

A COMPARITIVE STUDY OF CONTINENTAL DRIFT THEORY- BASED ON MAHAPURANAS

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Introduction

Mahapuranas are great scriptures which always caused humans wonder and evoked their thought process. Even today, there is almost no topic of science which has not been discussed by the Puranas. Geography is one among them. Without the earth, Puranas have no relevance, so does life itself. It shall not be wrong to state that Geography existed even in pre-historic human societies in the form of questioning about and examining the earth and phenomena surrounding it, long before it has touted as a science in modern human history. Though the science of the earth is a predominant topic of discussion in all the Vedas, Itihasas and Puranas, the ancient scholars did not attempt to call it a science, dedicate distinct chapters and form titles denoting it. Because they did not view themselves, all other living and non living creatures separated from the nature. They viewed everything as one contrary to the modern humans. Still there are titles such as *Bhuvanakosa*, *Bhuvanasagaraa*, *Bhuvanavinyasa* which are straight away denominates the earth.

Origin and Evolution of the Earth on the basis of Mahapuranas

There is an authentic analysis about the origin of earth and the universe in the Mahapuranas. There are detailed account of the earth's origin in the chapter named *Pridhyudharam* (Erection of the earth) in *Kurmapurana*,¹ and *Lokakalpanam* in *Brahmandapurana*². It was mentioned that the universe was utterly dark and a single super ocean without any segregations. There was no wind, nothing can be known at that age.

आसीदेकार्णवं घोरमविभागं तमोमयम् I

शान्तवातादिकं सर्वं न प्रायत किञ्चना II (*Kurma.p*, I.6.1.p.29)

With the merger of all the movables and immovables into the super ocean ``Brahma emerged with thousand eyes, feet and heads. Before that Brahma, who also bear the name Narayana, with a golden colour and an extra sensory abilities was sleeping on the flood water. Here Narayana is denoted as the absolute reason behind the emergence of the earth as well as inexplicable image contains the whole universe in himself. The word '*Naram*' means water and *Ayanam* has so many meanings such as place, shelter, trajectory etc. Here it can be observed that the name Narayana, literally translates into 'the one who made water his place'. Narayana spends some time equal to thousand eons as night. Then at the last third of the night he adopted the essence of the universe (*Brahma tatva*) to start creation.

Then he speculates land sits under water and tries to bring the land up. In order to do that he assumed form of *Varaha* (a pig) and entered the *rasatala*, (one of the inner layers of the earth). Then he lifted the landmass using his horns. As a result the earth became like a floating raft above the ocean spanning about five hundred million yojanas (approximately one billion miles).³

योजनानां प्रमाणेन पञ्चाशत्कोटिरायता I

जलोपरि महीयं हि नौरिवास्ते सरिज्जले II (*Vamana.p*.11.31.61)

The massive land emerged did not sink into the ocean because of its vastness. It has been said in *Brahmavaivartapurana* that Narayana, placed the earth like a lotus leaf upon the ocean after erecting it from the great sea⁴. Lord Visnu flattened the earth and re-created the mountains which had been perished in the great flood. All the former creations had been burnt to ashes in the *samvartakagni* (a fire which is said to burn everything into ashes when the time *-kalpa-* ends). All the mountains had been erased by the fire from the face of the earth. Then it flown in the wind and after being settled on the ground it became condensed and solidified. In all the places where the relics of the perished mountains solidified, a new mountain range emerged⁵. Then a eight great mountains named Sumeru, Kailasa, Malaya, Himalaya, Udaya, Asta, Suvela, Gandhamadhana had been created⁶. Following these the creator of the universe divided the earth as land, mountains and oceans. At the beginning of all *kalpas* (a duration of age) he divides it further and further. His world consists of seven continents had been created again. He created four worlds beginning from the earth⁷. As earlier he created moon, sun, planets, and all the living beings. He created water, fire, earth, heaven, herbs, flora and fauna. Also the division of time such as lava, kasta, kala, muhurta, night, day, months, solstices, year, eons such as *krta*, *treta*, *dwapara* and *kali* all are also re-created. He then created all his progenies. All of them were doomed in the last *kalpa*. Thus he completed all the creation⁸. This is the puranic depiction of origin of the earth. The landmass erected by varaha, comprised of continents (*dvipas*), oceans and all the land forms. This is the essence of puranas about earth's origin.

It was in 1920's the modern Science reached to a hypothesis about the origin of the earth and how it has reached to the present state after a series of experiments and observations through advanced means and technologies . But the ancient humans, through their observations by the naked eye, had narrated it in their scriptures.

Geographical Interpretation

All the continents that Geography has identified today were a single huge landmass surrounded by a huge single ocean. Eventually this landmass had divided into several pieces and drifted away to different locations. Humans could not witness this phenomenon happened through billions of years because they had not yet originated on the face of the earth.

The research has been prompted by a few questions. It is only in the early 19th century humans had access to the space and had started to avail satellite imagery of the earth. Through carbon dating and computational data analysis modern scientific societies have reached to a near- plausible hypotheses about the earth and other celestial bodies. Then how the ancient scriptures could present a lot of information closely matches or can be interpreted to match the findings of modern science? At a time when even an aerial image of the earth was practically unobtainable, how the ancient people allegedly ‘assumed’ things so close to the modern scientific findings with its countless technological advancement?

There are several hypotheses about the origin of the earth and the Universe. Among them the Big Bang Theory is the only widely accepted hypothesis. All the rest are unaccepted by the majority in the scientific community. Many scientists had put forward theories about the origin and evolution of the earth. In the modern geography there are several such hypothetical concepts⁹. Gaseous Hypothesis of Kant, Nebular Hypothesis of Laplace, Planetesimal Hypothesis of Chamberlin, Tidal Hypothesis of James Jeans, Binary star Hypothesis of Russel, Supernova Hypothesis of Hoyle, Inter Stellar dust Hypothesis of Otto Schmidt are a few of them. Besides them a many other scientists had presented a bunch of hypotheses but they all failed to gather support and acceptance in the main stream scientific community. Among these hypotheses the Planetesimal hypothesis of Chamberlin goes hand in hand with the depiction of origin of the earth in Mahapuranas.

One among the above mentioned hypotheses is widely known as Chamberlin-Moulton Planetesimal Hypothesis proposed by two American geologists T C Chamberlin and F R Moulton in 1905 to describe the formation of the solar system¹⁰. They attempted to describe and explain the evolution of different components of the earth three specific periods or stages.

1. The period of Planetesimal accretion or the period of a adoption of present shape and size by the earth
2. The period of the evolution of the interior of the earth and the evolution of continents and ocean basins.
3. The period of the formation of the mountains, folds, faults etc.

Among these three stages, the second and third stages can be found described with a considerable amount of similarity in the Puranas.

According to modern geography the origin of the universe and the earth happened in similar time and fashion. Puranas discusses the origin and evolution of the earth. It mentions a chapter in Kurmapurana named Pridhyudharam. This chapter describes the formation of big landmasses which can be understood as Continents.

In the Puranas the earth is thought to be in a dark, undivided state right from its origin (Kurma.I.6.1.p.29). The divisions and formation of different geo locations happened through billions of years. The continental drift theory of Alfred Wegner validates this Puranic idea. Besides, the well known British Geologist Arthur Holmes had opined the Convection currents occur in the mantle of the earth causes drifting away of the continental geo-mass. Mahapuranas depicts Visnu in the avatar of Varaha (pig) pushed the earth up to the upper terrain away from the *rasatala* which interestingly sounds like a character animation of the Convection current phenomenon. It needs a power exerted to a mass for the mass to become divided. Thus because of that power the single huge landmass, ‘Pangaea’, divided into two then eventually it ended up into seven continents so far. These are the seven continents modern geography presents. To clarify further the Continental Drift theory and Plate Tectonic theory are briefed below.

The theory of continental drift¹¹

Continental drift was a theory that explained how continents shift position on Earth's surface. Set forth in 1912 by Alfred Wegener, a geophysicist and meteorologist, continental drift also explained why look-alike animal and plant fossils, and similar rock formations, are found on different continents. Wegener thought all the continents were once joined together as a “Super Continent” before breaking up and drifting away to their current positions. The similarities in shape of the South American and African continents are very important in Wegner's research. The cape of Brazil protrudes in South American continents similar to the contours of the African continents caught the attention of Wegner. The astonishing similarities in the fossils excavated from both these continents, so many evidences point towards the ice age thought to be happened in the continents of the southern hemisphere in between the Permian period and subsequent carboniferous period in the geological history of the earth and the order of the natural deployment of fold mountains also helped Wegner to form his idea of continental drift.

Conclusion

Continental Drift is so far the predominant and unchallenged theory which explains the earth's surface formation as it is seen today. It is relatively a modern theory which was put forth by Wegener in the year 1912. The Mahapuranas were authored and compiled roughly a few centuries ago before Christ. Stunning similarities to the idea of continental drift can be seen in the depictions of earth in the puranas. Although it cannot be confirmed that those depictions and similarities are a result of scientific studies done by the ancient sages, the similarities itself are sufficient to grab the attention of a researcher. The ancients did not have any scientific means or apparatus as it is understood today to examine the universe as the modern civilization do. There is no known archaeological evidence or fossil findings excavated anywhere which can remotely be accused as a scientific apparatus the ancients used in their inquiries. Besides the texts itself were to presented as any scientific material either. Those are widely classified as religious texts. Even the contents of the texts predominantly focus on religious faith, its back stories and its nuances. So any serious researcher can easily dismiss them as unreliable sources in examining the scientific inquiry of the past. But at the same time the texts challenge the modern notion of a perceived ignorance of the time of its origin as well. Thus it positions itself as “not completely negligible” pieces of interest in the inquiry of the ancient civilizations’ quest to know the truth behind the

universe. What are astonishing in this process are the texts, even though intended as some religious scriptures or supplementary literature to authenticate or establish some kind of belief system challenged the modern notion about the perceived ignorance of its time. Barring the exaggerations in their method of narration, the staggering similarities in the relatively tiny details which resembles the modern scientific discoveries about the earth and oceans, cannot be dismissed as a mere imagination of some ancient mystic. Even though it is unknown how they 'found' or 'assumed' this much in tune with what the modern science know about the earth and the oceans, it seems safe to assume that they had some sort of ways to look into the universe to identify the factors consisting of it in as much detail as possible. An in-depth inquiry into that may reveal more if done with enthusiasm and academic passion. Perhaps it may re-write the primary purpose of the texts too. That is nothing other than the "perceived" establishment or validation of a faith system.

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