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Application of Physics for Understanding the Earth's Reverse Gravity

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Abstract

The prevalent view endorses that the force of gravitation of the earth is directed towards the centre of the planet, in consequence of which, temperature and pressure at the deepest part of the planet must be very high. This view leads to the conclusion that the inner core or deepest part of the planet, though constituted of iron through which magnetic lines of force emanate, cannot be magnetic. The author has shown that amongst the earth's three geospheres, fluid outer core that occurs between mantle and inner core, is a void zone which, because of the association of some particles from the mantle, apparently shows fluid characteristics. Occurrence of a virtually void zone in the planet's deep interior separated by a solid mantle and iron inner core would generate a reversely directed gravitational force due to which pressure and temperature at the deepest part of the earth would be sufficiently low. Hence, the earth's solid inner core, constituted of iron, is a dipolar permanent magnet. The paper envisages that the concept of reverse gravity presented here needs to be validated by physicists since it is an original view. The concept put forward here, not only explains the cause of earth's magnetic phenomena, but also elucidates continental drifting and several other features of the planet in a scientifically accepted manner, thereby refuting the possibility of occurrence of convection current in the mantle which is solid and rigid.

Keywords

Gravitation, Mantle, Inner Core, Reverse Gravity, Void Zone, Dipolar Permanent Magnet, Meteorite

1. Introduction

With the help of geophysical study, Bullen (1965) has shown that below the earth's granitic crust of average 33 km thickness, three distinct zones termed geospheres occur. Amongst these, the top-most 2867 km thick geosphere, com-

posed of basaltic rock is mantle, which occurs between 33 km to 2900 km depth from the earth's surface. Below the mantle occurs an enigmatic zone of 2080 km thickness, termed outer core, which extends up to 4980 km depth from the earth's surface. The outer core has been considered in the prevalent concept as a fluid zone, although whether it is in a gaseous or liquid state has not been confirmed. The prevalent concept also considers that while the outer core is composed mainly of liquid iron, the innermost 1391 km thick geosphere or inner core is composed of solid iron with some nickel. The inner core occurs below the base of the outer core, namely at 4980 km depth, and extends up to the centre of the earth at 6371 km depth. The prevalent concept, based on the evidence of the increase of temperature and pressure with depth at upper part of the planet, conjectures that the same trend of increase of temperature and pressure with depth has been continued at great depth too, thereby, contemplating a temperature of the order of 3500 to 4000 Celsius at the inner core region of the planet.

According to the prevalent concept because of incidence of such high temperature, the inner core of the planet, though composed of solid iron through which magnetic lines of force emerge, cannot be magnetic in nature. An alternative view has therefore been put forward for explaining the cause of the earth's magnetic phenomena and drifting of continents. The author, nevertheless, considers that the prevalent views should be thoroughly scrutinised in the interest of earth science.

The author interprets that the original small earth was oceanless, and therefore initially the ocean-forming water was associated with the planet's mantle. Under such circumstances, the mantle would turn considerably fluid and, suitable for expansion.

2. Continental Drift

If the globe is carefully noticed, it would be evident that the opposite landmasses across the oceans, conspicuously exhibited on both sides of the Atlantic Ocean, show remarkable parallelism which was first detected by the pioneer cartographer Abraham Ortelius (1596) who prepared the very first modern map of the world. Nevertheless, if we try to fit the relevant distantly placed continents perfect adjustment would not be possible indicating certain lacuna in the manner of adjustment. In fact, when a German meteorologist Alfred Wegener (1912) convincingly presented the concept of continental drift with lots of data, his view was not only rejected, but was also severely criticized by many geo-scientists. Refuting Wegener's work, renowned British geophysicist Harold Jeffreys (1976) asserted that the earth is too rigid to support any substantial movement of the crust. In this article the present author has attempted to solve the dilemma in which certain features confirm that continents have moved in the past, while several other characteristics reveal that such movement of continents cannot take place. It has been found by the author that the problem can only be solved with the help of earth expansion theory.

The principal reasons of disagreement of continental fitting were rigid state of the mantle and the fittings were far from perfect. Antonio Snider-Pellegrini in 1858 of France, Alfred Wegener of Germany in 1912 and many others have attempted to adjust the continents in models of constant dimension earth by distorting the shores. In a scientific work such adjustment achieved by liberally distorting the shore or any part of continents cannot be accepted.

3. Plate Tectonics and Occurrence of Convection Current at the Mantle?

The concept of plate tectonics was developed in the later part of the last century by Le Pichon (1968), Lowman Jr. (1992) and others, essentially based on the view that the earth's dimension is fixed throughout the past geological periods. To support this dogmatic concept, a new phenomenon termed subduction was required to be devised. Subduction implies that while a new crust is generated at certain place, such as at ocean floor, a plate or a continental fragment is pushed under another plate in a different place in a smooth conveyor belt like manner, thereby keeping the dimension of the earth unchanged. Regarding plate tectonics doubts have been expressed by several geologists, although the concept is supported by the larger section of earth scientists, particularly those who consider that the planet's dimension has remained unchanged throughout the past geological ages.

Even after protracted studies, the cause of fragmentation of continents and movement of the fragmented parts has remained unknown. Renowned British geologist Arthur Homes (1933, 1978) suggested that due to occurrence of convection cells in the earth's mantle, caused by dissipation of radioactive heat, movement of the crust may take place, though he himself doubted such phenomenon. In plate tectonics mantle convection has, nevertheless, been considered to have caused continental drifting, as well as, driving of a geo-dynamo which gives rise to magnetic phenomena of the planet. Earth Expansion Theory of Hilgenberg (1933) shows that the problem of continental fitting can easily be solved by reducing the radial thickness of the earth to two-third of its present thickness. The earth expansion theory, a detailed account of which has been presented in the author's book "Earth – The Planet Extraordinary" (Sen, 2007), envisages that during the primordial stage, the earth was considerably small with a radius of nearly two-third of its present radial thickness, as suggested by Hilgenberg (1933). The continental fragments at that time were joined together encompassing the entire globe. It was due to expansion, the planet's silicate crust was fragmented forming expansion cracks or mid-oceanic ridges and isolated fragments of discrete continents (**Figure 1**). Despite the concept's radical and rational explanations on the origin and evolution of various global features, it has so far failed to attain its deserving status, probably owing to the lack of a cause for such widespread expansion of the planet. Roy and Tuttle (1961) experimentally showed that if a silicate rock contains large quantum of water under pressure its melting point would be depressed or, in other words, the silicate

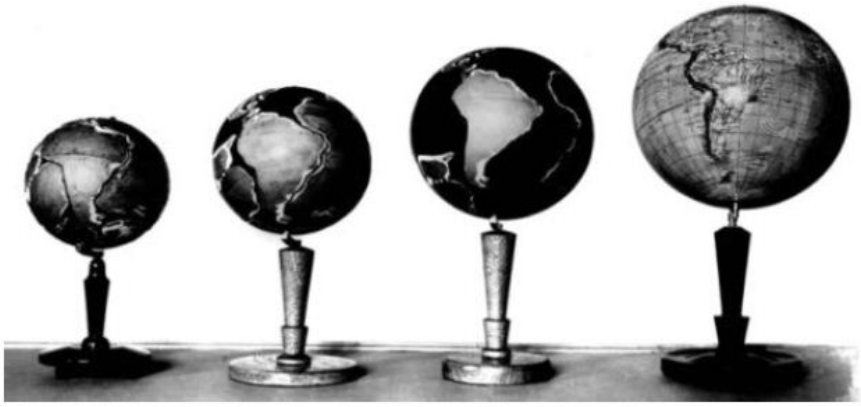

Figure 1. Hilgenberg of Germany in 1933 showed that if the radius in a model of earth could be reduced to two-third of its length, all the continental blocks could be adjusted in a perfectly snug-fit manner.

rock would develop semi-fluid characteristics Hence, in case of earth's mantle too, which in the primordial un-expanded or condensed state was associated with ocean-forming water, it can be postulated that the mantle must have been sufficiently fluid and suitable for expansion. The author has shown that the small earth of pre-expansion stage was devoid of ocean. Hence, at that stage the ocean-forming water was associated with the mantle turning that geosphere considerable fluid and suitable for movement of continents or expansion of the planet.

4. Cause of the Earth's Expansion

With the model of semi-fluid state of the mantle, the cause of all-embracing expansion of the planet earth can indeed be readily perceived, especially, with the example of gravitational pull of the Moon which periodically and profoundly affects the earth's principal water bodies bringing forth tides. Considering the dimension of the Moon vis-à-vis that of the earth and want of planetary expansion during the primordial and earlier stages of the earth, it can be deduced that Moon is a captured object of the planet which it circles now. From the time when the Moon was captured by the bigger planet, it started to revolve around the larger planet earth as a satellite, the Moon. In such event of arrest of Moon, the planet earth too encountered significant repercussions as its semi-fluid mantle was swelled up due to tidal action in response to the Moon's gravitational pull. Due to swelling up of the semi-fluid mantle, the earth's expansion was triggered with development of several long and sinuous expansion cracks, which in due course turned into mid-oceanic ridges. Initially on both sides of the cracks, which later turned into mid-oceanic ridges, rudimentary ocean bodies were opened along with various other significant changes over the terrestrial surface. In the deep interior of the planet too, due to the Moon's capture and its subsequent influence on earth, several incidences of far-reaching consequences took place (Sen, 1988).

5. Remarkable Changes in the Earth's Interior

It has been assumed that due to planetary expansion, the earth's interior too was greatly affected due to which the core-mantle conjunction was ruptured. With prolonged process of expansion, along the ruptured zone a void or low-density geosphere—the so called "outer core" of the prevalent concept—was opened. This view is strongly supported by the equivalent thickness of extent of expansion and length of the outer core. The view suggests that originally the base of the mantle and top surface of the inner core were juxtaposed to each other when the planet's so called outer core was not developed.

6. Occurrence of a Virtually Void Zone or Low-Density Geosphere-Prevalence of Reverse Gravity

Since in the earth's interior a void zone exists, conforming to the laws of gravitation, the lower-most portion of the planet, especially, the earth's inner core, would experience a gravitational pull in opposite or reverse direction exerted by the mantle (Figure 2). In consequence of such incidence of manifestation of reversely directed gravitational force or "reverse gravity", low pressure and low temperature condition would prevail in the inner core constituting the earth's deep interior. Thus, inner core of the planet which is constituted of solid iron and through which magnetic lines of force emanate, can rationally be reckoned as a dipolar permanent magnet. The authenticity of this view can be confirmed from the structure and texture of meteorites, considered to be broken fragments

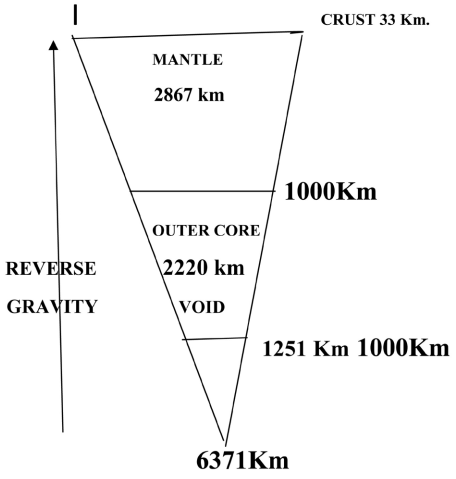

Figure 2. Overall structure of the earth (not to scale). Mantle composed of about 2867 km thick basic igneous rocks. Below the mantle occurs the outer core having an average thickness of 2220 km which, according to the prevalent concept appears to be a fluid zone, constituted of liquid iron. The inner-most geosphere is about 1251 km average thickness. With separation of original semi-fluid mantle from the iron core due to planetary expansion and formation of a void zone in between—the so-called outer core of the prevalent view—it is reasonable to conceive that around the inner core an oppositely or reversely directed force of gravitational attraction would prevail forming a low-pressure low temperature zone at depth, supporting the view that the inner core, made of solid iron, is a magnet.

of a pre-existing earth-like planet. That the terrestrial inner core, which is solid, made of iron with some nickel and, through which magnetic lines of force emerge is indeed a low pressure and low temperature zone and composed of a gigantic magnet can be decisively proved from the strong magnetic properties exhibited by most iron meteorites (Murthy, Srivastava, & Dube, 1969). The popular view of incidence of very high temperature and pressure in and around the inner core has been developed based on conjecture which cannot be established. On the other hand, solid nature of the inner core, composed of iron, from where magnetic lines of force emanate, leaves no scope to reckon that this geosphere is a huge bar magnet. The view is strongly supported by most iron meteorites which are magnetic in nature. Thus, the innovative view presented here contemplates that temperature and pressure of the inner core must be adequately low and the inner core is a magnet.

7. Smooth Oscillation of Magnetic Core

During the pre-expansion stage of the planet when its magnetic core and mantle were juxtaposed to each other (**Figure 3(a)**), in response to an approaching planetary object with strong magnetic properties, earth's magnetic core would

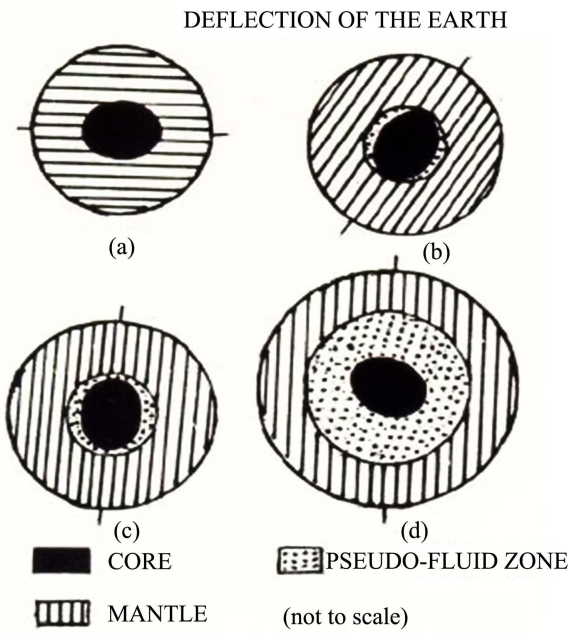

Figure 3. Before expansion of the planet, the solid iron core and semi-fluid mantle were juxtaposed to each other (a). Due to expansion the original core-mantle conjunction was ruptured (b) and along the ruptured surface a void zone was developed (c). Hence, due to occurrence of two solid geospheres separated by a virtually void zone, in the deep interior, the phenomenon of reverse gravity would prevail, generating low temperature and low-pressure zones in the earth's core and deeper parts. After development of the thick void geosphere (d), the iron-core remained within it in a suspended condition. Hence at this stage in response to extra-terrestrial magnetic influences, new magnetic phenomena like polar wandering, pole reversal and west-ward drift could take place which have been precisely documented over the global surface (not to scale).

experience smooth movements. Due to such movements the entire earth would be deflected causing major changes on terrestrial surface features, especially affecting its climatic characteristics. In contrast to such incidences during the younger post-expansion period when the earth's magnetic core was completely detached from the mantle (**Figure 3(b)** and **Figure 3(c)**), in response to extra-terrestrial magnetic influence, the core would execute smooth movements and oscillations within the earth's mantle without causing any movement or deflection of the entire earth (**Figure 3(d)**). Evidence of such events are well documented in the earth's crust, particularly in the sedimentary layers of the past five million years exhibiting signatures of several incidences of movements of magnetic poles and pole reversals.

8. Conclusion

The concept of unified global tectonics is fundamentally based on the earth expansion theory and can be considered as a new theory on the total earth system as it is intended for explaining the earth in a systematic manner from its centre to the outer-most layer, including the core, mantle, crust, as well as the cause of expansion. With separation of fluid mantle from the iron core due to planetary expansion, it is reasonable to conceive that these two discrete and completely detached geospheres would exert a gravitational pull on each other thereby generating a low-pressure zone around the inner core and certain other parts in the earth's deep interior. The author considers that the completely contradictory view presented here should be seriously scrutinised by geophysicists, geologists, physicists, and mathematicians along with the wrong concepts that have deliberately been put forward based on false assumptions.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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