth is said to be, at places, white, dark, tawny and of variegated colour. The Earth is then described as raised at some places and lowered at other places. The sages. it is said, have treated them as the children of the Earth and worship the Earth for rains. The Earth is described as the progenitor of the people and animals with two or four feet. The people have been identified as of five types.

The divine fire is noted to be in the earth and in herbs, waters and rocks. The divine fire is also noted in all life. The divine fire causes heat in the daytime from the sky. The Earth with such divine fire is asked to give a long life and children. The Earth is noted to have a smell which is in the herbs also. Then the Earth is described as enjoying the six ritus, like grisma. varsa, sarad, hemanta. Sisira and vasanta. The earth is also described as the wife of rains. The Earth contains wealth and she is requested to give the worshipper golden gems.

These statements indicate that the Vedic Aryans had close interaction with the earth and knew that the earth was fully responsible for their food and prosperity. They had recognised the changes in terrestrial scenery during the period of every two months — described by them as ritus — in a yearly cycle. They could realise that the ritus were repeated once every year. They knew how to measure the year. They counted days against the movements of the luminaries.

In the iconographic description of the Earth, she is shown as the consort of Mahavisnu, the other consort being Sri Devi. She is described as having various colours in different texts. A text mentions her in white colour, another in slightly bluish dark colour and yet another in the colour of sprouts of plants. It will be interesting to see what was the colour of the earth noted by Edgar Mitchell on his way to the moon in the 14th Apollo mission. He has described the earth as a splendid blue jewel suspended against a velvet black sky[16].

The Earth is described as a beautiful goddess bedecked with ornaments who has a pleasant countenance. She is described as having four arms and carrying a jewel pot. a pot filled with plants, a vessel filled with medicinal herbs and a lotus in her hands. She is described to be seated on four elephants of the four quarters. A different description of the earth is available in other texts. She is described as one wearing a karanda-mukuta type of crown and red or yellow garments. Her eyes are compared to that of the lotus flower and her forehead is decorated with curly hairs. She is said to ride on the Cataka bird. She is sometimes described as golden-coloured and sitting under the kalpa-tree. The above concept of the earth is rather restricted. The beauty of the earth is indescribable— in the words of E. Mitchell. The beauty of the earth with her forest-clad mountains and on the banks of wide-flowing rivers, the high seas and mid-oceans, the top of the hills and mountain peaks, the beaches, the confluences of rivers, the river mouths joining or pouring into the seas and oceans, the plains and mountain slopes etc. cannot be described in words. She is a representative of the universe. She is the only planet directly available for the study of the universe and to realise the underlying truth. Thus the earth holds almost all secrets of nature the unraveling of which will help us in understanding the universe.

There are few references to the earth in the Yajurveda. However they are important as they show the advancement made over the Rigvedic period. In kanda 4, anuvaka 5, it is observed that the sage makes a request that inorganic material like rocks, soil, mountains, hills, sands, vegetation. gold, silver, iron, lead, tin, copper and steel be made available to him for the performance of sacrifices. In the same kanda and 6th anuvaka, it is stated that the earth which is also Indra be available to the sages for carrying out the sacrifices.

The above statements have great significance in that the rocks, soils, hills and mountains as well as the metals as parts of the earth were well-known to the Yajurvedic sages. The examination of the ground of mountains and hills as well as of the soil, especially for the metallic ores of gold, silver, iron, lead, copper and steel, has been stressed. They must have located the ores of all these metals and also their metallurgical properties: otherwise they would not have been able to mention the metals by name. From the above it is evident that zinc metallurgy was not known to the Yajurvedic sages. Zinc metallurgy happens to be a little difficult. This science has been propounded by one *Sakala* as mentioned by *Kautilya* in his *Arthasastra*, but his treatise is not available to us today. As a result, the metallurgical skill of the

Yajurvedic sages has not been fully understood. The most astonishing factor is that the area occupied by the Yajurvedic sages must have been the marginal parts of the Indian Peninsula comprising the Punjab, the plains of the Himachal Pradesh, and Jammu and Kashmir hill areas of the Rigvedic times. In the marginal parts of the Indian Peninsula as far interior as Zawar in Rajasthan, very old workings for metallic ores are known. Gold appears to have been obtained by panning the alluvial sands of the Siwãlik foothills of the Himalayas, whose 'pepper and salt' sandstones contain one to two grammes of it per ton of material. They got silver possibly as a by product of lead in the Zawar area. The iron amphibolite rocks found in these regions would have served them as iron ores. Some haematitic ores also served their purpose. They would have known steel-making from wrought iron by introducing carbon on second heating in kilns, as has been found out in the manufacturing of wootz steel in Karnataka in the recent past. Copper metallurgy in the ores of Khetri in Rajasthan was also known to them. Bronze and brass alloys have not been mentioned in the Yajurveda, probably they are later to the Yajurvedic period[17].

Similarly Mercury, in Ayurveda-Rasasastra, has found maximum use in Indian medicine though its occurrence in the country is almost nil, and it was obtained by barter from abroad. Similarly, gold is another commodity which was found in meagre quantities in India from the ancient times. The Hutti and Kolar mines in Karnataka have been identified as the suppliers of gold for the Harappan and Mohenjo-Daro civilisations. But all put together, indigenous supply of gold even when India was producing maximum of it was but negligible as compared to world production. These facts suggest that the Vedic sages were good ore hunters and metallurgists at a very early period in human history. No text of any comparative period — for the Vedas are the oldest in the library of mankind — could inform us about metallurgical skills as those of the Aryan sages. In later periods, they tried to produce imitations of metallic gold with an alloy of zinc and lead (brass) with 10 to 12 per cent of zinc — when the alloy gets a golden yellow colour[18]. This alloy probably accounted for the 'fabulous gold' of the country in the early and middle ages which invited invasions.

The most important issue is the availability of tin ore, cassiterite (called kastira) in Sanskrit. It is suggested by the author that the Tosham hill deposit might have accounted for a small quantity of alluvial tin in the area of Aryan origin. But the pan-Indian civilization might have accounted for tin from Burma(near Myanmar), Malaya,

Sumatra, and other places in the east and Afghanistan, Baluchistan in the mid-east. India within her present territory has very little quantity of tin ore[19].

The Earth is also Indra, as Indra meant the geomagnetic-electrical field encompassing the whole earth. Thus, the Vedic sages had mastered many a field of study including hunting. mining, metallurgy. etc.

Earth is one of the eight vasus mentioned in the Vedas. These are some terrestrial and celestial objects present in the universe. But the seers have put greater importance upon the Earth. They have coined an unique term in the literature i.e. *Vasundhara*. The meaning of *Vasundhara* is one who holds all. So Earth holds all vasus unto herself. All terrestrial and celestial objects have some characteristic, but Earth holds all or all their qualities reside upon the earth. Murthy mentioned it properly - *Asta vasus* are said to be *Agni, Prthvi. Vavu, Antariksa, Aditya, Dyau, Candrarna* and *Naksatras*. As such, the Earth is one of the asta vasus. But as She bears all the other vasus mentioned above, She is addressed as *Vasundhara*. The terrestrial fire, a face of the divine fire, which is also in the sun, and hence *Aditya*, and all the *devas* are noted to reside within the Earth as *Vayu, Dyau* etc. and they include the moon and stars. The Earth is formed of *antariksa* i.e., space. As such no other member of this group has the honour of being addressed as *Vasundhara*, except the Earth. It has been explained earlier that the other gods including the 11 *Rudras* and the 12 *Adiyas*, *lndra* and *Prajapati* are parts or specialties of *Vayu*, the Sun is in different sections of the zodiac and *Indra* is the Earth. That *Prajapati* or Brahman is enclosing all these or is present in all these objects is known. Hence, all the gods of the *Rigveda* reside in the Earth. The earth, therefore, enjoys a unique position in the Vedas(68).

Modern view of earth science deals with the fact that earth is a non-living mass of matter. The science decipher the materialistic reality and came to the conclusion that earth is under the different types of forces i.e. gravitational force, geomagnetic force, etc. The ultimate truth lying behind the whole universe is the *space-time continuum.* But the vedic view indicates that the earth is full of divinity. Vedic people consider different gods like *Indra, agni, Varuna* etc. for describing the different characteristics of earth. They also consider divinity behind all planets, stars, moon etc present in the universe. Their imagination extends further leading to an all pervasive principle called *Brahman* which percolates the universe in and through. Murthy explains it -- One of the most important aspects of these hymns is investing the earth with divinity. The earth is elevated to the position of a goddess. This is the most important distinction

between the modern view in the study of the earth sciences and the Vedic view. In the modern study of the earth, the earth is treated as a lifeless planet showing various movements around the sun along with other planets. But in the Vedic view, the earth is not lifeless. It is invested with the divinity of *Indra, Agni, Varuna, Vayu* etc. All the planets, the moon and the sun are invested with divinity. Not only are they considered to be divine manifestations but also that the supreme subtle spirit called the Brahman is seen as residing in all these celestial and terrestrial objects. Herein lies the difference in the conception of the universal objects as reflected in the philosophies of the East and the West. The Western philosophy has, as a result of the non-living conditions of all objects analysed by scientific acumen, arrived at the final space-time continuum as the truth of the universe. But cracks have developed in that philosophy and they are in search of some other principle which can satisfy all these observations. But where Indian philosophy is concerned, the grounding in the Vedic deities made the people find the universal spirit in all the universal manifestations, both living and non-living. Hence, their final conclusion is that the field of Brahman is in existence in the whole ‘universe’, both living and non-living. The first data for both these kinds of philosophies is the same: a detailed study of the natural geological agencies and the planets, luminaries, stars etc. But while Indian philosophy has taken a course of lively discussions, the Western — which has come to be called scientific — philosophy has taken a dreary course and ended in a universe without life, with only an abstract 'space-time continuum'. It is rather difficult to reconcile these two dimensions of philosophy. It is not possible to think of the existence of life-force within the material world. At no stretch of imagination is it possible to feel the existence of life in natural forces like geothermal, geomagnetic, electrical and other fields. Similarly, it has been difficult to arrive at the idea of a 'living Earth' with all the numerous forms of life on its surface. It would be rather difficult to substantiate the destructive activity of the earth through its storms heavy rains, volcanoes, earthquakes etc. Similarly, where its constructive activities are concerned, it is uncertain whether they are done intentionally by the earth or the activities occur subject to some unknown principle, which has not yet been understood by the geoscientists. The earth has a life-field within it; it must also have a field of mind — however subtle it may be. But it has not been proved; there is no means to prove it, except by way of certain inferences like the life supporting capacity of the earth. But there are certain other celestial objects — the other planets, for instance — which have no trace of life in them. Hence. they may

be devoid of even the life-supporting capacity of the Earth. How then can divinity be invested in them? These are very tricky and, at the same time highly reasonable questions to be answered by students studying the earth. That such a thing is mentioned in the Vedas cannot be considered as evidence. All these aspects cannot be proved by physical experiments. Hence, the direct observations as well as empirical data have not been considered by Sayana as the substratum of the Vedas.

Though the geological agencies like the geothermal field, the hydrosphere, atmosphere etc. could be considered in the references to the Vedic deities and the prevalence of field of Brahman — which defies all kinds of description — as the living-non-living universe, there still appears to be something lacking in the oriental philosophy. The absence of such a complete understanding is declared as *maya* or ignorance. It is also said that by the realisation of the Brahman, nothing is left to know. Most of the *risis* of the Vedic school have been known to be *brahmarsis* i.e., one who has realised the Brahman. Even they have not been able to solve many of the seemingly contradictory factors happening on the surface of the earth, for example, the human misery due to the destructive activity of the various geological agencies. They have their Theory of Karma which does not have a strong base. And they also insist that the Brahman has nothing to do with the activities of the *bhutagrarma.* It is just like any field force which has nothing to do with human values. Proving such a thing and realising such a fact does not lead anywhere. Hence, there is the need to combine the Eastern and the Western philosophical ideas especially in the context of life on the earth. Such a philosophy may appeal to the human mind and may be practicable as well. There is scope for a psycho-spiritual-material philosophy, considering all aspects of the Universe.

It is noted in the Taittiriya Upanisad that the Brahman is the concept of *satyam-jnanam-anantam*, meaning that the eternal truth of knowledge is Brahman. It includes the human psyche also when it describes the *manomaya* shell. The Brahman is still subtler, it is observed, and is beyond *vijnanamaya* shell, i.e., even transcending the scientific perceptions. Even then the field of Brahman is noted to be not responsible in anyway for the worldly activities, 'Worldly' is taken as ignorance. Transcending the level of ignorance and realising Brahman takes one beyond time and space. Hence, no scope for any other philosophy is mentioned. Thus, the Earth is the basis of all realizations[20].

In *Rigveda* it is mentioned that the earth has the nature of creator. In earth all living beings are born and after death all these disintegrate. In almost all animals body is made of flesh, blood and bone. Ṛgvedic risis are asking questions regarding how life is formed; blood, bone etc. are originated. Their questions are so simple and their questions are itself the answer of all their enquiries. The earth also sustains whole nature. The months, day, night, year etc. are also the concern of the Ṛgvedic seers. They have calculated the number of months in a full cycle of year and also the number of days / nights throughout the whole year.

One of the most important or the most important hymn in the Rigveda which considers the earth as the foundation to discuss the nature of the Creator is given below:

को ददर्श प्रथमं जायमानमस्थन्वन्तं यदनस्था बिभर्ति ।

भूम्या असुरसृगात्मा क्व स्वित्को विद्वांसमुप गात्प्रष्टुमेतत् ॥

पाकः पृच्छामि मनसाविजानन्देवानामेना निहिता पदानि ।

वत्से बष्कयेऽधि सप्त तन्तून्वि तत्निरे कवय ओतवा उ ॥

अचिकित्वाञ्चिकितुषश्चिदत्र कवीन्पृच्छामि विद्मने न विद्वान् ।

वि यस्तस्तम्भ षळिमा रजास्यजस्य रूपे किमपि स्विदेकम् ॥

इह ब्रवीतु य इमङ्ग वेदास्य वामस्य निहिओतं पदं वेः ।

शीर्ष्णः क्षीरं दुह्रते गावो अस्य वव्रिं वसाना उदकं पदापुः ॥

माता पितरमृत सा बभाज धीत्यग्रे मनसा सं हि जग्मे ।

सा बीभत्सुर्गर्भरसा निविद्धा नमस्वन्त इदुपवाकमीयुः ॥

युक्ता मातासीद्धुरि दक्षिणाया अतिष्ठद्भ्रभो वृजनीष्वन्तः ।

अमीमेद्वत्सो अनु गामपश्यत् विश्वरूप्यं त्रिषु योजनेषु ॥

तिस्रो मातॄस्त्रीन्पितॄन्विभ्रदेक ऊर्ध्वस्तस्थौ नेमव ग्लापयन्ति ।

मन्त्रयन्ते दिवो अमुष्य पृष्ठे विश्वविदं वाचमविश्वमिन्वाम् ॥

द्वावशारं नहि तज्जराय वर्वर्ति चक्रं परि द्यामृतस्य ।

आ पुत्रा अग्ने मिथुनासो अत्र सप्त शतानि विंशतिश्च तस्थुः ॥ Rigveda 1.164.4-11

Who hath beheld him as he sprang to
being, seen how the boneless one
supports the bony?
Where is the blood of Earth, the life, the
spirit? who may approach the man
who knows, to ask it?
Formed with twelve spokes, by length of
time, unweakened. rolls round the
heaven this wheel of during Order.
Herein established, joined in pairs together
seven hundred sons and twenty
stand, O Agni.

The boneless one is the unsubstantiated. i.e.. the prakrti or the Nature and the bony is the substantiated one — the visible universe, the representative of which is the earth. In these hymns, Rsi Dirghatamas question as to how life on the earth originated with blood and spirit and who knows the truth of it. Not only is the question concerned with the manifest universal origin but it also enquiries about life on earth. This question was not asked in the Western world nor even thought of earlier than the nineteenth century and the answer was obtained only in the early part of this century. The same was accomplished by the Upanisadic sages eons ago in India. They arrived at conclusions in line with those of the West but these were substantiated by the concept of the life-spirit leading to the Brahman. The life-supporting capacity of the earth cannot be substantiated if the life does not exist in the earth. This does not mean that life does not exist in other planets where life has not been reported. Life exists in them also but the necessary conditions for its manifestation might be absent in them or life in some other form may exist in those bodies. In any case, the Vedic students of the earth rightly consider the earth as being governed by a field of life. The concept of 'divine earth' is due to the Ṛgvedic sages. That the earth represents a tiny form of the vast universe is also due to them. These are absolutely new to modern science studies of the Earth which have accepted the latter observation but not the former.

The Ṛgvedic hymn given above is important from the view of measurement of time. Earlier. they noted six *ṛtus*: now they note 12 months of the year called spokes of the wheel. Further, the day and night in pairs are described herein as seven hundred and twenty sons, meaning 360 days and nights pairs. Perhaps this is the first measure of time of a year found in any literature. They have scrupulously, in ascertaining the time for their sacrifices, maintained a correct measure of time. The early lunar calendar was slowly blended into a later solar calendar for a still later luni-solar calendar, the measure of which made them keep perfect time for their sacrifices. The naming of the solar months in Vedic period as *Madhu, Madhava* etc. appears to be an extended observation on the terrestrial scene from the *ṛtus*. And the nomenclature of the lunar months is found based on the star during which the full moon appeared. e.g. *Aswayuja. Karttika* etc. Thus, according to Shamasastry. -The mean periods of the *Vedangajyotisa* thus adjusted are so perfect that they could have been observed for 10.000 years without an year going wrong by a single day. Thus, the movements of the Earth helped the Vedic students form a perfect calendar.

The solar sweep of the earth has been described as seven houses and they are named as the seven metres of the Vedic mantras including the *Gayatri* which could be substantiated by the shadow of gnomon. That such an earth protects us is the meaning of *rk*. no. 16 of hymn 22 in *Mandala* 1. The *rk* no. 15 of the same hymn describes the earth as a vast spread and the dwelling place that affords no botheration. Such an Earth is requested to bestow peace on the sage. The 13th *rk* of the same hymn also makes an observation on the Earth. She is requested to help the sage in performing the sacrifice with her products, by which the sage can get plenty. Similarly, there are numerous *rks* which describe the earth in many terms and the meanings of such terms make us believe that the Vedic bards had a very close and highly appreciative tone in their compositions on the earth. They even went to the extent of questioning the Creator who made mountains like the Himalayas, the rivers and the water sheet of the earth, and presented their respectful oblations (as in *rk*. No. 4, Hymn 121, *mandala* X)[21].

Earth's magnetic Field is described in several veses in the *Indra Suktas* (*Rigveda*). In *Rigveda* several verses have been connected with the description of different attributes of *Indra.* All these are mainly associated with two characteristics of *Indra.*

1. Firstly *Indra* is closely associated with thunderbolt and lightning consequently the causing of rains to pour from the rainy cloud and thus fill the rivers, pools, water bodies etc.
2. Secondly *Indra* is related to earthquakes with trembling earth firmly and shaking the movable and immovable material world

It is clearly enumerated by the Murthy ---- The causing of rains from clouds is a natural phenomenon in the hydrological cycle. Thunder associated with the rainy clouds is the loud noise following the flash of lightning due to discharge of electricity through the air. The electricity in the clouds may be due to the geomagnetic-electric field of the earth generated by the motion of its liquid core of iron and other components. This natural phenomenon was addressed as *Indra* and thus *Indra* may fundamentally mean the geo-magnetic-electric field especially since *Indra* is described to be omnipresent.

Coming to the second attribute of *Indra*. it may be recalled that the earth displays several kinds of motions on its orbit. Its regulation, again, is due to the motion in the core which generates the geo-electric (magnetic) field. The shaking of the earth, meaning causing of the earthquakes is a complex phenomena.

The concept of Bhu-Vidyunmandala— geo-electric-magnetic field — is the meaning of the deity Indra with his attributes and omnipresence. Since the Vedic statements are rather 'suggestive', their actual meaning has to be inferred by conceptual prognostication[22].

The vedic seers at first observes all natural phenomena and consider divinity in every aspect of natural events. But they go on searching the root or cause of all events. It is nothing but the searching the theory of evolution in modern time. They understand that some unique principle is lying behind the whole creation. This principle is not only the cause of creation but also the cause of sustenance, and dissolution. In the Upanishads and Brahmanas text the theory of evolution is discussed. In Taittiriya Upanishad , one section is known as *Bhriguvalli* where the *Bhrigu* is the son of *Varuna* asks question his father and requests him to teach Brahman. Father advises him to mediate deeply upon Brahman. After long meditation and contemplation *Bhrigu* tells his father that *Anna* is the Brahman, the supreme reality, all living beings depends upon food or *anna.* Then his father further advises him to continue the meditation, contemplation and deep enquiry regarding the subject. *Bhrigu* realizes *prana*, *manas*, *vijnana* and finally the *ananda* are the atman or *Brahman*. In this way

vedic sages try to find out the fundamental principle upon which all creation exist and dissolve. This known as *Brahman*. They call the *Brahman* as attributeless. But as purpose of understanding it is *satyam- jnanam-anantam* Brahman i.e. truth-knowledge-infinite. The Upanishadic time sages have established the monotheism from the polytheism.

This aspect of the Upanisad deserves much commentary. First of all by the time of this Upanisad, the Vedic bards had gave up all the deities that they had instituted and worshipped in early times. Then they questioned about the one in control of the entire manifest universe. They observed that *Vayu* is the Brahman and began tracing the evolution of space, air, fire, water and the earth from the *Brahman*. The Upanisadic renaissance of the Vedic school is something spectacular: it was an advancement on the earlier understanding and saw the evolution of a monotheistic philosophy from a multitheistic philosophy. All these have come out of a deep study of the earth and its evolution in the manifest universe. The Upanisadic texts are rather crisp and do not unfold the evolution of ideas from the Vedic multitheistic stage to the highly-advanced monotheistic stage. It appears that many texts which could have described this evolution of ideas have been lost, leaving us with little, though extremely significant information[23].

According to Murthy the 'Theory of Evolution' of the earth has not been challenged by any later authority in the entire Sanskrit literature. Rather, they have advocated it as the basis or foundation of their respective theories.

The important feature of earth evolution is categorically described by Murthy—

According to Murthy - the Earth is a representative of the Universe. This concept at once invalidates the understanding that the Earth is independent and can be examined in isolation as per the Theory of Hutton. The mountains, oceans, rivers, plains, deserts and habitable lands are the elements of the earth. The electro-magnetic field of the earth, addressed as the omnipresent '*Indra*', causes thunder and lightning and rains which sustain vegetation and life on the earth; it also causes earthquakes. The atmosphere field of the earth called omnipresent '*Vayu*' is responsible for large-scale movements of rain clouds and dust storms, and it also causes earthquakes. The hydrosphere of the earth called the omnipresent '*Apas*' is responsible for the hydrological cycle, flooding of rivers which join the oceans and maintaining their level. The field of gravitation addressed as '*Varuna'* is noted to control all the above forces as well as keep the luminaries and stars in their path of motion. The geothermal

field addressed as divine '*Agni*'. is found in the sun, waters. rocks, vegetation and life on the earth. The various fields of *Indra. Vayu. Vartina and Agin* interact with one another and cause rainfall resulting in floods, vegetation and life on earth as well as earthquakes. The magical movements of the earth with reference to the motions of the luminaries and stars provide a calendar to measure the time on earth. The earth is the home of Life. It evolved out of space through air, fire and water according to the orders of the Brahman, the fundamental truth underlying universal manifestation and dissolution .

All the fields and their close interaction with earth is depicted in the following picture :

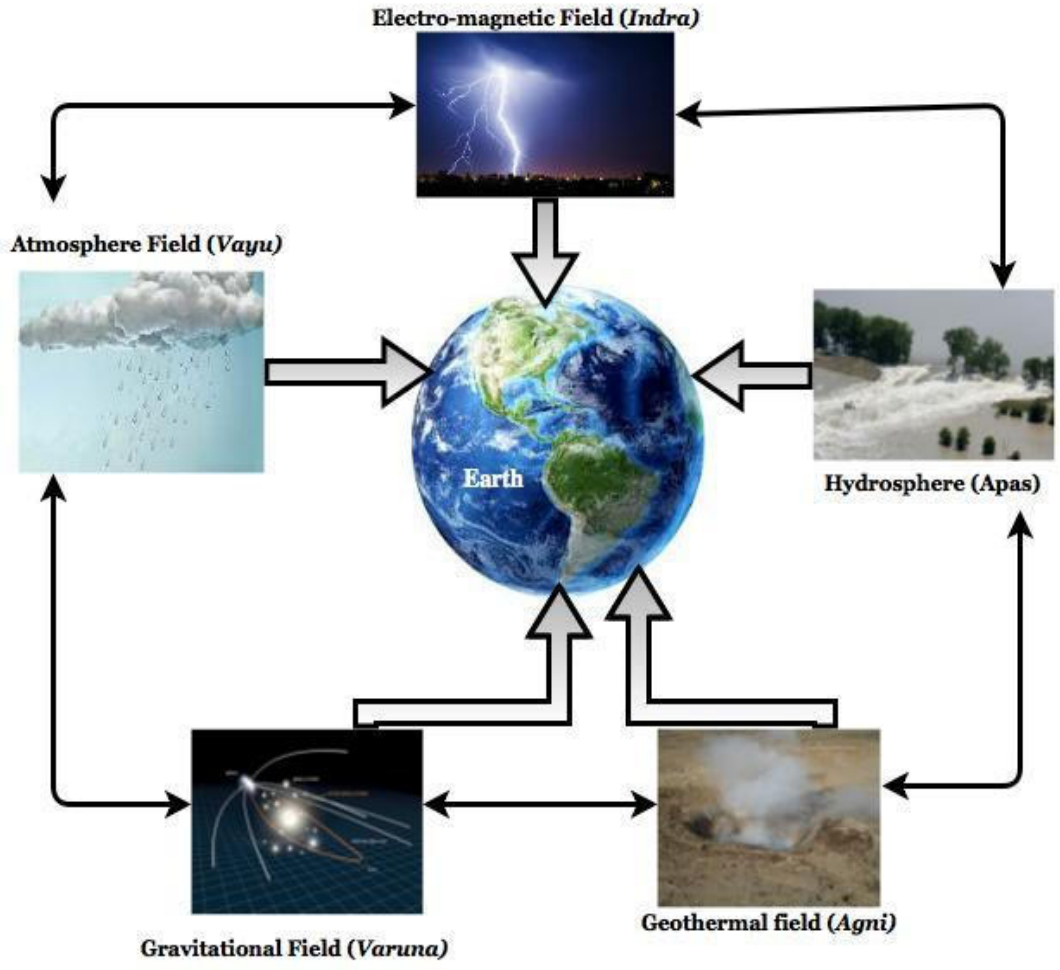

Diagram-3: Different Fields and their interaction with Earth

The modern concepts of the evolution of the universe corroborate the above-mentioned features in general. The modern astronomers also believe that the manifest universe is from space. The concept of space in Hindu philosophy has already been presented. A thorough discussion of the ancient Indian concepts of space by applying Indian logic to them will be rewarding[24].

Water is considered as primeval element. It is said in Rigveda 10,121.1,

हिरण्यगर्भः समवर्ततात्रे भूतस्य जातः पतिरेक आसीत् ।

स दाधार पृथिवीं द्यामुतेमां कस्मैदेवाय हविषा विधेम ॥ Rigveda 10,121.1

"Neither Non-Being nor Being existed then. Neither air nor the firmament above existed. What was moving with such force? Where? Under whose care? Was it the deep and fathomless water[25]? Again in Atharuaveda 12.1, The earth was originally a wave in the heart of the ocean; the Sages went looking for it with their magic"[26]. In the Satapatha, Brahmana (VI.1.1.9) it is said that they were produced out of *vac*, the word: the first element out of the first "principle". The waters are primeval element; everything rests on them[27]. In Rigveda X.137.6.7: Atharva Veda V. II.3.6; V1.91.3; Satapatha, Brahmana. III.6.1.7 etc. the waters are described as possessing an integral reality, and thus having healing power. Water is the great cleanser, second only to Agni (fire), the Great. Purifier. In contemporary terminology, one would say that water cleanses and fire disinfects or sterilizes[28].

आप इद्धा उ भषजीरापो अमीवचातनीः ।

आपः सरवस्य भेषजीस्तास्ते कृण्वन्तु भेषजम् ॥ Rigveda X.137.6.7

Again, Rigveda VII.49; X.9. speaks of the divine waters and the waters of life.

समुद्रज्येष्ठाः सलिलस्य मध्यात्पुनाना यन्त्यनिविशमानाः ।

इन्द्रो या वज्री वृषभो ररात ता आपो देवीरिह मामवन्तु ॥

या आपो दिव्या उत वा स्रवन्ति खनित्रिमा उत वा याः स्वयंजाः ।

समुद्रार्था याः शुचयः पावकास्ता आपो देवीरिह मामवन्तु ॥ Rigveda VII.49. 1, 2

This reminds us of the fact that water is a substance that has the greatest dissolving power. Water is also considered as primordial element.. In Rigveda X.45.1.3; VIII.43.9; X.121.7: Satapatha, Brahmana VI.8.2.4, Agni is mentioned as the son of the Waters.

दिवस्परि प्रथमं जज्ञे अग्निरस्मद् द्वितीयं परि जातवेदाः ।

तृतीयमप्सु नृमणा अजस्रमिन्धान एनं जरते स्वाधीः ॥

समुद्रे त्वा नृमणा अप्स्वऽन्तर्नृचक्षा इधे दिवो अग्न ऊधन् ।

तृतीये त्वा रजसि तस्थिवांसमपामुपस्थे महिषा अवर्धन् ॥ Rigveda X.45.1.3

अप्स्वग्ने सधिष्टव सौषधीरनु रुध्यसे ।

गर्भे सञ्जायसे पुनः ॥ Rigveda VIII.43.9

At the sight of waters we find prayer welling within us and in prayer we become aware of the marvelous harmony of this universe. "In the waters, O Lord, is your seat!"[29].

The Vedas give the general understanding about the role of water in the process of proper functioning of the environment.

Water is regarded as divine and described as mother, the parents of all existing things and as the knower of the origin of heaven and earth. According to the Vedic cosmogony, water is the primeval element. The hymn of creation (*Nasadiya Sukta)* indicates that everything was at first water. It is water which first came into existence. In Veda Varuna is a major god who rules over nature, gods and human; he is guardian of rita, the religious order of things. In RigVeda it is stated that Agni is closely related with water. Agni is described as " son of the waters" and also dwells in the water. Fire and water exists together. The cleansing effect of the waters has been recognized. It has a great environmental effect. The water cycle is known to vedic sages. The water in the rivers or other water bodies is the nerve centre of the living kingdom. There is any substitute for pure, sparkling water. Its importance for animal and plant health has recently understood by modern science. The vedic sages chant prayer to the waters of life and source of happiness, seeking for vigor, energy, health and strength. Without water the earth is a desert. Without there is no rice, no bread, no any other food items – there exists only hunger, sorrow, diseases and despair.

आपो हि ष्ठा मयोभुवस्ता न ऊर्जे दधातन ।

महे रणाय चक्से ॥

यो वः शिवतमो रस्तस्तस्य भाजयतेह नः ।

उशतीरिव मातरः ॥

तस्मा अरं गमाम वो यस्य क्षयाय जिन्वथा ।

आपो जनयथा च नः ॥

शं नो देवीरभिष्टय आपो भवन्तु पीतये ।

शंयोरभि स्त्रवन्तु नः॥ (Rigveda X.9.)

The waters are naturally conceived as feminine. Since the unity of water in its natural sources was extremely important. It was equated to the "mother image". The relationship between water and human beings has been depicted as one that exists between a mother and her children: " *ambayo yanthu adhvabhir jamayo adhvariyatam / prncatir maghura payah*"(Rigveda 1.23.16).

अम्वयो यन्त्यध्वभिर्जामयो अध्वरीयताम् ।

पृञ्चतीर्मधुना पयः ॥ (Rigveda 1.23.16)

It says that water are mothers per excellence. It means mothers to us, who are desirous of sacrificing, the kindred waters low by the paths of sacrifice, qualifying the milk of kin with sweetness. In Atharvaveda (1.5.1-4) water has been illustrated as a great refreshing object, a propitious savior, a zealous mother and an adept generator[30].

Water removes the illness of people and is helpful to keep death away. Vedas indicates it as the origin of medicine. It is source of pleasure, possessor of life infusing power. It ensures long life and creative energy, they are the principle of all healing and immortality.

Soma juice described in Vedas as flowing liquid or fluid. Some of these *Soma* plants had a milky sap. *Soma* was obviously a substance that exhilarated, inebriated, intoxicated and gave enhanced powers mentally and physically. *Soma* is a juice having rich content of alkaloids which has many important physico-psychological effects upon human beings.

The Hydrosphere is mentioned in the Apa Suktas. A vivid description of the torrential rains attended by roaring thunder and the forming of numerous streams leveling the undulations of the ground is found in the *Parjanya Suktas*. The rain

waters treated by the Sun are described as ambrosia capable of healing all injuries. Many of the rivers draining the land of *Brahmavartta* have been described in the *Nadi Suktas*. The *Sarasvati* which is the most important river of the Vedic Civilization has been elevated to godhood and its most important utility that of production of food, has been well described. The cleansing and active nature of the sea waters has been described in *SamudraSuktas*. The incessant action of the rivers draining the ground and marching to music as they flow towards their receptacle seas is described. *Nadi* means one which produces sound (*nadati*). The most benevolent aspect of the waters, especially their role in the upkeep of the environment, was recognised by the Vedic sages. The rivers were seen as a healer of all diseases and sicknesses. Their flooding nature, roaring movement, thundering sound, confluences and the effect of erosion of the river banks and mountains were understood and these are some of the first and finest lessons in modern physical geology.

Varuna is said to reside in the waters and make them flow His law as well is followed by all gods. This suggests that the gravity flow of the waters in the form of streams and rivers now called the force of gravitation was known to the Vedic sages. Though some of the concepts overlap, their rudimentary aspects can be gleaned. They observed that all the rivers flow into the oceans which maintain a level due to the action of *Varuna*. It was a wonder to them that in spite of the flow of waters through the rivers of the world into the seas, the seas did not fill up! *Varuna*'s power of controlling the waters' flow and ordering the motion of the sun, moon and the stars suggests that it is nothing but the force of gravitation known to modern science[31].

Water is described in many forms and functions in Brahmanas. According to Satapatha Brahamana it is said that waters are produced out of *vac.* The waters are the primeval element: everything else rest on them. The waters are, it must be remembered the primeval elements, they are a fact and they are also based on fact, on truth[32]. Waters as the primeval element, everything else rests on them. Water is not only filled with the desire for procreation (*kama*). it is also capable of truly creative effort and ascetic heat (*tapas*)[33]. For Satapatha Brahmana waters are the foundations of the world[34]. In particular, bodies of water often establish important boundaries[35].

Waters belong to the three worlds. The ritual of the Satapatha Brahmana points out those vessels and other utensils after being used in the sacrifice must be thrown into the waters precisely because these waters are the basis and foundation of the universe.

It is still a common practice in everyday life to immerse idols, utensils, used things in the sacred rivers. Moreover, deceased children and holy men are not cremated but are returned either to the earth or to the waters. All this symbolizes the same thing: the return to, the origins[36]. Water symbolizes the primal substance from which all forms come and to which they will return. It .existed at the beginning and returns at the end of every cosmic or historic cycle: it will always exist, though never alone, for water is always germinative, containing the potentiality of all forms in their unbroken unity[37]. The symbolic use of water, which cleanses the mind and soul is also the cleansing agent of the body. It is used as the purifying agent or item used for offering respect to the almighty in different ritual of many religions and as such is pointed out in the *Satapatha Brahmana*.

In collecting so many varieties of waters, the priests collected the vigor and the essence of the waters. The waters was not made " holy" by depriving it of its mundane qualities, but its properties were enriched and its efficacy increased by the molding of diversity into one[38].

The waters are also recorded the Brahmanas as the conception of law: when the waters comes to this earth, then all is in due and lawful order: when there is lack of rain, the stronger oppresses the weaker (Satapatha Brahmana XI.1.6.24). The waters are also the reality itself (Satapatha Brahmana. VII.6.1.4). they are immortality (Gopatha Brahmana II. 1.3), they are faith and they are sacrifice. Human person must use them to sprinkle himself/herself with water in order to become ritually pure. The performance of the bath provides even consecration and fervor, for the gods placed consecration in the waters. Moreover, the sap of the sacrifice is in the waters and by it they flow (Satapatha Brahmana III.9.2.1). The waters are as a thunderbolt, and they must be propitiated with suitable words to avoid injury by them. They are extremely powerful to destroy the *Raksases,* and they are therefore, benevolent if managed well: they form atonement (Satapatha Brahmana I.9.3.2: Aitareya Brahmana VIII.6)[39].

In Upanishads water is the first principle of creation. In Brhadaranyakopanisad (III.6.1) that Gargi opens a discussion with *Yajnavalkya* by asking a question – ' this entire world is woven, warp and woof, on water[40].

आप एवेदमग्र आसुः, ता आपः सत्यमसृजन्त, सत्यं ब्रह्म ब्रह्म प्रजापतिम्, प्रजापतिर्देवात् । (Brhadaranyakopanisad *V.5.1*) Water is present in the beginning of the world. From

the water satya or truth is produced. This truth is nothing but Brahman. From Brahman *Prajapati* is created. From *Prajapati* all gods are produced.

All the elements, which before their manifestation remain in an undifferentiated state, are together with the agent designated as water. That water which is the seed of the universe, remains in its undifferentiated form. This entire universe, differentiated into name and form, was just this water in the beginning, and there was no other manifested object(Brhadaranyakopanisad *Bhasya of Shankara V.5.1).* This water created Truth-Satya, Satya-Brattman who in turn created the dems-gods[41]. This passage indicates that originally the waters were the first to exist and later everything came from them. The *Brhadaranyakopanisad* regards Water as the origin of all things whatsoever, disposing of a belief in God as the creator of the Water itself[42]. For this reason it is said that Water is the source of all things and life is impossible without water.

Water is indeed greater than Food. Because when there is sufficient rain all living beings become happy, delighted at the prospect that there will be much food. Because, solid Food has its source in Water, all these things - that are found to be solidified into various forms, as well as formless - such as earth, sky, mountains, gods and human and the rest - are only water solidified - assumed forms: all these things with forms are Water itself(Chandogyopanishad *Bhasya of Shankara.VII.10.1*). Moreover, there is one god in water, the seed and the heart. Agreeable, i.e., not contrary to the Srutis and Strirtis, is his/her attributes. The result is that only agreeable things come to him/her not adverse ones. Another result is that from him/her are born children who are such i.e., obeying the scriptures (Brhadaranyakopanisad *Bhasya of Shankara II.1.8).* In Chandogyopanisad VI.5.2 it is said that when a person drinks water it becomes threefold: The grossest portion becomes water, the medium part into blood and the subtlest part into breath-Prana. Again in the same text (VI.6.3) it is said, the subtlest portion of water when drunk rises upward and becomes breath -Prana. Further it is mentioned (V1.7.1) that a person can survive for fifteen days without food but only drinking water to his/her heart's content. For breathe comes from water and therefore will not be cut off if one drinks water[43]. Waters are neither air nor earth: they are on earth hut come from heaven; they bring life but they can also be lethal; they purify but they can also be muddy; they flow on the surface but there are also internal rivers of water in the earth; as well as in the individual; they take all forms

and have unlimited freedom, but yet they are not Supreme[44]. There is something greater than water.

In Vedas Air is of two types i.e. *vata or vayu*. *Vata* indicates as an element and *Vayu* indicates the God personified. Of all the forces of nature air is the most restless and chaotic. It never stops any place. It has a constant ceaseless motion without any preferred direction. Modern science calls this movement as Brownian movement.
Besides the gentle breeze, there are found three types of wind in the Vedic area, wind accompanying dust-storms, wind that blows up monsoon, and wind that accompanies the rain-storm. In the hymn mentioned below, there is mention of the wind that whirls up the dust, and air/wind as 'the Water's friend' may be the wind that "brings the monsoon-clouds in due season"[45]. Ṛgvedic hymns have clear reference regarding the benefits bestowed by the air/wind and they constantly pray for such blessings.
In Rigveda X.168 verse it is mentioned that the air/wind collects and takes away in his chariot toward the celestial heights.

वातस्य नु महिमानं रथस्य रुजन्नेति स्तनयन्नस्य घोष ।

दिविस्पृग्यात्यरुणानि कृण्वन्नुतो एति पृथिव्या रेणुमस्यन् ॥ Rigveda X.168.1

And it is this same air/wind which is connected with the primordial waters and is called the first-born. Its origin is unknown and nobody knows where it goes and where it comes from. It freely moves, its voice is only heard and its form is not seen. Its presence can be sensed, felt and understood. The air presents itself as a mysterious element. Its theophany is in terms of sound and not in terms of sight. Its origin sometime called the child of heaven and earth (Rigveda VII.90.3) and again it is said to have sprung from the breath (prana) of the world-giant (X.90.13).

राये नु यं जज्ञतु रोदसीमे राये देवी धिषणा धाति देवम् ।

अध वायुं नियुतः सश्चत स्वा उत श्वेतं वसुदधतिं निरेके ॥ Rigveda VII.90.3

चन्द्रमा मनसो जातश्चक्षोः सूर्यो अजायत ।

मुखादिन्द्रश्चाग्निश्च प्राणाद्वायुरजायत ॥ Rigveda X.90.13

The hymn (X.186) voices a deep prayer that he may breathe or impart life or prolong the life with comfort.

वात आ वातु भेषजं शंभु मयोभु नो हृदे ।

प्र ण आयूँषि तारिषत् ॥ Rigveda X.186.1

The Vedic Indian knew the hygienic and vital aspects of the air. They knew that air is the condition of life and air in motions the condition of health. If there were terrible activities of air/wind, sending forth brood of winds to accompany the thunder-strom, shattering trees and whirling up dust, there were also gracious (Rigveda, VIII.26.23) and remedial activities.

वायो याहि शिवा दिवो वहस्वा सु स्वश्व्यम् ।

वहस्व महः पृथुपक्सा रथे ॥ Rigveda, VIII.26.23

Air cures diseases and prolongs the life process. In its possession the power of immortality is lying. Air is a powerful thing because the existence of life depends upon the presence of the air. So Air is called the source of the world and the father of humanity.

मधु वाता ऋतायते मधुक्षरन्ति सिन्धवः माध्वीर्नः सन्त्वोषधिः ॥ (Yajurveda *13.27*)

Vayu - air. is limitless. effortlessly it crosses boundaries of land and sea, earth and water. Invisibly it pervades all that lives, and without it all would die, it pervades space, crossing the ocean and continents and is higher than the reach of fire, the flight paths of migrating birds or clouds. It is the force, which protects ships across the seas or down the rivers, which moves the water and forests, which kindles and nurture fire, drives it forward and brings rain clouds[46]. 184 Finally Air is recognized as breath of life, *prana,* of all living beings. No living beings can exists without air. Inthis sense, the recurrent word *bhuta* indicates all beings and being alive means to have a spirit, therefore whether material or immaterial or just air, *bhutas* have a real existence[47].

The Air is noted in the Vayu Suktas. Here, both the *Vayu* and *Marut Suktas* are taken into consideration. *Vayu* and the *Maruts* are described to be great and mighty; they make a thundering noise and cause mountains to quake. The destruction of forests by gales has been described. Their ability to generate thunder and storms relates them to Indra (geo-electric field) and they are known to be allies of *Indra*. The transportation of rainy clouds, the movement of sand and rocks due to heavy gales, storms, cyclones,

hurricanes, tornadoes etc. have been recognised by the Vedic bards and recorded. In association with the waters, the winds act swiftly to clean the ground and weather out the rocky surfaces of the mountains. Thus, the geological activities of the major geological agents have been identified by the Vedic bards in their geo-poetry of the Rigveda. There may be some exaggerations and shortcomings in the compositions of hymns. The exaggerations, however, may be seen as characteristic of poetry; bereft of such things, the matter would boil down to hard facts many of which are corroborated even today by students of physical geology. These early observations may not compete with those derived from modern study since they are more than five to six thousand years old. But they, very early, realised the global aspects of the geological agents. That in itself is something superb. The Vedas are thus not only religious spells, as they have been known from the time of their composition, but also the foundation-stones for material philosophy. The activities of sub-surface geological agents as dealt with in the Vedas bring out the geomorphological changes that attend upon them and the changing scenery of the earth (evident in the Vedic observations on seasons). While giving importance to the earth shells of lithosphere, hydrosphere and atmosphere along with the geothermal field and geo-electro (magnetic) fields, the Vedic sages also made a thorough study of time by manipulating the motions of the luminaries against the starry background of the Zodiacal belt[48].

Air is described in different forms in theseveral Upanishads.

वायुर्वाव संवर्गो यदा वा अग्निरुद्वायति वायुमेवाप्येति यदा सूर्योऽस्तमेति वायुमेवाप्येति यदा चन्द्रोऽस्तमेति वायुमेवाप्येति ॥

यदाप उच्छुष्यन्ति वायुमेवापियन्ति वायुर्यैवा वैतान्सर्वान्संवृङ्क्त्ऽ इत्यधिदैवतम् ॥

Air indeed is the absorbent. When fire is extinguished it goes to the air, when the sun sets it goes to the air, when the moon sets it goes to the air, when the waters dry up, they go to the air, thus verily is Air the final absorbent of things whatsoever (*Chandogyopasishad*, IV.3.1.2). In nature many elemental forces are present. Such as fire, water, sun, moon etc. They everyday and a particular duration of time exist. After that they all finish their activity. All their perceptible activities are absorbed by the Air. So at last only Air remains exist. When human being goes to sleep, other

functions of the body disappear in sleep and only the breathing function exists. Similarly all the natural phenomena disappear into Air and Air only exists ultimately.

In *Kaushitaki Upanishad*. *II.12* indicates that the air is the end of everything or the final absorbent that when fire, sun, moon or lightning die, their life goes to the air. Though dead having entered the air, they do not vanish but out of the very air they rise again. In *Chandogyopasishad*, it is said that the body of all organic beings can be sustained only as long as the *Prana* inhabits it[49].

सर्बाणि ह वा इमानि भूतानि प्राणमेवाभिसंविशन्ति प्राणम्भ्युज्जिहते ।

All these created beings enter into the body with the breath, and these again leave the same body with the Breath i.e. exhalation of the breathing (*Chandogyopasishad,1.11.5).*

All beings whether animate or inanimate arise out of Breath at the time of birth. This is the primary symptom for the presence of the life. So long they exist Air / Breath constantly maintains their existence. When all dissolute in time of death they goes back into the Breath / Air. Without breathing no life can be possible for a moment. Life is what is between the first breath and the last breath.

Vayu is praised as the protector of the world. Praise to Air, who dwells in the atmosphere and protects the world नमो वायवे अन्तरिक्षाक्षिते लोकस्पृते लोकमसमै यजमानाय देहि । (Maitri Upanishad, VI.35).

On account of purifying nature, *Vayu*, i.e. wind appears to be identified with *Yajna* – the sacrifice. The wind acquires this quality of purifying the ill-smelled things through its ever-moving and constantly active character[50].

Agni in Veda is described as several different forms. It has transcendental power and other powers. So Agni is an important element in nature that was understood by Vedic people. Agni is *deva* or deity and is used to indicate not any material phenomenon present in the nature but it is personified as God represents the manifestation of transcendental power.

It is unpredictable and cannot be said – as good or bad. But it is both good and bad aspects. So it is the matter of great respect in the vedic period. The mystery of fire is the ground of many Vedic paradoxes. Agni is at once young and old, heavenly and earthly, latent and manifested[51].

Agni has brilliant complexion, flame like hair and beard, several tongues, pointed teeth, shinning face and blazing eyes. It destroys everything present in the earth. Agni is old but at the same time eternally young, fertile, and life giving[52].

Agni is called *jata-vedas* i.e. he who knows all created beings. He is also called *visvani vayunani vidam* i.e. knower of the all manifestations, all phenomena in the world. Agni is required for sacrifice. From sacrifice all things come into existence. Agni in Vedas is always presented in the double aspect of force and light. He is divine power that builds up the worlds, a power, which acts always with a perfect knowledge[53].

Life of the living beings is but the continuous process of offering to the divine fire. Life after being offered is converted to fire and life is nothing but the part and parcel of the fire. So the manifestation of life in being is but the expression of the fire in that being.

अग्निमीले पुरोहितं यज्ञस्य देवमृत्विजम् ।

होतारं रत्नधातमम् ॥

अग्निः पूर्वभिर्ऋषीभिर नूतनैरूत ।

स देर्वा एह वक्षति ॥

अग्निना रयिमश्नवत् पोषमेव दिवेदिवे ।

यशसं वीरवत्तमम् ॥

अग्ने यं यज्ञम्धरं विश्वतः परिभूरसि

स इद्देवेषु गच्छति ॥

अग्निहोर्ता कविक्रतुः सत्यश्चित्रश्रवस्तमः ।

देवो देवेभिरा गमत् ॥

यदङ्ग दाश्रुषे त्वम अग्ने भद्रं करिष्यसि ।

तवेत्तत्सत्यमङिगरः ॥

ऊप त्वाग्ने दिवेदिवे दोषावस्तधिर्या वयम् ।

नम भरन्त एमसि ॥

राजन्तमध्यराणां गोपामृतस्य दीदिविम् ।

वर्धमानं स्वे दमे ॥

स नः पितेव सूनवे अग्ने सूपायनो भय ।

सचस्वा नः स्वस्तये ॥ (Rigveda, 1.1)

All life is a sacrifice, an endless series of mutual offerings, a giving which is also a receiving, a complementary rhythmic exchange within the Oneness. Living is giving, a single interdependent movement in which each being partakes of the whole and the whole partakes of each being. This burning state of giving which bestows warmth and radiance is the flame of life, the inner Fire of the cosmic religion of oneness[54].

Vedic people are sincere about doing sacrifice. For sacrifice offering is required to place into the Agni. It is believed that the offering goes to particular God through the Agni. Agni acts as a mediator which as a carrier sends the required offerings to the desired deity. Agni is a source of heat. Heat looses the gross bonds in the substance and in presence of Fire / Agni substance loses its grossness and gradually becomes subtler. Finally it becomes so subtle that it goes to the higher region with its required destiny. Heat transforms it and endows it with a power to ascend to its goal. The offerings, therefore, can rise up to the gods, only when they are transformed and endowed with energy[55].

O Agni, thou have made the Sun, Eternal Star to mount the sky, bestowing light on living men/women (Rigveda, X.156.4).

आग्ने नक्षत्रमजरमा सूर्य रोहयो दिवि ।

दधज्ज्योतिर्जनेभ्यः ॥ (Rigveda, X.156.4)

And therefore, it can also be said that the benefits of light and warmth that fire gives and its service in preparing food are regarded as direct gifts from the gods. The Vedic poets saw a connection between the light and heat of the fire and the light and heat of the sun, and then trace the ripening of grain and fruit to the same beneficent power. It is only a step from this to the power of one great God[56].

तं पृच्छता स जगामा स वेद स चिकित्वाँ इयते स न्वीयते ।

तस्मिन्त्सन्ति प्रशिस्तस्मिन्निष्टयः स वाजस्य शवसः शुष्मिणस्पतिः ॥

तमित्पृच्छन्ति न सिमो वि पृच्छति स्वेनेव धीरो मनसा यदग्रभीत् ।

न मृष्यते प्रथमं नापरं वचोऽस्य क्रत्वा सचते अप्रदृपितः ॥

तमिद्गच्छन्ति जुह्वऽस्तमर्वतीवश्वान्येकः शृणवद्वचांसि मे ।

पुरुप्रैस्ततुरिर्यज्ञसाधनोऽच्छिद्रोति ः शिशुरादत्त सं रभः ॥

उपस्थयं चरति यत्समारत सद्यो जातस्तत्सार युज्येभिः ।

अभि श्वान्तं मृशते नान्ये मुदे यदीं गच्छन्त्युशतीरापिष्ठितम् ॥

स इं मृगो अप्यो वनर्गुरुप त्वच्युपमस्यां निधायि ।

व्यब्रवीद्वयुना मत्येभ्योऽग्निवद्वाँ ऋतचिद्धि सत्यः ॥ (Rigveda, I.145.1-5)

Uplift your prayer! He comes! He knows! His wisdom is implored. In him are counsels, in him requests, this Lord of power.

Human pray to him, yet he needs no asking: his mind has grasped all things. He goes as one who knows the first word and the last, with mind composed.

To him ascend these hymns, these steed-swift prayers. He alone hears my words. All-mover, all-conqueror, conveyer of sacrifice, the Child, ever aiding, he assumes great power.

What he meets he grasps and, newly born, advances vehemently, darting with his fellows. He brings to the weary pleasure and great joy, accepting their gifts.

He is a being of flood and forest who passes aloft, knowing the law, he inspires to right action, this wise and true Lord (Rigveda, I.145)

Here Agni or Fire is personified. He is sage like knowledgeable personality. He knows the righteous path and knows all inner significance. Again he is beyond man and posses all power.

The Fire is the sage who knows the truth of himself as the being who resides in the hearts o all. He knows the teachings. He knows the meaning at our thoughts and the sense of our symbols as the Fire which sees into the depths. He is not a mere human invention. He is the free Spirit of the natural world, the person who contains within himself all nature. That Fire who is human and all the world, and the human beyond the world, is the being of Reality[57]. This passage of the Rigveda gives us the very unique character of *Agni*. *Agni* has the power and lordship of infinite capability. Yet at

the same time is merciful, compassionate, full of goodness and easily pleased by the devotion of the human beings.

In the verse of Rigveda III.22, X.51 .3 and Atharvaveda X.8.40 it is described that Agni is hidden in the plant world, and present in water. Moreover for growth and normal physiological activity Agni/fire is necessary. Otherwise all these activities cease and the normal consequence is the cessation of life. Thus Fire, as the energy is responsible for the dynamics of nature or in ecological terms, the agent of the continuous exchange of energy and matter and constant evolution development of everything uninterruptedly. Fire, as Agni is the ecological factor causative of movement at all levels, from molecular to the astronomical[58]. In fact, it is Agni who guards our bodies with ever-watchful care. It is He who is eulogized as physician and maker of remedies[59].

The Earth's Geothermal Field is mentioned in Agni Suktas of Ṛigveda.The geothermal field of the earth is represented as *Agni*. The term *Agni* is mentioned again and again in Ṛigveda. It has many important characteristics which are very unique. So the sages of Vedas repeat their chanting again and again to announce the glory of *Agni*. The following are important phenomena observed by Vedic seers.

Agni is present in rock. In the core of the earth where metallic substances are in molten form and covered by rocky substance, *Agni* is verily present there. This inner presence of *Agni* exposes to environment in form of volcanic eruption. When this expression of fire takes place in the sea water then it is present in water. It is present in the vegetable. It is present in the all life forms of the earth.

Agni is the universal carrier of *havi* i.e. oblation for deities. So the natural geological agencies can be linked through the medium of *Agni* i.e. geo-electric field. This geo-electric field is controlling the temperature of the climate, cloud-rain dual phenomena, vegetation, formation and sustenance of different life process in the earth. The geo-thermal field is not only interact the different field forces present in the earth, but also it interacts with the field of luminaries. All these fields present in the universe are closely related each other.

Agni , as geo-thermal field force is omniscience and directly pervades all objects in the earth. All forces and field actions are in direct contact of geo-thermal field.

Agni is said to shine like the sun with a luster resembling that of the dawn and the lightning of the rain clouds. Hence he is noted to be the brother of *Indra*. Here it may be stated that conversion of geothermal energy into geo-electrical energy is intended. *Agni* is noted to reside in waters as 'Fire under the Sea'. The sun being described as a form of *Agni* who was brought to earth from the heavens by *Matarisvan*, the triplicity of *Agni* may be observed here. *Agni* resides in the rocks — the primary rocks are called 'igneous ('igni' is derivative of *Agni*), in vegetation, in life and all objects. This proves his omnipresence. Hence, *Agni* means the Geothermal Field.

Agni is prominently the carrier of *havis* to all other deities. This means that all other natural geological agencies can be approached through the medium of fire. The importance of temperature in controlling the climate, the effective action of the hydrological cycle, the formation of rocks, and the growth of forests, vegetation and all life on earth has been appreciated by the sages. The interaction of the geothermal field with all other field forces including the atmosphere, hydrosphere, lithosphere and with the fields of luminaries is evident. All these fields exist within the earth and they mutually influence one another and individually interact with the earth. In this way the hymns concerning the aspects of *Indra-Agni. Agni-Vayu. Agni-Marut,* etc. are relevant. The great sages, for want of technical terms, infused divinity into the field forces and named them as gods.

The attributes of *Agni* — his omniscience, his being the forehead of the sky and centre of the earth, his close touch making solid things shake, his traversing of the earth — all go to show the activity of the geothermal field. As the medium of *havis* to all gods. *Agni,* or this agent of the geothermal field, has direct contact with all other field forces. Though other geological agents like the geo-electric, hydro and atmosphere are also omnipresent. *Agni* is special in that he alone carries the *havis* to all[60].

Agni is described in many Brahmanas. Without light there is no life. But light is not an abstract reality, light is Sun and Fire[61]. The Kausitaki Brahmana says, --- Light is *Agni, Agni* is light. The one who is light, he calls light...*Agni* offers itself in sacrifice to the rising Sun and the setting Sun offers itself in sacrifice to *Agni* in the evening: Night sacrifices itself to the Day and Day sacrifices itself to the Night (Kausitaki Brahmana, II.8). The sacrifice is the *Agnihotra* (fire-offering). Satapatha Brahmana says that if the priest did not perform the *Agnihotra* in the morning, that day the sun would not rise (Satapatha Brahmana 11.3. 1.5). The mystic fire on the sacrificial altar

is a liberating force (Satapatha Brahamana,7. 1. 2. 21): through its agency in the pursuit of solely selfish interests and is made capable of feeling the pulsation of the infinite her/himself (Satapatha Brahamana. 7.1.2.23). By pouring oblations into the fire, the sacrificer gains access to the world of light. Thus having emptied her/himself of impurities is refilled with the nectar of life which pours down from heaven and so enjoy good health and with all his/her faculties fortified, a full span of life[62]. It is also said that the vital fire deep in the soul, stimulated by the sanctified oblation, blazes upwards (Satapatha Brahamana. X.6.4.10).

Thus with the shift in emphasis from sacrifice to sacrificer in the Brahamana period, the abstract qualities of the fire's "heat" (tapas) become interiorized. The heat of the flame, of Soma, of the priest's sweat, and of the cooked food becomes part of an internal sacrifice within the body (antaryajna) of the "patron become priest". What was in the period of the Brahmanas the elaborate fire ritual (*Agnihotra*) becomes in the ascetic tradition the -interiorized fire ritual- (*antaragnihotra*). As human sell identified with the sacrificial process and with the cosmos, an elaborate system of correspondence is set up homologizing the microcosmic fires of wo/ man's body with the macrocosmic fires of the universe, the whole system manipulable through the asceticism of yoga. The long-haired ascetic (muni), first seen holding fire and riding the wind in Rigveda 10.136, now becomes the ascetic thoroughly possessed by *Agni*: in his head is the fire of mind and speech, in his arms the fire of sovereign power, and his belly and lions the fire of productivity[63].

Agni is of several names and forms in Upanishads. In the Kathopanishad it is said that Fire after entering the universe it takes different forms – अग्निर्यथै को भुबनं प्रबिष्टो रूपं रूपं प्रतिरूपो बभूब ॥ *(*Kathopanishad*, II.5).* On the other hand, in the Chandogyopanisad, it is said that Fire was the first to evolve from the primeval Being, and that from fire came water, and from water the earth[64].

तेजो वावाद्भयो भूयः । तद्वा एतद्वायुमागृह्याकाशमभितपति तदाहुर्निशुचति नितपति वर्षिष्यति वा इति तेग एव तत्पूर्वं दर्शयित्वाऽथापः सृजते तदेतदूर्वावाभिश्च तिरश्चीभिश्च विद्युद्भिराह्लादाश्चरन्ति तस्मादाहुर्विद्योतते स्तनयति वर्षिष्यति वा इति तेज एव तत्पूर्वं दर्शयित्वाऽथापः सृजते तेज उपास्स्वेति ॥ (Chandogyopanisad*, VII,11,1)*

'Fire/heat, verily, is greater than water. For it seizes hold of the air and warms the ether. Then people say it is hot, it is burning hot, and it will rain. Thus does heat show this sign first, and creates water. So with lightning, flashing upwards and across the sky and thunder roll people say, there is lightning, there is thunder, therefore it will rain. Heat, indeed, first indicates this and creates water. Meditate on heat'[65].

अग्ने नय सुपाथा राये अस्मान् बिश्बानि देब बयुनानि बिद्बान् ।
यूयोध्यस्मज्जुहुराणमेनो भूयिष्ठां ते नमऽक्तिं बिधेम ॥.*(*Isopanishad*, 18)* The above verse of Isaopanisad is one where the sages pray to the Fire the heartfelt prayer. This is a common prayer of every man. Every man after death wants to unit with the source from which he/she has come into existence. So sages pray to fire so that it will lead the subtle body to Brahman. So according to them fire not only burns the mortal reaming after death, but also it carries the subtle part of the human being to its ultimate source i.e. Brahman.

Agni burns out in us and it is that increasing knowledge and force which carries us finally into the straight or good path out of the crookedness. Agni in its divine force which manifest first in matter as heat and light and material energy and then, taking different forms in the other principles of human's consciousness, leads us by a progressive manifestation upwards to the Truth and the Bliss[66].

Ether (Space, Sky, Heaven)is mentioned in Vedas. The element ether or *Akasa* does not appear in the early Vedic period. However, its synonyms - sky or heaven is mentioned in the Rig Veda. It has been described and worshipped in various names in Sanskrit texts as *Dyauh. Svah, Ahasa, Kham*. In the Rig Veda sky is treated as the father and the earth as the mother of all created beings[67]. Although all these above mentioned words are generally understood as sky, space, mid-air. etc., one important point, regarding *antariksa* is that it is said to lie between the two worlds *dyavaprthivi* (heaven and earth). However, the concepts of *dyaus* in the Rgveda is very similar to that of *akasa* in the Upanisads. In fact. Atharva Veda 10.7.3 mentions four worlds: *bhumi* (earth). *antariksa* (mid-air), *dyauss* (heaven or skv), and the fourth world is beyond the heaven (uttararn divah)[68].

भूभुर्बः स्बः तत् सबितुरबरेण्यं भर्गो देबस्य धीणहि ।
धियो यो नः प्रचोदयात् ॥ (Yajurveda, 3.35,36.3)

We contemplate the glory of the deity – which is in the earth, atmosphere, sky, which is in the essence of the great Sun. May this deity leads our intellect power.

Space or *Akasa* is mentioned in Satapatha Brahmana as the first product of creation which is mentioned in Satapatha Brahmana 13.5.2.17 स होताद्वर्य्युम्पृच्छति । का स्विदासीत्पूर्ब्बचितिरिति तम्प्रत्याह द्यौरासीत्पूर्ब्बचित्तरिति ॥

This observation of the Brahamanas that space is the first created element without which the creation of the universe is impossible is also supported by the findings of modern science which describes space as 'the pre-condition of condition'[69].

In Brahamana period Ether of *Dyaus* is not regarded as the gross element but it transcends its physical character. But it goes up to the status of *Prajapati.* So Brahmana stage people are very much conscious about the importance of the Ether. It has important role on the earth and the animate / inanimate staff of the world. Latter period it has attracted more importance.

Ether(Space) has its own meaning and implications in Upanishad.

सर्वाणि ह वा इमानि भूतान्याकाशादेव समुत्पद्यन्त आकाशं प्रत्यस्तं यन्त्याकाशो ह्येवैभ्यो ज्यायानाकाशः परायणम् ॥ (Chandogyopanishad, 1.9.1)

All beings are created from *akasa* and finally they go to the *akasa* at the very end. So *akasa* is verily greater than any other beings.

According to Sankara, *akasa* stands for supreme self – *akasa* by name: as the producing of all things is the function of that Self, all things become dissolved into the self. All these things in this world – animate as well inanimate, mobile and immobile – are produced out of *akasa* in a regulated order and they become dissolved into *akasa,* at the time of Universal Dissolution in the reverse order.(Chandogyopanishad Bhasya, 1.9.1)

स होवाच यदूर्ध्वं गार्गि दिवो यदवाक्पृथिव्या यदन्तरा द्यावापृथिवी इमे यद्भूतं च भवच्च भविष्यच्चेत्याक्षत आकाश एव तदोतं च प्रोतं चेति ॥ (Brihadaranyakaopanishad, III.8.7)

He said: "That, O Gargi, which is above heaven and below the earth, which is heaven and earth as well as what is between them and which—they say—was, is and will be, is pervaded by the unmanifested akasa."

The Upanisads look upon the earliest state of the material world as one of extension in space, of which the characteristic feature is vibration represented to us by the phenomenon of sound. From *akasa*-space, *vayu*-air arises. Vibration by itself cannot create forms unless it meets with obstruction. The interaction of vibrations is possible in air which is the next modification. To sustain the different forces, a third modification arises. *tejas*-fire, of which light and heat are the manifestations. Still it does not have stable forms and so the denser medium of water is produced. A further cohesion is found in earth. The development of the world is a process of steady grossening of the subtle *akasa* or space[70].

In Upanishad ether or space is considered as Brahman. In Chandyogyopanisad, it is mentioned – …ज्यायन्पृथिव्या ज्यायाण्तरिक्षाज्ज्यायान्दिवो ज्यायानेभ्यो लोकेभ्यः

Larger than the earth, larger than the atmosphere, larger than heaven, larger than all these worlds. (Chandogyopanishad, III.14.3)

आकाशो वाव तेजसो भूयानाकाशे वै सूर्याचन्द्रमसावुभौ

विद्युणक्षत्राण्यग्निराकाशेनाह्वयत्याकाशेन शृनोत्याकाशेन प्रतिशृणोत्याकाशे रमत आकासॅ

न रमत आकाशे जायत आकाशमभिजायत आकाशमुपास्स्वेति ॥

(Chandogyopanishad, III.14.3)

The *akasa* is, verily, greater than fire. For in the *akasa* exist both the sun and the moon, lightning, stars and fire. It is through the *akasa* that a person calls another; it is through the *akasa* that the other hears; it is through the *akasa* that the person hears back. In the *akasa* we rejoice when we are together and in the *akasa* we rejoice not when we are separated. In the *akasa* everything is born and toward the *akasa* all things grow. Meditate upon the *akasa*.

Akasa indeed is greater than Fire: because *Akasa* is the cause (origin) of Fire along with Air. *Akasa* is greater. In *Akasa* subsist the sun and the moon, both, which are

forms of Fire, as also lightning, stars, all in form of fire, subsist in the *Akasa*. Further, it is indicated in the above verse that it is through *Akasa* that one calls another person and when the person thus called hears, it is through *Akasa* that he/she hears the words uttered by the other. (Chandogyopanishad Bhasya, VII.12.1) Thus - *Akasa* indeed is greater than these – superior, larger, than all things; and for that reason, it is the *pararm* - ultimate and *ayanarn*' - substratum - basis., support. (Chandogyopanishad Bhasya, I.9.1)

In Tattiriya Upanishad it is mentioned that the space present outside the body is same which is present inside of the heart of the human. The heart is represented as the mind present in the body. As all beings are present in the ether and ether is the common place for all beings, similarly the mind present inside the living body and mind is the common place for all beings.

यद्वा तद्ब्रह्मेतीदं वाव तद्योऽयं बहिर्धा पुरुषादाकाशो यो वै स बहिर्धा पुरुषादाकाशः ॥

अयं वाव स योयमन्तः पुरुष आकाशो यो वै सोऽन्तःपुरुष आकाशः ॥

अयं वाव स योऽयमन्तर्हृदय आकाशस्तदेतत्पुर्णमप्रवर्ति पूर्णामप्रवर्तिनीगं श्रियं लभते य एवं वेद ॥ (Chandogyopanishad, III.12.7-9)

The Brahman which has been thus described is the same as the physical *akasa* outside a person. The *akasa* which is outside a person is the same as that which is inside a person. The *akasa* which is inside a person is the *akasa* within the heart. The *akasa* which is within the heart is omnipresent and unchanging. He who knows this obtains full and unchanging prosperity.

Brahman is described as king and he has many subjects as well as the kingdom from where he controls the whole affairs of the state. Similarly Brahman as a king stay inside the body where the lotus like heart is the seat of its kingdom and he control the whole affairs of the body by dictating the sense organs, minds, intelligence etc. This Brahman is *akasa* present in the heart.

Just as the king, who has many subjects under him, has his city - so has the Brahman His city, equipped with the several sense-organs, mind and intelligence devoted to the service of their Master. So here in Brahman's city, the Body, there is a small Palace which is the locus or venue of the apprehension of Brahman. In this body, which is an off-shoot of one of his products, Brahman named 'Being', enters in the form of the

Living Self - for the purpose of differentiating Names and Forms.(Chandogyopanishad Bhasya, VIII.1.1-3) This Brahman, known as The *akasa* in the Heart is complete, i.e., it should be regarded as omnipresent, not limited within the Heart, though it is true that the Mind is concentrated in the Heart which is unmoving i.e.. by its very nature it is incapable of moving anywhere. As a matter of fact, *akasa* in the Heart is not limited and perishable as the other elemental substances are. (Chandogyopanishad Bhasya, III.12.7-9) Thus according to these passages from the Chandogyopanisad, then. one must regard *akasa* - space as a higher entity than any of the conceptions that have been hitherto reached[71].

General understanding of Mahābhūtas are mentioned several brahminical texts like Sāṁkhya, Mahābhārata and Rāmāyana. The Sāṁkhya philosophy describes the five elements. It has attached great importance upon the five great elements of earth, water, fire, air, and space as the essential building blocks of physical reality[72]. In Mahābhārata different elements are the part of the body of God. So nature is the part of the divine body of God. It is elaborated in the *Shantiparva* :

सोऽसृजत्प्रथमं देवो महान्तं नाम नामतः ।

आकाशमिति विख्यातं सर्वभूतधरः प्रभुः ॥

आकाशादभवद्वारि सलिलादग्निमारुतौ ।

अग्निमारुतसंयोगात्ततः समभवन्मही ॥

ततस्तेजोमयं दिव्यं पद्मं सृष्टं स्वयंभुवा ।

तस्मात्पद्मात्समभवद्ब्रह्मा वेदमयो निधिः ॥

He first created a Divine Being known by the name of *Mahat. Mahat* created Consciousness. That Divine Being created Space. That puissant Being is the holder of all created objects. From Space was born Water, and from Water were born Fire and Wind. Through the union of Fire and Wind was born the Earth. Self-born Manasa then created a divine Lotus pregnant with Energy. From that Lotus sprang Brahman, that Ocean of Veda[73]. Again in the same text the role of all elements are described there. The chronological formation of all elements are described and their existence are mention in a systematic manner.

पुरा स्तिमितनिःशब्दमाकाशमचलोपमम् ।

नष्टचन्द्रार्कपवनं प्रसुप्तमिव संबभौ ॥

ततः सलिलमुत्पन्नं तमसीवापरं तमः ।

तस्मच्च सलिलोत्पीडादुदतिष्ठत मारुतः ॥

यथा भाजनमच्छिद्रं निःशब्दमिव लक्ष्यते ।

तच्चाम्भसा पूर्यमाणं सशब्दं पुरुतेऽनिलः ॥

तथा सलिलसंरुद्धे नभसोऽन्ते निरन्तरे ।

भित्त्वार्णवतलं वायुः सरुत्पतति घोषवान् ॥

स एष चरते वायुरर्णवोत्पीडसंभवः ।

आकाशस्थानमासाद्य प्रशान्तिं नाधिगच्छति ॥

तस्मिन्वाय्वम्बुसंघर्षे दीप्ततेजा महावलः ।

प्रादुर्भवत्यूर्ध्वशिखः कृत्वा वितिमिरं नभः ॥

अग्निः पवनसंयुक्तः खात्समुत्पतते जलम् ।

सोऽग्निर्मारुतसंयोगाद्घनत्वमुपपद्यते ॥

तस्याकाशे निपतितः स्नेहस्तिष्ठति योऽपरः ।

स संधातत्वमापन्नो भूमित्वमुपगच्छति ॥

रसानां सर्वगन्धानां स्नेहानां प्राणिनां तथा ।

भूमिर्योनिरिह ज्ञेया यस्यां सर्वं प्रसूयते ॥

Formerly there was only infinite Space, perfectly motionless and immovable. Without sun, moon, stars, and wind, it seemed to be asleep. Then water sprang into existence like something darker within darkness. Then from the pressure of water arose wind. As an empty vessel without a hole appears at first to be without any sound, but when filled with water, air appears and makes a great noise, even so when infinite Space was filled with water, the wind arose with a great noise, penetrating through the water. That wind, thus generated by the pressure of the ocean of water, still moveth. Coming into (unobstructed) Space, its motion is never stopped. Then in consequence of the friction of wind and water, fire possessed of great might and blazing energy,

sprang into existence, with flames directed upwards. That fire dispelled the darkness that had covered Space. Assisted by the wind, fire drew Space and Water together. Indeed, combining with the wind, fire became solidified. While failing from the sky, the liquid portion of fire solidified again and became what is known as the earth. The earth or land, in which everything is born, is the origin of all kinds of taste, of all kinds of scent, of all kinds of liquids, and of all kinds of animals[74].

The following diagram schematically represents the gradual formation of the five elements.

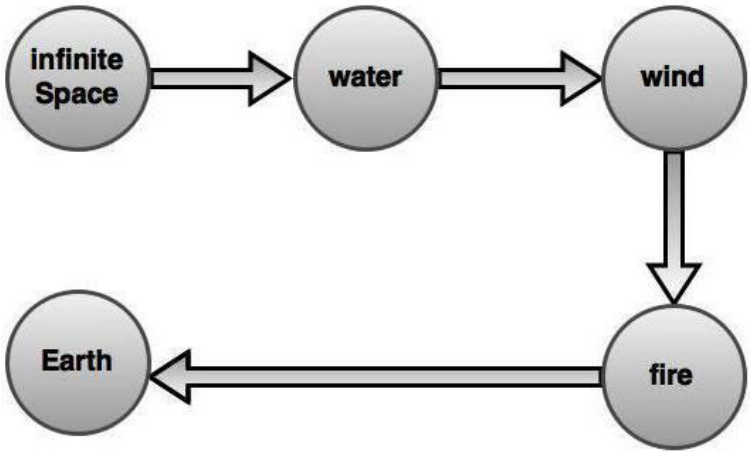

Diagram-4: The gradual formation of the five elements

These gradual evolution indicates that space is the first element of the five gross elements. From it the water is evolved first. This is also established by the moden science.

The water is in a cloud around a huge black hole that is in the process of sucking in matter and spraying out energy…….. The official NASA news release describes the amount of water as "140 trillion times all the water in the world's oceans," ……. The two teams of astrophysicists that found the quasar were looking out in space a distance of 12 billion light years. That means they were also looking back in time 12 billion years, to when the universe itself was just 1.6 billion years old. They were watching water being formed at the very start of the known universe, which is to

say, water was one of the first substances formed, created in galactic volumes from the earliest time[75].

From water air is generated gradually. Air is flowing by nature and this dynamics or fluid dynamics gives rise to friction which forms the fire. The fire due to its burning nature takes the air and water along its fold. After cooling it becomes solidified and forms the earth.

The *Gita* is the part of the Mahābhārata. In this text Krishna teaches Arjuna his nature and how the nature manifests itself in manifold form the entire creation. It is mentioned that the entire nature of the God is divided into eight parts i.e. earth, water, fire, air, space, mind, intellect and egoism. The first five parts are the five gross elements which constitute the entire creation.

भूमिरापोऽनलो वायुः खं मनो बुद्धिर् एव च ।

अहंकार इतियं मे भिन्ना प्रकृतिर् अष्टधा ॥

रसोऽहम् अप्सु कौन्तेय प्रभास्मि शशिसूर्ययोः ।

प्रणवः सर्ववेदेषु शब्दः खे पौरुषं नृषु ॥

Earth, water, fire, air, ether, mind, intellect and egoism : thus is My prakriti divided eightfold. I am the sapidity of water, O son of Kunti, I, the rediance in the moon and the sun, I am the Om oin the Vedas, sound in infinite space, and manhood in men[76].

In Rāmāyana many passages are present for describing the importance of the five gross elements. This will be discussed in later chapter. Here the importance of the *agni* which is mentioned in Rāmāyana is discussed. It is the God presided over speech. So it is used as the demonstration purpose for truthfulness of any fact. The best known example of this is in the Rāmāyana where *Sita* after being released from *Ravana's* citadel in Lanka, is made to prove her fidelity to *Rama* by publicly entering the flames[77].

The *Pañcamahābhūtas* play a vital role in the thought and ideas of ancient people and these are reflected in the ancient Indian literatures. The idea of the people of Vedic time gradually changes and gives different dimension and in epic age it rest upon the concept of God which creats everything and after dissolution all go the

same. These evolutions of concepts give the proper understanding and importance of five great elements right from the vedic literature upto the epic literature.

In Sanhitas and Brahamanas, Earth is consided as Mother and all being are born out of Mother Earth. Earth sustains all living beings and maintain the ecological balance. In Brahamana Earth is considered as divine Mother and she holds all *Bhutas,* animate and inanimate beings.

In Vedas water is considered material cause of the world. It is described as the source of happiness, vigor, strength of all living beings. It has cleansing effect and it has also medicinal values as it removes the illness. In Brahmans it is described as the foundation of all beings. So people throw the body into water after death in the idea that after death gross elements goes to the source.

Agni is described in Vedic literatures as the omnipresent being. It is all knowing of the created existence – जातवेद (who knows all beings). It is the giver of energy of all beings. It control the ecological cycle of the matter and energy by converting the gross matter into its subtle form. So agni is the medium through the material world is connected with the energy form. The sacrificial fire in the Brahamana is sacred and it is the medium through which the subject of performing the sacrifice becomes identified with the sacrificial fire.

In Vedic texts air is described as the life of all beings. It pervades the all beings and without which all being cease to exist. It has healing effect and medicinal effect.

In all Vedas Ether is not mentioned as any element but the Brahamanas it is mentioned as first created element. In Upanisads Vedic deities are insignificant and the five gross elements are considered as mere elements. Here the ultimate reality is the basis of all activities of the elements.

In Upanishads no one is superior or greater. All are created, guided and governed by the one Ultimate Reality which is called Brahman. In the Brihadarnyakopanishad Upanishad it is mentioned –

> यः सर्वेषु भूतेषु तिष्ठन्सर्वेभ्यो भूतेभ्योऽन्तरो यगं सर्वाणि भूतानि न विदुर्यस्य सर्वाणि भूतानि शरीरं यः सर्वाणि भूतान्यन्तरो यमयत्येष त आत्माऽन्तर्याम्यमृत इत्यधिभूतमथाध्यात्मम् ॥ (Brihadarnyakopanishad Upanishad, III, 7.15)

> Yajnavalkya said: "He who inhabits all beings, yet is within all beings, whom no beings know, whose body all beings are and who controls all beings from within—He is your Self, the Inner Controller, the Immortal."

So in Vedic period people are great concern about the five elements and separately they attach the importance upon each element. Gradually their understanding becomes too much introspective and tries to find a governing principle which can satisfy their mind and effort. Ultimately they have come to the conclusion of the one Supreme Principle. From the very beginning they have established the interrelated principle but this principle was confined to gross elements separately. But in Upanishadic time they have found out the unique principle of the interrelatedness where all are interrelated into the unique principle. So the important concept of interrelationship which is the basis of the Ecology is very much present in the Vedic and Upanishadic period through the continuous change of the philosophical outlook of the ancient people.

In the different epics the gross elements are the integral parts of the God or the nature of God. In the epic age the concept of God is evolved and all the concepts prevalent in ealier literatures take its shape through the idea of God.

The idea of the *Pañcamahābhūtas* has direct and indirect influence to several culture and traditions. These include the non-brahminical and other culture developed both India and abroad.

In Buddhist tradition the five gross element are not discussed as the physical phenomena as described in the Vedas or other literature. Here the physical phenomena has lost its importance and is converted to the psychological character. This is due to the fact that Buddhists are very much conscious about the mind and its subsequent transformation. So the five elements have different implication in the Buddhist texts. In *Abhidharmakosa* the classification of all the elements of existence is represented. The first of them is matter – *Rupaskandha* .

The physical elements of personality, including its outer world, i.e. the external objects, are represented by this one item – matter. If we use the old pre-buddhistic term *nama-rupa* , this matter, the first of the five skandhas – is *rupa* and rest of the four skandhas – *vedana* (feelings), *samjna* (ideas). *Samskara* (violation) and *vijnana* (pure sensation) come under the category of *nama.*[78]

These five sense-organs and their five external objects are nothing but the matter. It is broadly divided into two categories. Sense-data is the objective world present around us. The sense organs are nothing but the subtle matter which is the place for

perception of the external senses. Both sense objects and sense organs are inseparable parts.

Here the concept of *Dhatu* is used and what is the support of the primary substance (*dhatu)* is described. These primary substances are established through their respective functions. Their nature and function is specific and described as-

The primary subatances – earth, water, fire and air – are established through their respective functions as follows :

Earth – *dhrti* or holding together,

Water – *samgraha* or cohesion or striking

Fire – *pakti*, ripening, maturing or transformation and

Air – *vyuhana* movement [79]

Their natures are respectively

खरस्नेहोष्णतेरणाः । खरः पृथिवीधातुः । स्नेहोऽब्धातुः । ऊष्णता तेजोधातुः। इरणा वायुधातुः ।

Hardness is the earth element.

Adhesion is the water element.

Heat is the fire element.

Motion is the air element[80].

The difference between earth and earth element is discussed in the following verse:

पृथिवी वर्णसंस्थानमुच्यते लोकसंज्ञया ।

In common parlance what is designated as earth is colour (*varna*) and shape (*samsthana*)[81].

The *prithividhatu* is atomic nature. There two types of atoms. One is simple atoms and other is combined atoms. Simple is so subtle that it is not visible but the combined one is the combination of Mahābhūtas. It is expressed as the hard, rigid expression of the different phenomena like motion, heat etc. These are called universal because they are present everywhere in same proportion. Only the different range intensity gives different expression in the outer world.

They are called universal because they are present everywhere, in every piece of matter, always in the same proportion; but in some combinations one or the other energy may get greater intensity and we accordingly get hard and liquid stuffs, warm and moving bodies. There is as much element of heat in a blazing flame as there is in

wood or in water and vice versa. The difference is only in their intensity, e.g. the tactile sensation may have a different degree of intensity as the touch by the bunch of steel needles is more intensely felt than the touch of a painter's brush although the quantity may be the same. It is also said that the existence of cohesion, i.e., of the element, water in a flame is proved by its keeping a shape. The pressure of repulsion of hardness, i.e., of the element of earth, in water is proved by the fact of its supporting a ship etc[82]

What is the nature of *rupa* :

रूप्यते बाध्यते इत्यर्थः

Rupa is that which obstructs[83].

What is the nature of this obstruction? In reply is explained clearly –

विपरिणामोत्पादना

It brings about some change, creation of transformation[84].

As combine atom has four Mahābhūtas or universal elements. So these combinations have different colour, taste, touch etc. depending upon the combination the combined atoms have changes and the result is the different expression.

So the elevenfold Buddhist matter the tenfold matters are discussed. Now the last one of the eleven is *avijnapti.* Now what is this matter?

विक्षिप्तचित्तकस्यापि योऽनुबन्धः शुभाशुभः ।

महाभूतान्युपादाय स ह्यविज्ञप्तिरुच्यते ।

Avijnapti is that stream of actions which being morally either good or bad, is present even in the mind of a distracted or unconscious person and which is essentially a product of material element[85].

It is completely different from the other ten elements. When we plan to do something and then fulfil the doing after some time, there is a interval between these two. In this interval everything is unknown and unmanifested.

In Buddhist literature there is the mention of the fifth element i.e. *Akasa* or space. It is opposite nature to that of matter. The previous ten elements has the nature of matter, so they have the nature of deformation, obstruction etc. But the Akasa has no such attribute. As it is verily non-obstructive.

अनास्रवा मार्गसत्यं त्रिविधं चाप्यसंस्कृतम् ।

आकाशं द्वौ निरोधौ च तत्राकाशमनावृतिः ॥ (Abhidharmakosa, 1.5)

Undefined dharmas consist of truth of the path of salvation and the threefold unconditioned dharmas – space and two types of cessation. Space means absence of covering (where can penetrate)[86].

In Jain tradition five great elements are mentioned. But there meaning is different. The first four except akasa are included in the *pudgala dravya* . jain system has divided the universe in two groups *jiva* and *ajiva.*

To point out this difference of substances from the five great elements in other systems, it is necessary to see in brief the *Saddravyas* in Jainism. Jain system has divided the universe in two main categories, *jiva* and *ajiva,* which comprise of six substances (*dravvas*). This *ajiva* category is a positive variety standing opposed to *jiva*. It is not merely of the form of negation. *Ajiva* consists of five substances — *akasa* (space); *dharma*,, i.e., medium of motion; *adharma* (medium of rest), *kala* (Time) and *pudgala* (matter). Excluding *kala*, all other substances are of the nature of *astikayas*. *Astikaya* means a combination or collection of areas or aspects. Because they exist, they are called *asti* and because they have many *pradesas* like bodies, they are called *kayas*. These *astikayas* or extensive substances are jivastikaya, akasastikaya,, dharmastikaya, adharmastikaya and pudgalastikaya. Jiva also is called *astikaya* because, according to jainism each *jiva* has innumerable *pradesas*. By contraction and expansion of its *pradesas*, the *jiva* occupies different proportions. It is just like the flame of a lamp whose light can fill a small room as well a big hall. So *ajiva* can occupy a smallest body of a bacterium or the biggest body of a great fish[87].

Akasa is not included into the five great elements. *Akasa* is a substance which holds all other elements like *dharma*, *adharma*, *pudgala* etc. So akasa as container posses all material beings so that all can do their proper function in this universe.

According to the Jain system, *akasa* is not included among the well-known five great elements, i.e.. *prthiti*, *ap, tejas*. *vayu* and akasa. *Akasa* is a substance which allows *dharrna, aharna, kala. pudgala* and *jiva* to remain within itself and which allows them to enter itself. It means that *akasa* acts as a support for the remaining substances which act as occupants. It is self-supporting. The jain concept of space is unique in its originality, for it holds space as positional quality of the world of material objects and space as the container of material objects and other substances[88].

In Jainism *Jiva* and *pudgala* are different meaning. The substance *pudgala* has the property of dissociation and association. Those substances are the properties of modification, called *pudgala.*

pudgala is of two types – *anu* and *skandha* . so it is one side atom and other side is the aggregates of molecules. Each atom possesses the properties like touch, taste, smell etc.. they can produce earth, water, fire etc. There are no different kinds of atoms for different creation but all atoms are same. No difference. According to Jainism, earth, water, fire and air are not separate and independent entities. These are different form of matter combined through the atoms.

It is significant that. Each and every atom possesses touch, taste, smell and colour and is potentially capable of forming earth, water, fire and air. These are no distinct and different kinds of atoms of earth etc., i.e., the atoms are ultimately not different. For example, airy atoms can be converted into water; watery atoms can be converted into fire and so on. Ultimately all the atoms belong to one and the same class of *pudgala*. Sometimes they form earth; sometimes they form water and so on. Thus according to Jainism, earth, water, fire and air are not ultimately separate and independent entities but only different forms of *pudgala*. There is no qualitative difference among them. The school of *Nyaya-Vaisesika* does not agree to this view of Jain as seen before that regards earth, water, fire and air as absolutely different and independent substances and so their atoms are also ultimately distinct and different[89].

The gross elements contained in *pudgala* are not insentient. But they have sentient property. There are twofold classification of *jivas* i.e. *trasa* and *sthavara. Sthavara* is of five kinds. According to Jain doctrine all gross elements have two parts - one is sentient and other is insentient. So substance like metal, stones etc. have also the sentient part.

Among the twofold classification of *jivas* as *trasa* and *sthavara* the *sthavara jivas* are of five kinds — *prthivikava, apkaya, tejaskava, vegukaya* and *vanaspatikaya*. Thus jivas whose body consists of *prthivi* is called *prthivikaya*, the *jiva* whose body consists of *ap* is called *apkaya*. These are sentient and non-sentient. Earth is the body of the sentient being as well as sentient body itself. These are elemental souls which live and die and are born again in the same or other elemental bodies. Their sentient part increases. To explain further, a metallic stone drawn from the mine in its natural condition is sentient but as soon as we make some chemical reaction on it, it becomes non-sentient. Earth which has not, suffered the blow of friction is sentient, but once

there is friction it becomes insentient. In a similar way, the water which is flowing through a river is sentient but as soon as water is boiled it becomes non-sentient. All these are *ekendriya jivas* or jivas having only one sense. In the case of *vanaspatikaya*, the plants are the *jivas* of one sense. Each plant may be the body of one soul or may possess a multitude of embodied souls. Thus, the doctrine of the gross elements having the sentient and non-sentient aspects, and the theory that there are souls even in inorganic objects like metals, stones, water, etc. are special features of the Jain system of thought[90].

In Jain system of thought, there is no place of absolute permanence and absolute transience. But they say that - which is characterizes by origination, destruction and permanence is real.

The integrated outline for creation of the universe is explained by the Jain –

Due to the interaction of the six dravyas, new things emerge and old things perish. Through the interaction of soul and matter, the Universe rolls. Matter is the cause of making bodies. It forms the physical basis for the body, speech, mind, respiration of the worldly souls. When the worldly career of the beings is over, they give up the gross body and accompany the subtle body and again receive physical particles appropriate for the gross body in the next birth[91].

From the early integration of the human into the great triad with heaven and earth to the more complex metaphysical discussion of the relationship of principle (*li*) and material force (*ch'i*), the Confucian worldview provides a wealth of suggestive resources for rethinking our contemporary situation[92]. The term *ch'i* has been translated by WING-TSIT Chan as 'material force' namely something that consists of both matter and energy. It referred to the " psychophysiological power associated with blood and breath". He also suggests that the terms 'matter' or 'ether' are not adequate translations for *ch'i* because they only convey one aspect of the term[93].

Lo Chi'in-shun speakes the force *ch'i* in order to explain the evolution of universe and its constant changes over time – " that which penetrates heaven and earth and connects past and present is nothing other than material force (*ch'i*), which is unitary. This material force, while originally one, revolves through endless cycles of movement and tranquility, going and coming, opening and closing, rising and falling. Having become increasingly obscure. It then becomes manifest; having become

manifest, it once again reverts to obscurity" [94]. The *ch'i* has its manifestation in the seasons and in natural growth, as well as moral relations in human life. *ch'i* operates throughout the universe ina process of continual disintegration and integration, like the waxing and waning of *yin* and *yang* . In this disintegrated states, *ch'i* is scattered and diffused. Through integration, it forms matter, thereby giving rise to the manifold iversity of human beings and things. *ch'i* moves and flows in all directions and in all manners. Its two elements (*yin* and *yang*) unite and give rie to the concrete. Thus the multiplicity of things and human beings is produced. In their ceaseless successions of two elements of *yin* and *yang* constitute the great principles of the universe[95]. Chou Tun-I states, " by the transformation of *yang* and its union with *yin* , the five agents of Water, Fire, Wood, Metal and Earth arise" and since " the five Agents constitute a system of *yin* and *yang*. They can be conceived as specific forms of *ch'i*[96]. The theories of *yin* and *yang* and the five elements are the part of Chinese cosmogony. *Shangsu* contains the earliest textual reference of five elements: " First we have the five elements water, fire, metal and earth. Water moistens downward. Fire heats upward. Wood is both crooked and straight. Metal can be changed into various shapes. Earth is for planting crops. Moistening downwards makes the salty taste. Heating upwards makes the bitter taste. Crookedness and straightness make the sour taste. Changing into shapes makes the pungent taste. Crops make the sweet taste"[97].

Jin Chungfeng, a modern Chinese scholar, thinks that earth was the centre of the agricultural economic activities in ancient times, hence being placed in the centre. The ancient Chinese linked space with time. East was linked with apring, south with summer, west with autumn, and north with winter. Earth controlled the four seasons and was the identification of human beings[98]. Human person is the attributes of Heaven and Earth, the interaction of the dual forces of nature, the union of animal and intelligent (souls), and the finest subtle matter of the five elements[99].

Lushi Chungiu associates the five elements with five colours and also with the development of ancient Chinese history. During the time of Huangdi the spirit of earth prevailed and its colour was yellow, hence the yellow earth and yellow emperor. During the time of *Yu* (the first king of the Xia dynasty), there was an exuberant vegetation in all the seasons which presented the colour of wood, i.e., green. During the time of Tang (the first king of Shang dynasty), the spirit of metal prevailed, presenting white colour. During king Wen of Zhou, the spirit of fire prevailed, presenting red colour. Fire would be replaced by water, which would present black

colour. Water would then, be absorbed by earth and the rotation of five elements would continue endlessly till eternity. The representative colours of the various seasons are the visual representations of the ecological environment. It makes sense to associate with green and wood as it is the season of growth of vegetation. Summer is associated with red and fire, as it is the hottest season with maximum sunshine. Associating autumn with white and metal needs a little more imagination. This probably had something to do with the withering of vegetation and transformation of a rich colourful world into whitish grey. Similarly the association of winter with water and black may be explained by the cold which forced people into hiding, thus bringing darkness. Besides this, black or other dark colours are used more often in winters[100].

Chou Tun-i opined – " it is human alone who receives (the five Agents) in their highest excellence, and therefore s/he is most intelligent. His/her physical form appears, and his/her spirit develops consciousness. The five moral principles of his/her nature (humanity, rightness, property, wisdom, and faithfulness) are aroused by, and react to, the external world and engage in activity; good and evil are distinguished; and human affairs take place"[101].

The main part of ancient Chinese idea was to synthesize human activities with their natural environment. The Chinese approach has been holistic. Although people did observe natural phenomena, they established too early an organic linkage between human and nature. One aspect of this human-nature synthesis was to humanize nature, attributing a human character to natural changes. Conversely, the other aspects of synthesis subjected human under the domination of nature, to bind human activities to movements of the sun, moon and stars[102].

Pañcamahābhūtas has an important role for shaping the Tibetan Bön Tradition. The five elements namely, earth, water, fire, air and space are considered in Tibetan culture to be the substance of all things and processes. The names of the elements are symbolic. They use the natural elements as fundamental metaphors to describe forces both internal and external. For example, physical properties are assigned ; earth is solidity; water is cohesion; fire is temperature; air is motion; and space is the spatial dimension that accommodates the other four active elements. In addition, the elements are correlated to different emotions, temperaments, directions, colors, tastes, body types, illnesses, thinking styles, and character. And from these five elements

arise the five senses and five fields of sensual experience; the five negative emotions and five wisdoms; and the five extensions of body. They are five primary *pranas* or vital energies. They are the constituents of every physical, sensual, mental, and spiritual phenomenon[103].

Five elements create the diversified things and beings. Five elements are the five discriminations that continually branch into more divisions. For instance, there are five major appendages to the torso: two legs, two arms, and a head. Each of these then branches into a further five: the arms and legs into five fingers and five toes each, the head into the five sense organs[104].

Further flesh is described as earth; the blood and other bodily fluids as water; the electrical and chemical energies and metabolic heat as fire; the breath oxygen and other gases as air; and the space the body occupies and the spaces in the body, as well as the consciousness, as the space element. Each of these five could be further analyzed in terms of the elements: in the flesh alone can be found solidity (earth), cohesion (water), temperature (fire), motility (air), and awareness (space). Thus the interactions of the five elements give rise not only to parts of the system, to individual bodies and planets, but also to all realms of existence in every dimension. The dynamism of the five elements lies under the complexities of all that exists[105].

It is interesting to note that in Tibet it is said that if one treats one's master like dog, the teachings are as worthless as rotten food. If one treats one's master like a friend, the teachings nourish like fresh food. If like a deity, the teachings are divine nectar. Similarly, if one relates to the natural world as a collection of lifeless mechanical processes, it is lifeless. If one relates to one's body as machine, it is machine. If one relates to one's religion as a fantasy, it is fantasy. But if one relates to the natural world as alive, full of spirits and elemental beings, the natural world speaks to us. Sacred relationship are defined not only in terms o how one relates to what is outside of oneself. Relating to the sacred also brings one to the deepest sense of oneself, to what is sacred in him/her[106].

In other words, when working with the elements, one is working the ground of the expeience and the experiencer. To recognize the elements in the natural world, their beauty and interplay, to enter the sacred dance of the elements, is to inhibit a living world full of mystery and potential[107].

Pañcamahābhūtas have an important role in Tribal Tradition. For the tribal the earth is considered a Mother from whom all sustenance comes to human beings and non-

humans. The cosmos is a reservoir of sacred forces. From a religious perspective, the earth is the clearest epiphany of an ensemble of sacred apparitions: soil, stones, trees, vegetation[108]. Animals, birds, water, air, sun shine and the like including human beings, and they are all bound to one another in an integral manner. The tribals have been holding such views from time immemorial and they have also understood human beings as art integral part of this macro-organism[109].

For them the earth is the foundation, the generative source, of every expression of existence. The land and forest, water and air and all nature's bounty are gifts of God. And they have been using these gifts as stewards and not as owners. Even to be the custodian of these gifts of God, it is the community and not the individuals who are primarily responsible for this stewardship of the earth[110].

The tribes of *Santal* and *Kondh* celebrates the earth in different forms of beautiful prayers for the human welfare: "Let the earth be green with our crops. Let there be no hindrance to our movements. Let there prevail among us the spirit of mutual love and goodwill"[111].

In the primitive cultures, worship of the Mother Earth is almost a universal phenomenon. They consider earth as mother goddess and take special care to see that the bhu-Mata (Mother-Earth) is not hurt or offended in any way. In some cases, they even restrain from tilling the ground, fearing that it might wound the body of their mother. the earth[112]. Such is found in the ease of Ao Nagas. During *Lijaba mong* (*Lijaba*.-- the creator of the earth and *mong* meaning ceremony), which is observed yearly in his honor[113], everybody stays indoors[114], and the days are strictly observed. No one may even husk rice or fetch firewood from the stakes outside the village:[115] also, cutting or digging of the earth/ground, going out and coming into the village, and manual labor are prohibited. It is believed that during these days *Lijaba* enters the earth just as a vital seed which gets buried beneath the soil and germinates as the life of plants[116]. One can also find extreme cases like Smohalla, Indian prophet of the Umatilla tribe, who forbade his followers to dig the earth. According to him it is a sin to wound or cut, tear or scratch our common mother by the labors of farming. He defended his anti-agricultural attitude by saying : "You ask me plough the ground? Shall I take a knife and tear my mother's bosom? Then when I die she will not take me to her bosom to rest. You ask me to dig for stone? Shall I dig under her skin for her bones? You ask me to cut grass and make hay and sell it, and be rich like white person! But how dare I cut off my mother's hair'?"[117]

Such type of devotion is also common to the *Dravidian* culture. They burnt the forest and converted it to ashes due to agricultural purpose. They do not plow the earth as it will tear the mother's bosom. This type of respect they feel for the mother earth. Their respect make them a true member of the mother earth. Their life-style and habitation do not hamper the earth and its organic mechanism.

Since water is a; source of nourishment to all the humanity the tribals worship water and offer offerings to the water deity[118]. Such water worship is also found in Ao Naga tribe. In every Ao village there is a separate clan who used to worship the water. When drought strikes the land. when the water in the well or pond dries up due to drought. people hold a worship day to pray for rain. The elders of the village will take one tzushi (Water vessel) and a cock and go to a place where they will pray and worship a big stone. After which, they will pour out the water from tzushi (water vessel) pronouncing the name of god. Anungtsungba (god of sky) to send showers of rain[119]. Lothas also call rain by beating the earth with sticks, calling to it to come and soak the earth well, and when done, while going away they sing "*O, dapotsisi, dapotsisi"*. Which is a song sung by children when dancing in the wet. It represents the fall of the rain wetting their heads and trickling down their bodies. "Rain, rain, soak me"[120].

Fire is also given great importance in a tribal community. Fire with its warmth and light fulfils a vital requirement of human life. Yet the same element can also wreak destruction. Both positive and negative functions are united in fire's role as an instrument of melting, refining, and purifying. In a religious context, fire has come to play a very large role in cult, myth, and symbolic speech. Some elements of fire worship and the use of fire in ritual arid in symbolism are rooted in and developed out of practical experience of human beings[121].

The *Adis* of the Upper *Siang* speaks of a *Piang-Rongne* who kindles disasterous fires in their villages. The Hill *Miris* attributes fires to the spirits Churum-Pira and to Ler-Karom. The Sherdukpen tribes attribute them to Mikam, god of fire. The Mishmis have a fire-spirit who is the son. of the Supreme God. intaiya. His name is *Erosu* and his body is full of fire. He lives in the sky and whenever he sees evil he comes down and destroys it with flames[122].

In the Naga traditional religion also, fire plays a prominent role, For e.g: when a site is selected for building a new house, the man goes and places two flat stones on the site. That night he dreams, and if the dreams have been favourable, the next day he

and his wife, taking fire, fuel, a fowl and other food, goes to the site and builds a fireplace with three stones and makes a fire. When the house is finished fire must be brought from the house of a kika kepfuma, i.e., a man who has performed the lesu - genna (taboo) and has horns on his house[123].

Wood only is burned in the fireplace, and if possible it is not allowed to go out. it is regarded as genna (taboo), or at least as a serious offence, to put out one's fire, though. there seem to be no definite reason for this except that it is contrary to custom and unlucky for both parties[124]. Even omen is observed while lighting a fire, for instance, each person after killing his/her cock makes a fire, which he/ she must light from a fire-stick and nothing else: matches or burning brands must. not be used to light this fire, and in the lighting of the fire if the spark is first produced to the right of the stick the year will be good one for men, if to the left for women[125].

It is evident that – 1) Tribals consider themselves as the integral part of the nature, 2) They consider that nature with five elements have life, feelings and understanding, 3) Any harm or injury cause serious impairment to their own personal life, 4) Any natural event indicates a particular implication to the habitants, it may be good or bad. 5) All types of attitudes of Tribals are the positive sign for the conservation and restoration of nature or five elements.

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