The Orbit of Planet Earth in the Last 150 Million Years

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Abstract: The structure of the world is a construction of philosophers and scientists. It changed all the time. Nowadays we have a chaotic Solar System. The orbit of Earth changes, therefore, on the very long run. With it changed the UV- radiation on the surface of Earth, influencing the number of mutations. This celestial factor plays an important role in the explanation of evolution and extinction which we can see in the fossil record of Earth, and reversed we can reconstruct the orbit of planet Earth. In principle this factor can also explain the loss of life on Venus and Mars.

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1. Introduction

History shows us several concepts of the structure of the world. The oldest is an idea of the Greek philosophers: the Earth is the centre, and the Sun and planets move in perfect orbits, circles, around it. Later it was thought that those heavy bodies were moved by angles. There was also a Tree of Life, the axis of the world, along which creatures of the invisible world could visit and take leave of the Earth (Hardison, 1989).

After that came the age of science in which the position and movement of the Earth and the Sun where interchanged, leaving us with a Solar system, with the Sun in the centre and the planets moving around it, not in circles, but ellipses. Exactly described and measured by some of God's Philosophers (so called by Hannan, 2009) e.g. Copernicus (1473-1543) and Kepler (1573-1630).

Newton (1642-1727) gave the perfect mathematical formulation, using gravity instead of angles. Viewed with a chaotic eye, however, the picture looks subtly different (Hall, 1991).

We know that, in principle, his system was not stable as we were taught in school. There is instability or chaos in the solar system (Peterson, 1991). The planets can get wider or narrower orbits, or varying distances to the Sun. So we are now far away from the eternal order of the old philosophers. This chaotic movement can be simulated by computer programs (Pleitgen and Richter, 1986) but also by a more direct method.

2. Consequences

The very long term changes in the distance from the Sun have consequences for the melted core of the Earth, the level and stream of melted material. If Earth makes a chaotic move towards the sun we may expect high tide of lava or "upwellings of magma" and volcanism on a large scale, as described by Coffin and Eldholm (1993). In the last 150 million years we had five of such periods. For a chaotic movement in the opposite direction we may expect low tide of lava. All this depends on the changing distances from the Sun, just as in the case of ocean water.

In the old models the number of species was stable at the level of the last day of Creation. In reality the number changes over time because of evolution and extinction, see figure 1.

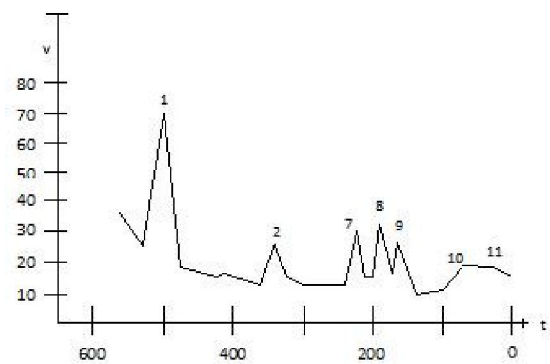

Figure 1. Estimates of extinction

The changing orbit of the Earth now has consequences in this field as well, because that distance has influence on the quantity of UV radiation that will reach the surface of the Earth, and which causes mutations.

In moving away from the Sun the Earth will pass a “critical distance line” after which almost no UV radiation will reach the surface and we will see not many mutations. The opposite will hold if Earth moves in the opposite direction. All this must have consequences for the ecosystems, especially for the 'vitality' of species as can be shown with the vitality-index (also called Newell-index).

$$N = \frac{hw(k-1)(2.6-k) + (1-hw)\log k}{k}$$

In which :

N = index of vitality of species
k = growth coefficient (between 1 and 4)
w = degree of competition
h = mutations.

We can distinguish two situations for h:
h=0, in a situation of many or increasing mutations, see Figure 2.
h=1, in a situation of few or decreasing mutations, see Figure 3.

Close to the Sun we may expect the situation of Figure 2 and far from the Sun the situation of Figure 3 (Noort, 1995).

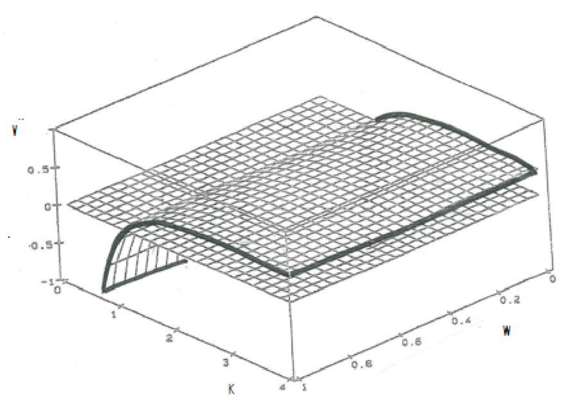

Figure 2. The Stable Ecological Hierarchy in case of increasing mutations
V=vitality, k=coefficient of growth, w=degree of competition, w=0=monopoly, w=1=pure competition (Noort, 1995)

There are two areas in which the Earth will move. The borderline between the two is very important. In the movement away from the Sun the line indicates the starting point of extinctions, and reversed that line will indicate the start of evolution.

The high developed species will find their exit starting about this line and the new mutants will appear also starting about this line. This line comes instead of the Tree of Life but is less poetic. The only exceptions are the so called living fossils, who can survive because of lack of competition (w = 0).

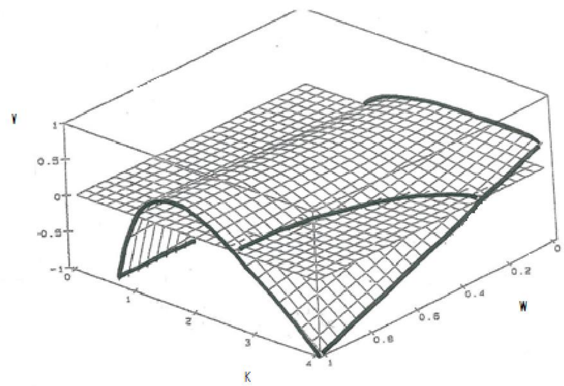

Figure 3. The unstable Ecological Hierarchy, in case of decreasing number of mutations

3. Relationship

The relationship between Heaven and Earth. In Figure 4 we have combined the two types of consequences of the chaotic movement of Earth. If Earth passes the critical line away from the Sun we will have a start of additional extinctions. If Earth makes chaotic turns towards the Sun we will notice upwellings and mass volcanism (Courtillot,1990). The upper turning points constitute a dramatic situation because of the nearness of the asteroid belt and therefore a higher chance of a hit or impact (Alvarez, 1990). The lower turning points must be quite different, because far away from the asteroid belt (fewer impacts) and near the sun with many mutations (see the Marsland publication of Noort and Elewa, 2011).

Not surprisingly, upwellings will not always be followed by extinctions. It depends on the sphere in which the Earth is moving. Perhaps we may say that volcanism is not an important cause of mass-extinctions. The details are a little more complicated because not only the distance towards the Sun may change, but also the tilt of the axis and the speed of Earth. (Bertotti, 1990 and Roy, 1988).

The distances of the orbit towards the Sun show variation in course of time, it is a picture so to say of the chaotic element, having the form of a logistic function. We could speculate and say extinctions have the form of logistic cycles, which you will see with a growth coefficient of e.g. 3.5. So we may expect various peaks or mass extinctions in succession. This is clearly not caused by a death-star around Earth (Muller, 1990), but by chaotic movements of Earth itself.

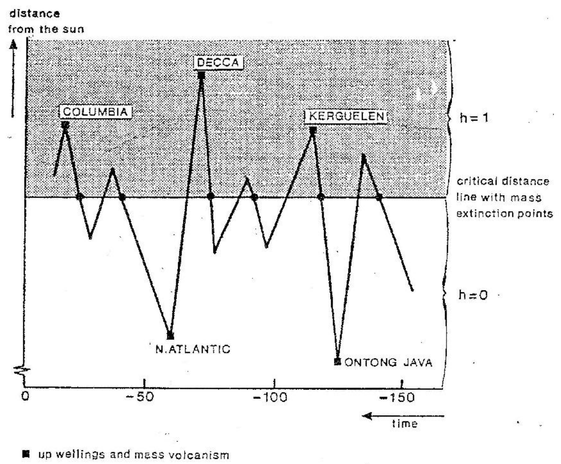

Figure 4. Orbit of planet Earth in the last 150 million years

4. Conclusion

So changes in orbit of planet Earth, the celestial factor, will have consequences for the structure of the surface of Earth (because of the influence on lava) but also for all living creatures upon it, in ways the old and even young philosophers would never have dreamt of. Chaos in the Solar system has, according to the Marsland publication, an unexpected influence on evolution and extinction, which we can see in the fossil record. We can say now that something must have happened in Space.

The orbit of Earth was sometimes wider or narrower. Happily for us the other planets followed in this dance, so preventing collisions. The consequences could be that planet Venus was sometimes very near to the Sun, and Mars very far away from the Sun. If we speculate on these facts we could say that they may have caused total extinction of life, if ever present, on our neighboring planets.

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References

1. Alvarez, W. and Assaro, F., An extraterrestrial Impact, Scientific American 263,1990, 78-84
2. Bertotti, B and P. Farinella, Physics of the Earth and the Solar System, Kluwer Academic Publishers, 1990, pp.500
3. Coffin, M.F. and Endholm, O., Large Igneous Provinces, Scientific American,1993.
4. Courtillot, V.E. Volcanic Eruptions, Scientific American,1990.
5. Hannam, J., God's Philosophers, London, 2009.
6. Hardison, O.H., Disappearing through the Skylight,1989.
7. Hall, N., The New Scientist Guide to Chaos, 1991.
8. Marsland publication: see Noort and Elewa, 2011.
9. Muller, R.A., Nemesis, the Death Star,1990.
10. Noort, P.C. vd., Equilibrium and Complexity,1995.
11. Noort P.C. van den, and Elewa, A.M.T, A new theory of extinction: The search of the common formula, Academia Arena, 2011,3(4). (Marsland)
12. Peterson, I. Newton's Clock, Chaos in the Solar System, 1992.
13. Pleitgen, H.O. and Richter, P.H. The Beauty of Fractals, 1986.
14. Roy A.E., Orbital Motion, 1988.
15. Sepkoski, Periodicity in Extinction, Journal of Geol.Sci., 1986.