Tectonics of Earth: octahedron frame and antipodean continents and oceans

Kochemasov G.G. IGEMof the Russian Academy of Sciences, 35 Staromonetny, 119017 Moscow, Russian Federation, kochem.36@mail.ru

Approximation of the Earth' globe by various polyhedrons is practiced rather long ago [1]. Because behind these constructions occur various regularities, periodicities, symmetries in disposition of terrestrial objects, all proposed figures are not fantasies but more or less objective reflect structural peculiarities of the planet. Now one may definitely state that at the base of these spatial regularities and symmetries lie wave processes. Their essence is in regular recurrence of phenomena. Stational inertia-gravity waves warping terrestrial spheres (this concerns all celestial bodies) and propagating in them along 4 ortho-and diagonal directions, appear in them due to applied orbital energy because celestial bodies move in non-round keplerian orbits implying periodically changing acceleration and curvature. Interference of the various directions waves leads to formation in planetary spheres regularly changing uplifting (+), subsiding (-) and neutral (0) tectonic blocks of various sizes. The sizes depend on the wave lengths. So far as any body is warped by waves of various lengths, starting from the fundamental one long as the great planetary circle, its overtones and individual waves (their lengths depend on orbital frequencies), then various geometric figures inscribed in a globe can exist.

Always present fundamental waves (long $2\pi R$,where R is a body radius) are responsible for the tectonic dichotomy of celestial bodies (Theorem 1[2]), their first overtone (πR) gives tectonic sectoring – tectonic octahedron (Fig. 1, 2)(Theorem 2, [2]). The individual characteristic waves, lengths of which are inversely proportional to orbital frequencies, produce tectonic granulation making various polyhedrons (Theorem 3 [2]). The characteristic terrestrial wave connected with the frequency 1/1 year has length $\pi R/2$ giving in the great circle alternating 4 tectonic bulges (+) and 4 holes (-) with length of $\pi R/4$ (cross-like configuration). With this peculiar wave warping is connected the figure cube manifestation of which in geospheres were noted by several authors [1 and others]. Vertexes, edges and faces of cube coincide with real very characteristic elements of the geospheres tectonics [1] but has no direct relation to their main structural blocks –continents and oceans. The wave tectonics for the first time shows and explains that the main tectonic blocks of Earth – continents and oceans are the elements of the octahedron frame of Earth. Become clear the typical sizes of these blocks (sizes of the octahedron faces) and remarkable regulation in their position on Earth. The chaos in their disposition is seeming.

An octahedron made by interference of waves 2 of 4 directions is observed in all celestial bodies [3]. Six antipodean vertexes of the Earth's octahedron (1. New Guinea – 2. Equatorial Atlantic; 3. Easter Isl. – 4. The Pamirs-Hindukush; 5. Bering Strait – 6. Bouvet Isl.) are placed in zones of the equator, tropics and the polar rings, thus indicating a cosmic orientation of the octahedron. Thus, the principal structure of Earth is caused by its cosmic movement ("orbits make structures") [4]. Orbits make structures, that is a combination of +, - and 0. This combination determines position in cosmos of the rotation axis, as this imaginary line has a zero angular momentum and it is formed by the whole sum of variously uplifted tectonic blocks of a rotating body. The rotation axis can by jump change its position in a body when blocks rapidly change their tectonic sign (an essence of the standing wave). It is known that the Earth's axis was changing its position and, in particular, could be along the line the Pamirs-Hindukush – Easter Isl. This is witnessed by the PR-Pz tillites – old ice related deposits. The rotation axis of the Moon also changed its position- in the past it was inclined by 30˚ relative to the present.

The Earth's structural octahedron also has other regularities related to its wave nature. To each of the six vertexes gather four faces-sectors by certain algorithm (Fig. 3). Always there is an opposition of two variously uplifted sectors separated by two variously subsided ones. By the tectonic "bisectors" the sectors are divided in two hypsometrically and tectonically different subsectors. To the relatively uplifted subsector is opposed relatively subsided subsector in the opposite sector and vice versa. This also confirms the wave nature of the global structurization.

In the New Guinea structure (Fig. 3 , 1) oppose Indonesian (++) and Melanesian (+) sectors separated by Pacific (- -) and Indoceanic (-)ones. In the Atlantic structure (Fig.3, 2) oppose African (++) and South-American (+) uplifted sectors separated by North-American (- -) and South-Atlantic (-) ones. In the Easter sector (Fig. 3, 3) oppose NE (++) and SW (+) sectors separated by NW (- -) and SE (-) ones. In the Pamirs-Hindukush sector (Fig.3, 4) oppose African-Mediterranean (++) and Asian (+) sectors separated by Eurasian (-) and Indoceanic (- -) ones. In the Bering structure (Fig. 3, 5) oppose Asian (++) and North-American (+) sectors separated by Pacific (- -) and Arctic (North ocean) (-) ones. In the Bouvet sector (Fig. 3, 6) oppose African (++) and Antarctic (+) sectors separated by Indoceanic (- -) and South-Atlantic (-) ones.

On every of 8 faces of the octahedron there are 3 sectors as a face has 3 vertices. Naturally, that every face summarizes whether (++, +) or (- -, -) but amplitude of uplift or subsidence is different: every face has an individual sum of + or - . The African face (6+) is antipodean to Pacific (6-); the Asian (5+) to South-Atlantic (3-); the North-

American (4+) to Indoceanic (5-); the Antarctic (3+) to North-Atlantic (4-). The sharpest contrast is between antipodean African (6+) and Pacific (6-) faces, the smallest between Antarctic (3+) and North-Atlantic (4-). Thus, the structural octahedron has different signs (uplift or subsidence) of antipodean vertices and faces that reflect its wave nature. This might be called "quantum tectonics". Long ago noted intriguing opposition of Arctic and Antarctic is, thus, result of the wave structurization. The Arctic-Antarctic symptom is shown in all cosmic bodies and especially in small bodies with rather characteristic opposition of sharp and blunt ends [5].

Thus, the main tectonic blocks of Earth – continents and oceans are made by waves 1 and 2. There is significant regularity, antipodality in their disposition due to their relation with faces of the structural octahedron. Small continent Australia and subcontinent Hindustan not like other continents belongs to the strongly subsided Indoceanic face. This is reflected in their on the whole low hypsometry, proximity of the relatively dense (ferruginous) mantle and, as a result, specific metallogeny.

The wave structurization of celestial bodies acquiring properties of polyhedrons compel us to remember the I. Kepler's explanation of twinkling stars by their polyhedron shape. This idea of the great scientist was not taken seriously and is not estimated up to now. In essence, Kepler was right.

References:

[1] Kochemasov G.G. 2003. Continents and oceans as faces of of the structural octahedron of Earth (geometry of Earth) // Proc. Joint Intern. Conf. "New Geometry of Nature", Vol. I. Kazan State University, Kazan, Russia, Aug. 25-Sept. 5, 2003. (In Russian with English abstract). **[2]** Kochemasov G.G. 1999. Theorems of wave planetary tectonics. Geophys. Res. Abstr., V.1, #3, p. 700. **[3]** Kochemasov G.G. 1999. "Diamond" and "dumb-bells"-like shapes of celestial bodies induced by inertia-graviity waves. The 30th microsymp. on comparative planetology. Abstracts, Moscow, Vernadsky , Inst., 49-50. **[4]** Kochemasov G.G. 2003. Coherent structurization of the Earth's geospheres from core to atmosphere and lithospheric weakness zones favorable for oncentration of metals // Global Tectonics & Metallogeny, V.8 # 1-4, 101-104. **[5]** Kochemasov G.G. 2000. 433Eros as a natural model of planetary wave processes. The 32nd microsymposium on comparative planetology. Abstracts, Moscow, Vernadsky Inst., 86-87. **[6]** Morelli A. and Dziewonski A.M. 1987. Topography of the core-mantle boundary and lateral homogeneity of the liquid core. // Nature, 1987, v. 325, # 6106, p. 678-683.

Fig. 1. Earth's octahedron; **Fig. 2**. Octahedron sectors (thick lines) and their inverse reflection in the core-mantle boundary [6]) ; **Fig. 3**. Sectors and subsectors around the octahedron vertexes.