

# **Jain view of Anthropogenic contributions overriding Natural climatic cycles responsible for the worsening Environment**

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## **Abstract**

There are many natural cycles and events which result in severe temperature changes on Earth and composition changes in the earth's atmosphere, damaging its biosphere. Overriding on these cycles, the anthropogenic activities have, since the advent of the industrial age, contributed significantly, so much so that it is thought that humans are solely responsible for the current degradation of the environment, which has brought the whole civilisation to the verge of extinction. In this article, we compare the relative roles of natural and anthropogenic contributions. It is suggested that the best course for humans, under the circumstances, is to adopt a life style of minimum interference with nature, as prescribed in Jain darshan.

## **Introduction**

Earth's climate has not been stable or equitable over its history and has gone through extreme conditions of atmospheric composition, temperature changes, ocean circulation and biological diversity, driven by geologic events as well as celestial factors. Still a debate is going on whether anthropogenic activities are responsible for the current degradation. This is probably driven by guilt because of our extravagant and wasteful life style, consumerism, and tinkering with natural processes or by human ego that we are powerful enough to influence Earth's environment significantly.

Looking back during the earth's geologic history, ever since its formation about 4.5 billion years ago from a hot, rotating, disk shaped solar nebula, the Earth has gone through extreme climatic conditions, many times. It has gone through several phases of extreme heat due to an early active Sun, an extremely cold Snow-earth phase, punctuated by several epochs

of glaciation, and abrupt heat due to volcanic eruptions, and celestial events like asteroid and comet impacts. The original atmosphere of earth had methane, carbon dioxide, ammonia and water etc. in abundance, but little oxygen, and such brief epochs have occurred time and again in the past. In spite of such extreme fluctuations in the atmospheric compositions and accompanying temperature changes, the life (jiva) found this planet habitable and evolved progressively, in complexity, functionality, brain power, consciousness etc. over the past 3.5 billion years, since life first appeared on Earth.

The journey of life on the earth has not been smooth and eventless. At least 5 major revolutions, which gave a big jump to the number of species and abruptly increased biodiversity and 5 mass extinction events, which caused extinction of 70 to 90 % species, have been recorded in the fossil sequences, preserved in the deep sea sediments. In this paper we will review the eventful geological and biological history of the earth to get the correct perspective of the way nature works with a goal, and produces conducive conditions in the right measure as and when required for evolution of species.

Only during the past two centuries, since the advent of industrial age, humans have been able to influence the climate by contributing greenhouse gases, garbage production etc., polluting the atmosphere and oceans, reducing the biodiversity, leading to extinction of many species by consumerism, wasteful lifestyle, food habits etc, so much so that the human civilization is now at the verge of extinction

In this paper we discuss the scientific basis which has led to the current alarming situation and solutions based on Jain philosophy. We first discuss the natural cycles.

### **Natural climatic cycles**

Diurnal solar cycles, monthly lunar cycles, annual seasonal cycles and the popular 11 year sunspot cycles are well known but, in short term, they are mild and within human habitability range. On long term basis, 21000 years, 42000 years, 100,000 years and 495,000 year cycles due to changes in solar insolation caused by precession of the rotational axis of the earth, change in its tilt, change in semi-major axis of the earth's orbit around the sun (eccentricity), known as Milankovitch cycles are well established. All these changes run concomitantly and lead to about 5 to 10 degrees Celsius change in temperature. These aspects have been discussed by Jain et al (2015). Without going through the solar forcing factors leading to such changes, we will mention here that some sporadic changes do occur due to volcanic activity on tens of millions years scale. Orbit of the solar system, in and out of the galactic plane on ~60 million scale and 250 million year cycle around the galactic centre. Over

and above these regular cycles, impact of comets and asteroids bring about major changes in the Earth's environment, with devastating effect on life on earth. One such event occurred 65 million years ago in which 70% of all species on earth, including marine and land animals became extinct. Dinosaurs disappeared from the earth in this event when a 10 km asteroid impacted near Gulf of Mexico and the huge undersea Chicxulub impact crater has been identified.

As far as Earth's atmosphere is concerned, nitrogen has not changed much, carbon dioxide and methane, the two most important green house gases were very high in the beginning and oxygen came into abundance only half way through the earth's history, some 2.3 billion years ago.

Studies over the past 500,000 years show that temperature of the earth changed between 12 degrees to 4 degrees Celsius with a roughly 100,000 year cycle and we are now at the peak of the present cycle, approaching a cooling phase. Soon we expect to enter the cold epoch. When exactly it will happen cannot be predicted. It could be in a decade or a few decades from now.

### **Anthropogenic contribution**

Much data, based on real time measurements are available in literature and we need not summarise it here. Melting of glaciers, encroachment of coastal areas by the sea, pollution of oceans and atmosphere, rapid reduction of biodiversity, deforestation are some of the obvious consequences observed in current times. To be brief, we just take two parameters for comparison here. Due to production of thermal energy by humans, carbon dioxide has increased a little from 280 parts per million to 480 parts per million, less than a factor of two over the past 200 years. The average temperature of the earth has increased by 1.5 degrees and is predicted to rise further in the next decades. These are small changes in comparison to natural changes over the Earth's history. Apart from energy required for the modern civilisation to support a comfortable life style, the other causes for the environmental degradation are consumerism, extravagant life style, waste production, changes in food habits from vegetarianism to non-vegetarianism, based on animal meat. . It may be noted that billions of animals are killed every year for food and entertainment.

In spite of all these human activities, in reality, the human contribution to degradation is small and overrides the more powerful natural phenomena. Thus we come to the conclusion that human contribution to atmospheric pollution and temperature changes is insignificant

compared to the natural causes. We are powerless in comparison to the mighty nature. In spite of the severe stress, the species have continued, not only to exist, but to thrive and grow from a single cell amoeba to complex humans, with high brain power, consciousness etc. Thus, the anthropogenic effects in the atmosphere are extremely feeble compared to the powerful natural factors, which have occurred over earth's history.

## **Discussion**

A study of the smallest cells as well as the large natural systems like galaxy show that everything and all its components work in harmony and unison. Living as well as non-living entities show deep coherence, synchronicity, spontaneity, anticipation and self-correcting ability in all their activities. This has led to the concept of GAIA (Lovelock) and one-ness of all things around. We would cease to exist and surely would not have evolved from an amoeba to humans, without this One-ness of all its components, which are multiply connected and interdependent. The Earth, it has been proposed works as macro-organism. The Earth and non-living entities show coherence, synchronicity, spontaneity, anticipation and self-correcting ability in all their activities, without which we would cease to exist and surely would not have evolved from an amoeba to humans. Catastrophes and evolution are the ways the nature has adopted. Some natural processes are violent, although normally the nature resorts to non-violent, efficient and conservative methods in most of its processes.

## **Jain view**

Jain darshan lays emphasis on non-violent life style. *Aparigrah* and minimum use of resources are also basic parts of Jain life style. Consumerism is a kind of violence, as is clearly mentioned in the sutra “*sarva bhuteshu samyam ahimsa*” that true non-violence entails minimum use of all resources by self discipline. Whereas Jain philosophy advocates protection of all living beings, because of their mutual interdependence, as enunciated in the sutra “*parasparopagraho jivanam*”, this is clearly not adequate in preserving the natural, pristine conditions and we propose to extend this sutra of interdependence to non-living entities too, that is *ajivas*. We call, consumerism and garbage production, which are clearly not required for a good life, as “*ajiva himsa*”, and in the context of today's lifestyle, we want to extend the sutra given by Acharya Umaswami in Tattvarthasutra to “*parasparopagraho jivanam-ajivanam*”.

Not that we know if the nature will spare human beings, without punishing the whole humanity, who damage it's serene environment, and interfere with its processes of evolution of consciousness, self restraint seems to be the best policy, supported by the rules of shravakachar, as advocated in Jain philosophy. Consequences of any human activity can be enormous because it triggers a chain of reactions and some natural reservoirs can amplify the effects. Scientific studies also support this view, as summed up by Arthur Eddington, when he famously said, "when an electron vibrates, the whole universe shakes".

Jain scriptures mention severe climatic changes two millennia ago. The 12 year long drought which brought in sectorial division of Svetambars and Digambars in Jain community, when human population and activity was minimal is well documented. Obviously this is consequence of natural cycles and nothing can be done about such variations. However, now a days, there is a lobby, which includes many scientists, who feel that the current climatic crisis is due to human activity. This has probably arisen out of human ego, that we are so powerful that we can change the climate.

Does it mean that we should continue to have a wasteful, extravagant life style, over-exploit the earth's resources and degrade the environment with pollutants and green house gases. Certainly not. This is where Jain philosophy and life style come into play.

Jain Darshan advocates that we should have minimum interference with nature, live a frugal life and let nature do its work. Life style of Jain *sadhus*, *sadhvis* and *shrawaks* is a living example showing how little we need to live comfortably, without hurting other living beings or the surroundings. One should therefore follow the principle of *aparigrah*, minimise use of energy and other resources like water and refrain from wastage. Ahimsa should not be confined to avoidance of harm to living beings but should be extended to non-living entities too. Killing jivas have a delayed effect, which may determine the *Gati* or yoni in the next birth, but producing garbage has immediate effect, in the sense it starts degrading the environment instantaneously. Thus principle of *ahimsa* must be applied to *Jiva* and *ajiva* both, for our health as well as the health of the earth.

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