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Universal Dynamic Science as the follow up to the Classic
Mechanics of gravitation
And the importance in our present times of the use in
Science of animated graphic designs

The association of the principle of equivalence to the Classic mechanics of gravitation is the next general advance in classic mechanics, since through it the interpretation and successive description of gravitational phenomena permits to identify the cause of transformations-degradations which justify the emergency of movements and are at the base of the temporal phenomena.

(Nothing gets destroyed nothing is created but everything is subjected to transformation-sentence attributed to Democritus)

When Newton's description of physical mass and Force acting on it (as expression of capacity of movement of the said physical mass or of contact borne by it over another mass) was formulated, Science had not clearly evolved the concepts of mass, and of Force acting on it and forcing it to move.

There was dichotomy between the two and they were intended as two separate physical entities, the mass in Ton and the Force as measure of contact reaction in kN (a measure of an entity totally on its own) measuring opposition to natural transformations, in the physical mass, which were extremely well hidden to comprehension, since in a time in which the existence of the atoms was just an hypothesis, no one could have been able to formulate the existence of transformations of substance from a status to another.

At that historical moment was not possible to carry on explaining how "mysteriously" the objects under examination suddenly acquired accelerated movement under the effect of the gravity.

Certainly in gravitational conditions of fall the appearance of movement could not be justified as part of a law of continuous creation of energy out of nothing, since movement came to be when a physical mass was moving through what was recognized as a gravitational field.

The great step forward, leading to the solution of the problem, was made (long time after) through the realization that mass and energy were equivalent on a ratio so small that was only possible to infer their equivalence, since it was unthinkable to measure what happens to a physical mass when an almost infinitesimal part of it would be transformed into something causing movement of it.

This notion in Newton's times would have been considered blasphemous since then, in the world of Science, the idea prevailed that mass could only be perfect and invariable and this idea was carried on and translated to the atoms (when their existence was discovered), and until towards the end of the 19th century they were also considered perfect and invariable.

At that time the electron was discovered as a particle coming out of a mass made of atoms and from that point on knowledge proceeded so fast that the idea of invariability of the mass of the single atoms became obsolete.

The idea of transformation is now well ingrained in Science and so is the fact that a transformation must have a cause and produce effects, but what fundamentally was at the base of a search had to be a continuous transformation of constant universal nature happening spontaneously, a "prima causa", affecting all the physical masses present in the universe and it resulted so cleverly disguised that we carry on our lives without even suspecting its existence.

Our present Science hasn't yet come to terms with the concept and perceptions are discrepant, since to reach explanations, old taboos must fall and mental categories must be built up.

When dealing with transformations I will point straight away what is going on, since I was able to follow the chain of transformations from the "necessary" beginning to the "necessary" end.

The beginning sees me accepting the presence of substance of indestructible nature in the Euclidean space where the space is not occupied by physical mass of a kind.

This substance is the Ether/ESF (Energized Space Fabric), is mass-energy present in the Euclidean space in a pristine uniform and homogeneous condition of existence and ready for transformation when contact with the physical mass which absorbs it (through an universal phenomenon of absorption common to all the masses of the universe) transforms it into a part of physical mass (the neutronic status of the physical mass).

This absorption by the physical mass causes presence of a field of flow and depression in the ESF present in the Euclidean space surrounding it.

At this point we have denied the presence of a "space void of substance" and everywhere we look we see either physical mass as a composite of mass-energies in different states of existence or Ether/ESF (which represents the substance origin of the physical mass).

Centering our interest over a very large mass (for example, our Earth, our Sun or a star) if a mass a lot smaller comes in contact with their field of flow and depression of the ESF, and if we admit that this contact is highly reactive (in the sense that movement caused by internal transformation-degradation has origin in the smaller mass, and can, somehow, transform in crescendo, a minuscule

fraction of the mass affected into something that gives increase to movement) we have that the “action at distance” is justified, insofar as we know that “the apple which falls from the tree” or “the ball of iron which falls from the top of a building” or “a plane crashing” and a physical mass which is resting on the surface of a larger one develops a dominant contact Force are all immersed inside the pristine substance called Ether/ESF present in reactive condition.

Once accepted that through gravitation, we have a series of situations consisting of transformations-degradations of substance, all related through cause and effect we can lift against gravity “a ball of iron” from the bottom to the top of a building, but then since by axiom a transformation is always an irreversible degradation, in moving this physical object against gravity we will subject it to a transformation which is of different nature than the one undergone in the fall.

This observation renders unsustainable the classic mechanics since in it the movement against gravity assumes that the transformation is perfectly reversible in respect to the one in favor of gravity.

If one is not satisfied about this explanation it will be sufficient for me to point that if we let an object move from a point A to a point B in favor of gravity and we want it to reach B in conditions of quiet we have to transform into heat (through friction consisting of disturbance of the surfaces of the atoms made of ESF) the kinetic mass-energy produced by neutronic transformation internal to the physical mass, caused by gravity.

This as a proof of equivalence of kinetic mass-energy and heat but also of existence of heat in a status reached after transformation-degradation of kinetic mass-energy and successive dissipation of it shows that is unthinkable to sustain that the same heat coming out as dissipation can be retransformed into neutronic mass.

From the study of these transformations and the way mass-energy is released from the neutronic component of the physical mass and transformed into inertial mass (the one which is responsible of movement of the physical mass), from the way aggregations of particles called “neutrons and protons” result present in the center of the atoms and from the assumption that the Ether/ESF is excluded from the volume occupied by the atom through presence of layers of electrons pushing against its fabric character, from the release of heat and dissipation as a phenomenon caused by the internal action of the gravity of very large physical masses, comes the new Universal Dynamic Science (UDS).

The change now is extreme, since from an early scientific perception based on “invariable” physical mass we now have ascertained that mass and energy are one and the same and that from the moment of inception the atomic mass has internal movements of unimaginable speed, which since contained inside the atomic surfaces made up of the fabric of the Ether/ESF and perfectly hidden and sheltered by it, do not appear to our senses as such, unless we manage to disturb that surface.

But then we manage to observe a physical mass falling under the reactive effect of the gravitational field of a much larger physical mass, and deduct that the true effect is a transformation of neutronic mass-energy into inertial mass-

energy (the one causing movement of the whole physical mass) and also we observe (at safe distance) and deduct, that the release of heat coming out from the Sun (and from the stars) as dissipation is a phenomenon of gravitational origin which (as mentioned) affects the fabric of the ESF surrounding the atoms constituting a Large Gravitational Mass such as the Sun or the said stars, and allowing some of the rowing materials contained inside the said atoms to escape as heat, out of the shell of the said atoms, (made of ESF), and move towards the surface of the physical mass entrapping it, from which surface it dissipates in the surrounding ESF.

The temporal phenomena affecting a physical mass in movement can only be explained in the light of presence of inertial mass in the physical mass, which impregnates it whilst absorbed by the ESF on a fixed direction (a sort of dissipation that only happen directionally and carries with it the physical mass), all this happening concurrently with the capture of the ESF immediately surrounding the physical mass in movement due to presence of inertial mass, and generating a separate physical entity in movement that we call a system.

It descends that in these systems as entities on their own the universal laws remain invariable but their developments are affected by presence of inertial mass (movement) and thickening of the ESF in respect of the surrounding ESF which for the moment we assume in a status of absolute immobility, this leads to a situation in which if the phenomena are observed by an observer inside the system the universal laws stay the same and remain invariable since the measure of time which is defined by the "prima causa" is also invariable for the observer internal to its own system, whereas if the system is observed by an external observer the observation is subjected to the way the temporal relative phenomena of transformation take place.

Note: this topic will have to be enlarged and explained separately.

I avoid here the discussion about the necessity of an absolute condition of immobility (necessity for an observer which wants to describe the universal reality made up by all the systems around him, to reside inside a system in absolute condition of immobility) but the establishment of a similar condition be it approximated in universal terms or absolute in local terms, is a condition which permits real time representation, in terms of simultaneity, of the universal reality in universal terms or in local terms according to the case.

The list of phenomena induced by gravity is not exhausted here since gravity induces precession in a physical mass in orbit around a much larger one (as it is the case with the planet Mercury and with the artificial systems constituted by the satellites of the GPS orbiting our Earth).

The phenomenon causing precession is so well a part of the theory of gravitation that under the present advance was possible to deduct a universal law of precession.

The UDS as a new Universal Dynamic Science, is the next advance in classic mechanics provided the principle of equivalence is taken into account and with it the reality of the fact that "Natura horror vacui habet" (the Nature has horror of vacuum) therefore there is an ever present Ether/ESF (having physical characters to be discovered and defined in relation to the physical interaction it

develops with a physical mass immersed in it, and this applies also to the electric and magnetic phenomena), and this Ether/ESF exists separately from the physical mass which by definition excludes it.

From the observation that only one substance is at the base of the physical reality and that such a substance is indestructible it must descend that it occupies the entire Euclidean space in a pure pristine status or after having undergone transformations-degradations of sorts is present as physical mass, and that these transformations-degradations are ruled by physical laws connecting passage of status of the substance through concatenation of events and the movements underlined by presence of this substance in different states of existence are contained between transformations of it, whereas the capacity to release movement of this basic substance goes through degrees from a potential capacity to do so when it is present in nature as ESF to a full release of it when it reaches the status that we call dissipation.

We then must say that, we are faced by substance of indestructible nature endowed of "spin" which is the capacity that the substance has to release itself in movement and the fact that movement goes through various states, means that the spin which is also an indestructible character of the substance goes through various degrees of impediment determined by the related transformations-degradations affecting the substance and causing, by degrees, partial removal of impediment, invariably corresponding to transformation and degradation, until the substance completely deploys its spin in a direction radial to the physical mass when expelled from the physical mass, reaches the final stage called "dissipation".

Through these interpretations, then, the classic mechanics are subjected to the claimed advance.

Use of animated graphic designs made in order to build up the mental categories and develop rationality and common sense in a learner.

The series of breakthroughs in Science which culminated with Newton's Laws of motion and the deduction by Newton of the Universal Law of Gravitation from the Laws of planetary motion of Kepler found better diffusion, at the time, through the new invention of the printing press and of course the refinements made in the manufacture of the paper.

This should make us meditate for a moment in regard to the ways civilizations advance, since new ideas need diffusion and in the very beginning of all the different human civilizations, necessity produced the invention of writing which permitted diffusion mainly through manuscripts.

In the new times of Renaissance, whilst the effort in gaining knowledge acquired momentum, in parallel with new scientific advances, the technology of the times, was also striving to produce something which would ease the process of learning and the result of this effort was the development of the printing press.

Presently the scenario has its parallels with the two above examples, insofar whilst Science struggles with concepts of increasingly difficult nature and the printed medium is becoming increasingly insufficient to present and diffuse them, another more advanced and sophisticated tool became available for the diffusion and the testing of the new ideas, it is based on the development of computer aided animated graphic designs which only lately matured to a satisfying degree and is continuously subjected to refinement and growth.

As it is now, animated graphic designs are used in the scientific disciplines, only casually and without method in screening programs of doubtful scientific value.

To my knowledge no sincere effort has been yet made in producing classics in this new medium, and only the industry has sporadically benefited from use of models and simulators and maintains secrecy over its applications of animation techniques made in order to achieve manufacturing advances, whilst the academic world still sticks to printed paper, and on occasions still to paper and pen.

Descartes is credited in initiating representation over the paper of mathematical functions in graphic form, but this new graphic approach has no single initiator though it has developed into an industry in continuous expansion, whilst huge teams work in order to produce mainly entertainment features consisting of animated 2D cartoons, animation in 3D, special effects on the film industry, adverts etc.

The scant success of the academic world in attracting interest of learners in science subjects is mainly due to the fact that the matter as it is presented today is arid and indigestible and for the beginners, concepts are hard to break through.

A visualization of forms and possible interactions with them, giving feedback of movement and interactions with virtual objects and exercises based on sound mechanics of the movements, (already present in form of computer games which not necessarily are modeling the natural phenomena) could be the start of a new age in Science since animated graphic representation can be instrumental in developing the mental categories which is a necessity if better understanding has to be achieved and in developing the commonsensical potential of the learner.

As Euclid, Aristotle etc.. used the pen, as Newton, Einstein etc.. used the press, at present I do not see that Science in general has an alternative to the use of "interactive" animated features and this trend once started will become the prevailing medium in education for maybe long time in the future.

It cannot be denied that this trend has already started as in astronomy we have planetariums in which movements of objects are simulated and presently many encyclopedias, journals and papers abound and are available in DVD, but I must point that although these are good news we are far from the intended goal.

What indeed is of necessity is not the translation of the world of the press into the world of info, which at the most can help to develop mnemonic skills, but a

live interaction with the brains of the learners in order to better develop learning capacities through true and faithful models and satisfy the curiosity of the learner through interaction (wherever possible).

The meaning of it is that the description of physical phenomena rendered through animations has to be accurate to the finest detail and the possibility to interact with the computer should be able to satisfy the questions of the learner.

As it is now the industry is available and in full progress and new branch of the human activities is getting ready to make its debut in the world of learning, it requires the collaboration of scientists and graphic designers and the will of those in power, in order to bring the learning experience forward.

The goals intended will certainly be far reaching since true knowledge will be more easily available in a world which needs advances and cannot survive without them.

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