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But where's that Chaos ?

Open letter to the Prof. Umberto Bartocci, the last one of the very rare Cartesians.

Obviously the adjective *Cartesian* is not offensive but instead it stands to underline irreducible position that a studious adopts respect to the scarce gnoseologic value of the modern physic and mathematic theoretics. Neither less then this unsatisfied gasp is inutile close to it self because it's satisfying can lead to new discoveries.

By the actual visions the entire Universe would be the product of the coincidence, of the big numbers' law and, in other words, of statistic. The known physic George Gamow used to say that *lies exist, innocent lies and the statistic*, but that, in the case of Planck (problem of the Black Body) the statistic illustrated approximately true (to solve the problem of The Black Body by Rayleigh & Jeans v. [1]) . The use of this method was born together with the treatment of the laws on gases and culminated with the statistic interpretation of the Quantum Mechanics. The successes of these theoretical formulations, uselessly opposed also by Einstein by the famous sentence God does not play dice, led to the gradual substitution of the presupposed Newtonian fortuity with the actual and powerful fortuity that would constitute, also the scientific demonstration of the non-existence of a Supreme entity, sorter of anything.

But either there might be a dense number of those who believe that when ignoring the real physic causes of a phenomena, we recur to the extreme static ratio so that tangible fortuity is instead the product, at least, of an inadeguate, darksome and so doubtful model of the reality. And that's just what we're about to show in this letter, by the mentions of the more punctual contents of the article [1] and to what's published on the site www.carlosantagata.it.

In the said work [1] we show that different and significant macroscopic properties of the **matter** (both in solid, liquid or gas state) that nowadays we're only able to determine in laboratory , are instead theoretically deducible and amenable to the electron charge, to the mass of the atom of the substance in examination and to the interatomic distance, bignesses deliciously **microscopic**. For example, the sound's speed in matter, that nowadays is still given by Newton's (1650) formula

$$v = \sqrt{\frac{E}{\rho}} \quad (1.1)$$

where E is the elasticity module of the distance and ρ is its density, is also given by the new relation [1] [c.g.s. system]

$$v = \sqrt{\frac{2e^2}{md}} \quad (1.2)$$

where e is the electron charge, m is the atomic mass of the substance in examination and d is the interatomic distance. Obviously the said formula is perfectible for the reasons exposed in [1].

In fact the (1.2) can be written

$$v = \sqrt{\frac{2e^2}{md}} = \sqrt{\frac{2e^2}{\frac{m}{d^3}d^4}} = \sqrt{\frac{2e^2/d^4}{m/d^3}} = \sqrt{\frac{E}{\rho}}. \quad (1.3)$$

But the (1.2) is both valid in the solids, in which d is of the order 10^{-8} cm. , and in liquids, in which d is of the order 10^{-7} cm. , and in the gasses, in which d is of the order 10^{-6} cm. . On the other hand if we are incline to think in a solid crystalline structure composing it, for example in the cooking salt Na^+Cl^- (salt crystals), is dictated by electric forces (in which d is of the order 10^{-8} cm.), we're not able to understand the motivation for which molecules of a generic gas (in cui d is of the order 10^{-6} cm.) should not feel again of some electric bond, as seen and considered, opposed to, Coulomb's force has an infinite action ray.

On the other hand (1.2) applied for example to air or to any other gas it give the same bigness order of sound speed in the considered substance.

Instead cynetic theory of gasses presupposes that molecules of any gas do not minimally interact among them; from there the use of the statistic.

Castelfranchi [2, pag. 25] for that thing wondered the following question. We know that a gas at the ordinary temperature of 273° Kelvin has an energy equal to

$$E = kT = 1.38 \times 10^{-16} \times 273^\circ = 3.77 \times 10^{-14} [J]$$

And he wonder if this energy is of gravitational nature. Maybe he thought to connect this form of energy to a gravitational collapse in an intergalactic hydrogen cloud. Its simple calculation [2] led him to the conclusion that its conjecture was completely wrong [2]. Instead if we hypothesize that molecules of a gas at that temperature stand to a medium distance of $6 \times 10^{-6} \text{ cm.}$ (average free path) and we think about the existence of an electric force we have (total medium energy) [c.g.s.]

$$E = \frac{e^2}{d} = \frac{(4.8 \times 10^{-10})^2}{6 \times 10^{-6}} = 3.84 \times 10^{-14} [J] \quad (1.4)$$

And this, together with the other verifications [1], is not a fortuity coincidence.

So we're led to assert that the Chaos only stands in wrong assumptions of our models and not in the realty around us!

We can surely end saying that the classic model of the matter continuum, that gives origin to Newton's relation (1.1), must give the step, from a certain point, to the atomic constitution of the matter itself, that gives origin to relation such as (1.2), in relation to the considered property.

But if the (1.2) is approximately true in the various states of matter, is it also valid in the aether ?

If we think aether, venue of the electromagnetic phenomenas, permeates the entire Universe and we hypothesize, with Dirac, that the *black* would be *full* of electrons couples and positrones (e^{-}, e^{+}) which masses orbit to a distance of $2 \times R_e$ where R_e is the classic ray of the electron $R_e = e^2 / mC^2$, so from (1.2) we have that the speed of this *sound* in this more detailed aether is just equal to light's speed. And then...

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Bibliography

- [1] C. Santagata **Macro e Microcosmo** www.carlosantagata.it
- [2] G. Castelfranchi **Fisica Moderna Atomica e Nucleare** Hoepli Editore