

30 November 2008

## The conditions distinguishing the new Universal Dynamic Science (UDS) from the old Classic Mechanics (CM) and from Quantum Mechanics (QM)

Why the Universal Dynamic Science (UDS), as a Science on its own, engulfs the old CM and why, although, in many cases, it uses concepts and explanations related to the enormously more complex Quantum Mechanics Science (QM), is a science that can be studied separately.

UDS is an advancement of the old CM, brought about from the enunciation of the principle of equivalence (by Einstein), and can be considered a branch of knowledge introductory to the QM.

The UDS comes of use when explanations of problems related to gravitation (from the mechanics of celestial bodies to the ordinary gravitational phenomena in everyday life) are requested; it is a science in which there is always reference to substance made of basic indefinable and conservable particles endowed of a physical indestructible but degradable character called Spin and from that point of view (as said above) can be regarded as a branch of QM.

These indefinable particles have the capacity to cluster together to form larger particles and the UDS studies in a gravitational context their behavior and properties and the transformations-degradations to which they undergo.

Substantially then, the UDS as above defined is the branch of Science explaining phenomena related to physical gravitational masses their universal capacity to absorb the ESF surrounding them producing around them a gravitational field whose characters are depression and flow of the ESF from their centers to infinity (see [Ruggeri11](#)).

The fact is, that a gravitational mass-energy (the mass constituting the nuclei of the atoms belonging to the physical mass, that I called “neutronic mass”) originates the gravitational field and reacts with it in more than a manner, as described in previous papers of mine, and reacts as well with the gravitational m-e belonging to other smaller physical masses immersed inside its gravitational field.

Reaction is producing always phenomena of transformation-degradation releasing the Spin character from the gravitational mass-energy in contact with a gravitational field, and the Spin is the character who can originate movements of the physical mass affected.

The UDS usually deals with Large Gravitational Masses  $M_{LGM}$ , the gravitational fields generated by them, the internal effects in these  $M_{LGM}$  due to the action of their own gravitational fields over their gravitational component, whose final stage is production and release of  $M_{Heat}$  and dissipation of it in the ESF, and deals with the effects of the gravitational field of a  $M_{LGM}$  on the surrounding smaller gravitational masses.

In the physical universal reality, movements of masses and systems of masses across the ESF denote presence in them of mass-energy in a status called “inertial”, it has lost its gravitational character and acts as a sort of internal ballast retarding inside these masses and systems of masses the basic gravitational absorption of ESF on which the time phenomenon is synchronized.

Note: in these physical masses and systems of physical masses the presence of inertial m-e causes entrapment of ESF in a measure that the system results a local absolute one, in which the physical phenomena observed by an internal observer are running for him in universal terms and conditions.

The gravitational effects at the surface of a  $M_{LGM}$  can be extended to the behavior of static structures, mechanisms and fluids moving under the effect of the gravity of the  $M_{LGM}$ .

We can reiterate that the UDS is an introductory branch of the QM, using as far as possible simple concepts and formulations based on the representation of transformations-degradations afflicting gravitational masses reacting to the presence of gravity fields.

In the UDS many explanations require the use of few basic simple concepts usually shared at elemental level with the QM (which as said is a science a lot more refined and complex).

On Earth, the formulations related to the UDS (closely similar to the ones of CM) find use in giving better and more advanced explanations to phenomena related mainly to civil structural, mechanical, hydraulic, engineering Disciplines (see [Ruggeri15](#)).

The UDS is adding to the traditional formulations of CM the notion that to presence of energy of gravitational origin corresponds presence of transformations-degradations of gravitational origin internally affecting the physical mass and gradually releasing some of the characters of the spin belonging to it, which in a context of temporal continuity, generate the Static and dynamic Forces.

The UDS blends into QM in the study of phenomena afflicting the atomic masses (their interiors and their surfaces) both, becoming in the long run the Sciences that, when applied to engineering, should give a better answer to extant questions such as: “what is an elastic phenomenon afflicting a physical mass and how the atomic bonds are influenced by elastic cyclical movements”; “Why the bridges are falling under intense traffic conditions”; “What is the effect of friction between masses in movement...”; “how to build better Engineering structures”; etc..

Note: it should be of interest to notice that modern techniques based on measurements of cyclical phenomena causing fatigue, presently overlook the QM aspect of the problem, consisting of the fact that during fatigue the physical mass is continuously absorbing mass-energy and since not all of it is dissipated, what remains inside the physical masses under fatigue can in the long run negatively affect their molecular status and by consequence the capacity of these structures to perform.

In depth knowledge of these problems can influence the way in which structures are designed and will enable the Engineers to design structures more reliable and longer lasting and consequently more economic (especially if the structures provide non destructive technology permitting the replacement of parts whose lifetime has been exhausted).

Note: these solutions are already enacted in various branches of engineering but still in unsatisfying rudimentary manner based only on empirical observations.

The main fields of interest in which physical phenomena are to be interpreted through the QM.

1) Many of the phenomena inside a physical  $M_{LGM}$  are affecting the internal nature of the atomic structures through transformations based on the gravitational effects.

Note: the gravitational phenomena inside a  $M_{LGM}$ , not only are releasing  $M_{Heat}$  but can produce conditions of accumulation of mass-energy  $M_{ESCM}$  inside the atomic structures, which can become unstable originating phenomena of fast release (explosions) producing transmutation of atomic matter in large scale.

2) on Earth, at surface level, the absorption, of solar dissipation, by atomic structures, whilst they are associated into basic molecular clusters, is a physic chemical phenomenon which through successive transformations-degradations permits storage of some of the said solar dissipation, (mass-energy in dissipation is absorbed in limited quantities or packets called photons or alternatively quanta of light) this m-e tends to accumulate as a form of glue between the atomic surfaces facilitating the formation of larger molecular clusters.

In the long run, the associations of molecule into larger molecular entities or macromolecules were the phenomena generating the emergence of life forms since the peculiarity of life forms is that they are capable of assimilate these macromolecules and reuse successively, part of the mass-energy stored by them through breakage of their bonds (controlled combustion or digestion, producing Heat and dynamism).

Note: these phenomena of absorption of the quanta of mass-energy reaching Earth, not only are cause of a series of transformations-degradation happening in natural sequence which from the beginning were exploited by the life forms, but presently since we also have learned to exploit them directly, through the use of numberless devices developed by our human inventive capacity, they permit us to benefit of the Heat and dynamism which they can produce.

Note: Chemistry, Biochemistry, electrodynamics electromagnetism etc..., are definitely the realm of QM, and the studies regarding phenomena related to QM have an unlimited potential of expansion.

3) Another very large field of research is today directed to the study of the inner structures of the atoms and in particular to the

observation of the numberless quantum particles obtained through collision and breakage of the larger particles forming the inner atomic structure.

Though we never will be able to uncover the infinite number of transformations-degradations related to absorption of substance in the form of quanta, inside the atoms and at their surface, I found possible to restrict phenomena of movement having origin in gravitational transformations-degradations internal to the atomic structures, under the name of UDS, reducing the references to QM to the bare minimum and to basic characters.

This advance was made possible through the introduction of the concept that the conservable character called Spin belonging to the conservable substance at the base of the universal reality is subjected to degradation, a phenomenon which by necessity happens in time and since it changes the status of existence of the conservable substance is referred as transformation in a context of degradation.

Note: time in my theory is the basic character of an universal unstoppable transformation (the absorption of the ESF by the gravitational mass-energy inside the physical mass, referred here as gravity), we can measure indirectly the ongoing of this basic transformation synchronizing our instruments of measure to basic phenomena of movement (orbits) associated to gravity.

Note: every physical phenomenon affecting substance endowed of spin is a transformation-degradation (an example regarding the particular gravitational case is presented on [Ruggeri15](#)).

Whereas the UDS provides explanations in regard of phenomena related to transformations-degradations of gravitational origin, the QM, as physic science, studies the acquisition, storage, practical use and loss of quanta of m-e by the physical mass, obtained causing in it transformations-degradations resulting in the establishment of energy levels, affecting in many cases the bonds at surfaces of the atoms generating molecular clusters, and where applicable the energy levels in the ESF surrounding the molecular clusters constituting the physical mass.

Phenomena generating in the ESF fields of m-e surrounding the atomic and molecular entities constituting the physical mass, through a principle of superimposition of effects and interaction with similar fields , can induce Static and dynamic Forces in the physical mass .

These fields surrounding a physical mass (including the inertial mass field) affect the ESF, the inertial mass field, can be generated by internal transformation caused by gravity or inserting, through the help of a device, m-e inside the physical mass as the inertial m-e  $M_{ESCE}$ , whilst the field of dissipation can be m-e generated by a physical mass  $M_{LGM}$  or by an Heat producing device, other fields entrapping m-e in various manners can be over imposed to the inertial mass fields surrounding a physical mass.

The effects related to the establishment of these fields of m-e can be utilized to produce work and their applications in order to do so has spawned various branches of knowledge and with the exception of the gravitational phenomena which I associated to the UDS, all the other branches such as, electrostatics, electrodynamics, magneto dynamics, electronics, general physic-chemistry atomic and molecular, and atomic-physics, belong to the QM and can be understood only in terms of QM.

The transformations-degradations of gravitational nature examined through the UDS are those originated inside the atoms of the physical masses, and are affecting the clusters of mass-energy or particles, component the internal nuclear structures of the atoms.

The articulated passages of status, related to these transformations-degradations, are starting from inception, when the gravitational mass-energy inside the atoms of the physical mass absorbs mass-energy in the status of Ether/ESF from the infinite reservoir which is the Euclidean space containing it and transforms-degrades it into  $M_{RM}$  (see [Ruggeri11](#)).

The physical mass through a chain of consecutive internal transformations-degradations, (all of them bound by a process of cause and effect) caused by the reactive nature of the gravitational field of depression and flow of the ESF, reaches a final stage of transformation-degradation, in which expels mass-energy, at first containing it as  $M_{Heat}$  whose degraded spin character is compressed inside it, between the external surfaces of the atoms and of the molecule and eventually releasing it and its spin inside the Ether/ESF (through the phenomenon called dissipation).

The UDS is the answer to the futile eagerness that the world of Science shows, when trying to explain through the paradigm

represented by the QM, phenomena which can be explained in simpler terms, the UDS can, with the use of simple formulations related to known true scientific advances, make the necessary step forward in the field of knowledge.

Showing in the process that it is a scientific procedure which (as requested from physical sciences) follows the traditional methods through which Science advances.

I deem necessary at this point to produce some elucidations regarding the large branch of QM studying physic chemistry from the point of view of the phenomena of acquisition and loss of mass-energy.

We start with the phenomena of acquisition, of which the by far most important are represented by the acquisition of m-e reaching us from the sun as dissipation, but is to be noted that a physical mass can acquire m-e from many other various sources.

The mass-energy reaching the physical mass as dissipation can have effect on the external surfaces of the atomic elements of the physical mass which are present clustered as molecular entities, inducing special interactions between the surfaces limiting the molecular entities and the internal electrons which move below these surfaces.

Acquisition of mass-energy in the status of dissipation is a endothermic phenomenon which goes to increase the chemical bonds between atomic surfaces inducing the molecule of the physical mass to join forming macromolecule, (or crystalline lattices of endothermic nature etc... ) and loss of m-e depends from an exothermic phenomenon also associated to changes of atomic bonds producing more stable molecular entities which tend to be made up of a number of atoms reduced to the bare essential (mostly oxides and salts).

The m-e coming from the sun can be stored in the physical mass as a form of glue over the external surfaces of the atoms and this has the effect to produce large clusters of macromolecule which eventually break under the effect of local physical conditions.

It is supposed that this macromolecule formation was an event from which sprang the capacity to reproduce which is the basic attribute of living organisms...

Note: another Science is profiling at the moment and will be of great importance in future, it is based on the observation that the processes

involving life depend from reproduction of particular macromolecule on their own (like it happens for the viruses that basically are macromolecules) and of cells as huge clusters of macromolecules, in which the capacity to reproduce, not only is similar to the one of the viruses but possess a more complex perfect internal memory mechanism which is telling them how to replicate other accessory organs.

The said capacity to replicate, from a single cell is extended to clusters of cells, or to super-clusters, which in final analysis represent more advanced forms of life reflecting the initial cell as the life form from which they originated into a final product constituted by an individual, animal or plant.

Note: cells as super clusters of macromolecules capable to replicate, must be intended in possession of the basic character of a living object since by definition, the life of which they are endowed is by necessity based on establishment of phenomena of transformation-degradation always associated to production of Heat and dynamism.

As earlier mentioned, objects endowed of life, exploit the capacity of the physical mass to store m-e through complex atomic bonds opportunely adapting their capacity to break them through transformation-degradation, in order to grow, reproduce, and generate dynamism.

A very large and interesting region of the realm of QM is to be found over the surfaces of the atoms constituting the physical mass, where there is presence of mass-energy endowed of spin, as  $M_{RME}$  and  $M_{ESCME}$  (E for actions external to the atomic surface), both types of m-e have the capacity to glue together in various manner the atomic surfaces (assumed incompressible), and both, respectively, can be compared by analogy to presence of mass-energy  $M_{RM}$  which glues together the basic particles of substance forming the neutronic particles and presence of the m-e  $M_{ESCM}$  gluing together the neutronic clusters and forming the atomic nuclei.

This presence in the physical mass of m-e  $M_{RME}$  and  $M_{ESCME}$  is represented by the different types of bonds clustering the atoms into molecule, to it must be added that



acquisition and loss of these bonds, whatever the cause is always associated with transformation-degradation.

Note: only the nuclei of the atoms are made up of gravitational m-e and both, the m-e  $M_{RME}$  and  $M_{ESCME}$ , are non gravitational.

It must be stated that whereas the fundamentals of the UDS are based on the Law of equivalence and its “corollary” which is the Law of increase of the inertial mass-energy belonging to a physical mass, with the increase of its velocity, (for both of which Einstein takes most of the credit), for the fundamentals of QM most of the credit goes in sequence to Planck and to Einstein, the first for having determined the elemental nature under which dissipation of the light is absorbed by the physical mass, successively identified as quantum of light or photon, and the second for its work on establishing the properties of the photons as clusters of basic particles of m-e and their effects over the molecule of the physical mass when they reach its surface and are absorbed by it, enunciating the quantum Law describing what is today called “the photoelectric effect”.

Note: “the photoelectric effect” is not the only phenomenon of transformation-degradation, that the absorption of dissipation as photons induces on the physical mass, since due to this phenomenon of absorption as photons and as other types of quantum particles, presently we already know a plethora of different transformations-degradations affecting the atomic surfaces and the interiors of the atoms and many huge industries have risen and benefit of these advances.

The basic extreme utility of these phenomena of absorption of quanta (and their transformation-degradation) is that in many cases they permit capture of the mass-energy of a quantum transforming it into a status which can be either directly used to produce dynamism or stored inside the physical mass and in some cases stored in fields of m-e established in the ESF surrounding the physical mass and accumulated in order to be used at a later suitable moment in time.

Note: whilst the UDS is the science based on the study of phenomena related to the absorption of ESF by the gravitational component of the physical mass and on the study of the successive transformations-degradations, and effects, following each other on strict basis of cause and effect, the QM is, instead, based on the

study of the phenomena related to absorption of particles of m-e (quanta, as photons, as electrons as neutrons etc...) in the physical mass and on the study of the successive transformations-degradations, and effects, that entry of quanta produces into the atomic or into the molecular structures.

The QM investigates the fact that absorption of quanta made of m-e by various types of physical mass, is transformation-degradation of them giving the physical mass capacity to retain m-e and also investigates the possibility to exploit conveniently, the various phenomena of release of m-e which are prerogative of the various types of physical mass.

It is to be noted that in some cases the borderline between the two sciences (UDS and QM) is not well defined.

QM investigates the absorption as photons of the m-e coming out of the Sun as dissipation of  $M_{\text{Heat}}$ , and reaching Earth, which together with the gravitational absorption is a most important phenomenon, affecting Earth as a system, and also investigates how this absorption as photons is affecting various devices (natural and otherwise) present over Earth's surface.

The m-e reaching Earth from the sun is absorbed in form of packets called photons since the recipients of it are discrete particles (the electrons) and the capacity of absorption of dissipation that they have whilst they change their status of existence, from an energetic level to another, is limited.

The quanta (intended here as photons) absorbed by the electrons present just underneath the atomic surfaces, are the agents which render possible life, through photosynthetic processes which associate to the initial phenomenon of absorption the capacity to store after an initial transformation-degradation, what is left of them, as mass-energy  $M_{\text{ESCME}}$  (the mass-energy in a status gluing the atoms and consequently building up macromolecules).

Note: From that point onwards life is very diversified and I feel obliged to abandon the subject hoping to be able to return to it at a later stage.

In the natural processes mentioned above the capacity of the molecule to absorb the flow of electrically neutral m-e reaching a physical mass as dissipation, depends from the frequency at which dissipation reaches the surface of the physical mass.

High frequency of the mass-energy is a necessary prerequisite allowing penetration of the atomic thin but resilient surfaces of the atoms or of the molecule, made up of the fabric of the ESF.

Once the m-e as dissipation is inside the atom it results instantly absorbed by the electrons which, (as mass-energy endowed of half spin) as said above, have a limited capacity of absorption profiled by a quantum law.

In the photoelectric effect, the incoming mass-energy ( $h\mu$ ), in virtue of its frequency, produces a hole in the atomic surface through which the electron comes out without losing its identity and moving at a velocity  $v$  according to the quantum Law of Einstein (based on Planck's Law) the following relation was proposed:

$$h\mu = h\mu_0 + \frac{1}{2} m_e v^2 = W + \frac{1}{2} m_e v^2$$

Note:  $W$  is the work energy which Einstein individuated as the energy spent by the photon in order to break through the shell of the atomic entity.

$h$  is Planck constant

$m_e$  the mass of the electron

$v$  the velocity at which the electron comes out

$\mu_0$  the minimum frequency below which the phenomenon does not takes place

$\frac{1}{2} m_e v^2$  is what is left of the energy, as photon, absorbed by the system atom/molecula and belongs to the electron to which is stuck as inertial mass-energy.

The term  $W$  as defined above is indestructible m-e and the definition "work energy" is vague and unacceptable since it does not explain what place it goes to fill after transformation-degradation.

We can point now that the electron as presented in this theory when inside the atom/molecula does not have electric charge and yet once it comes out of the atoms we are in presence of two particles endowed of characters that we call "electric" (an electron and a ion), this I suggest is where the m-e  $W$  becomes accountable, as  $W/2$  distributed in the ESF (electric field) around the ion and  $W/2$  distributed in the ESF and present around the electron moving at  $v$  speed.

The electric charge then is represented here as the field of mass-energy distributed in the ESF immediately surrounding the particles

(ion-electron) respectively generated by the work energy assumed to be  $W/2$  in conditions which can justify the electrostatics and the electrodynamics of the electric charges of opposite sign.

Note: I deem that the above justification of the electric fields, being of primary importance, will have to be dealt separately.

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Question: Why the first principle of thermodynamics that says: "Heat goes from a hot object mass to a cold one".

Is insufficiently defined when phenomena belonging to UDS and QM are presented?

Answer: The definition of the first principle of thermodynamics is referred only to  $M_{\text{Heat}}$  and passage of it from a physical mass to another but is correct also when extended to transformations-degradations in terms of continuity, nevertheless results complete only if we include the intermediate steps between transformations-degradations which are changing the status of the m-e in a condition permitting storage of it inside the molecular entities.

This intuition denies temporal continuity to the phenomenon, as presented in the first principle, whose definition, then (in terms of continuity), to be fulfilled needs a restart of transformation-degradation.

The necessity to extend the meaning of the first principle depends on the fact that when it was formulated, the phenomena above mentioned belonging to UDS and QM were unknown.

Passage of mass-energy  $M_{\text{Heat}}$  inside the physical mass which generated it through internal gravitational transformation-degradation is due to establishment of a negative gradient of compression of  $M_{\text{Heat}}$  between the atoms of the physical mass from the center to the external surface, which facilitates flow of  $M_{\text{Heat}}$  to the external surface where is released as dissipation.

Note: At the external surface of the physical mass the ESF present is reducing the density of the  $M_{\text{Heat}}$   $c$  times and absorbs it at  $c$  speed (due to release of the spin which in the  $M_{\text{Heat}}$  is almost fully compressed).

In a point in space, the transfer of a  $\Delta M_{\text{Heat}}$  at  $c$  speed is as shown below:

$$\Delta M_{\text{Heat}} = \left( \frac{\Delta M_{\text{Heat}}}{c} \right) c$$

This phenomenon is in analogy (mutatis mutandis) with internal gravitational transformation-degradation of m-e  $\Delta M_{\text{RM}}$  inside a physical mass under gravitational compression in equivalent value of kinetic energy, as enunciated by D. Bernoulli.

The above transmission of  $M_{\text{Heat}}$  inside the physical mass which generated it and successive dissipation in the ESF, has been presented as explanation of a thermodynamic reality but is a phenomenon which goes deeper into the physical reality since the passage of  $M_{\text{Heat}}$  into the physical mass from which was internally released is transformation-degradation and once accepted that  $M_{\text{Heat}}$  cannot spontaneously return inside the physical mass which released it we have by consequence to accept that since transformation-degradation is by-definition “irreversible” any transformation-degradation respects the first principle of thermodynamics and inversely that the first principle of thermodynamics applies more generally to all transformations-degradations which can be tied up each other through cause and effect.

Since substance present in a particular status in the Euclidean space, can always be figured as a field of m-e and fields of mass-energy are constituting the physical mass, we can say that independently from the fact that more than one status of existence of the m-e can be present inside the physical mass, the temporal phenomenon called transformation-degradation is always the result of interaction between two field of mass-energy .

We can then say that transformations-degradations following each other through a sequence of cause and effect can enlarge the definition of the first principle of thermodynamics, whose exposition as it is at present is just a particular case of the principle, which ignores quantum Law phenomena.

The UDS as a new science is then based on the advancement of the old CM through assimilation of the relevant formulation of the CM with the Law of equivalence and in taking into account the extended

enunciation of the first principle of thermodynamics as presented above.

Below are the statements of existence of the UDS:

$$a(r)r = v(r)_0^2 \quad \text{Statement Static-Dynamic}$$

$$\frac{a(r)r}{c^2} = \frac{v(r)_0^2}{c^2} \quad \text{Statement in mass energy equivalent}$$