

Epistemological Reappraisal of Regime / Rupture Geology in the Last 200 Years – Cosmic, Planetary, Geophysical, Atmospheric, Oceanic, Ecological and Microscopic Evidences

¹MARTINS Jr., P.P. ¹Fundação CETEC, Belo Horizonte and ¹Universidade Federal de Ouro Preto, Escola de Minas - DEGEO, Brasil.

In the last two hundreds years the pendulum of theory has oscillated in between two geological principles [uniformitarianism / actualism] and [catastrophism]. Massive extinction, ecological crisis, glaciations, electromagnetic alternations, solar variations, comets / meteorite impacts, oceanic events, earthquakes and volcanism are the catastrophic geological and cosmic processes concerned. Mutations also must not be neglected as an important aspect for evolution. The standard Phaenozoic column was established by previously catastrophist geologists and geological ages are event connected [index fossils are one notable case]. Uniformitarianists and actualists placed catastrophism in a no-one's land mode of thinking during the last 170 years as a consequence of Lyell's intransigent positions against all sort of catastrophes. Alvarez and others' discovery of the Mesozoic "impact provoked mass extinction" turned upside down the centennial dogmatism in geological sciences. Other catastrophic events may be impact derived or not. Their products are volcanism [eventually inducing catalysis of anthracite formation with volcanic cinders at low temperature $\cong 180^{\circ}$], many types of geochemical traces, sedimentary processes, fauna/ flora extinction, paeleoecology radical transformations and glaciations. Impact geology may be also supported by anthropology. Brazilian studies started with episodic sedimentation within oceanic / coastal ecosystems and mass extinction in 1990. Nowadays it prosecutes with ejecta analysis [spherules] in eastern coastal basins of South America and with image digital processing and software engineering production for circular structures recognition. New developments in Earth Sciences Epistemology emphasises the actualist and catastrophist principles as both *bona fides* description of regime – rupture processes in Earth history.