

The Time Cycle

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I. Introduction

This limitless Universe whose origin is beyond our wild imagination has many treasures in its womb [such as Galaxies, Stars, Planets, Asteroids, etc.] in which the most prominent quantity is "the time". We, the humans always want of un-parallel domination on all other species are more enthusiastic about this term than any other physical entities. It is the wonderful word without which one cannot imagine many things such as birth, growth, death, speed, rate, etc., This word has no discrimination and every part of science or social or geography or else has no meaning without this word "the time". If a person starts thinking about how was he (or) she some 10 y or 20 y or 30 y back, his or her brain starts sending electrical signals to create a 3D-picture before his or her vision thus making one either a very happy or very sorrow based on events or incidents that he or she has had earlier. The nature is so marvelous that it allows specific species to take birth or death at specific moment called "the time". Even every sperm must understand the value of "the time" in which it has to reach its destiny i.e egg, if not, it loses its identity. Each cell of every species understood "the time" hence finishes its division according to specific mechanism. Even a minute error in understanding "the time" would lead to many unwanted events to dominate thus destroying the species itself [eg: Cancer]. All of us might had encountered the value of "the time" though most of us knew nothing about "the time". Why? The word "the time" is not that much simple term to define. It is not just keeping a seconds clock or a digital clock and observing certain event but, beyond that. My small imaginative world tried to encircle many things which can never be experienced without this word "the time".

Controller Of "The Time"

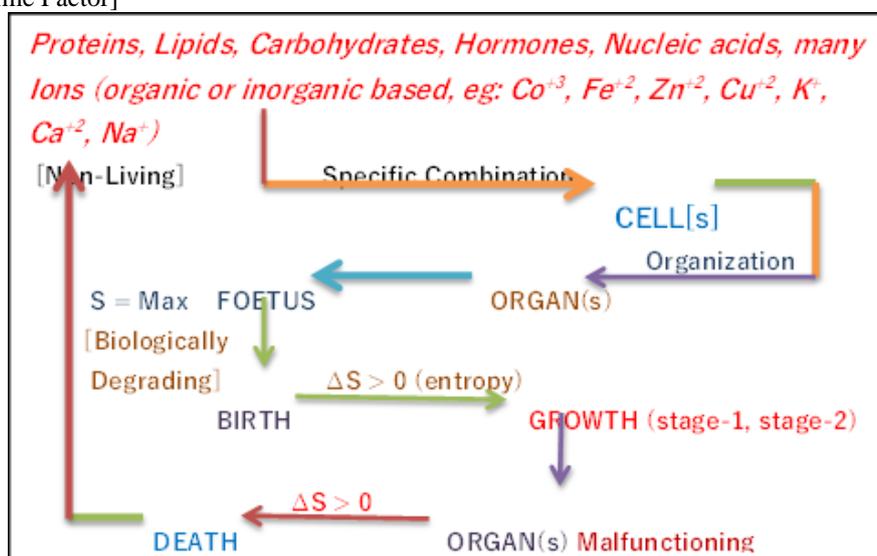
I myself questioned, "Is the time, time independent"? This question may allow most of readers of this article to think whether am mad. Of course, even I too, think about myself for putting such a question. But, to explore anything, one must put many questions to himself or herself. If the answer to this question is "yes", then, another question immediately strikes my brain i.e "if the time itself independent of itself, then, what is its origin?". This second question too, may be a foolish type but, it has certain inner meaning. Suppose, person-A asks a person-B, when you reach your home? Person-B must give certain answer i.e at about so and so (say 8 am, 9 pm etc.). Here, there exists a clear uncertainty in the answer of person-B. Why? As most of science background people knew "no two clocks show exactly same time". So, without error, one cannot answer to such questions. Even if, both person-A and person-B stop their wrist watches and start exactly at the same moment too, there exists an error in answer given by person-B because, a mechanical device has friction. So, this friction itself does not allow the two watches to run exactly with same pace. Here, the time for which the device experiencing such a friction is always dragging its purpose (showing time) thereby causing delay. So, "the time itself decelerates the time or even accelerates the time". I hope, you are not confusing...! So, the answer to the first question is "NO...!". Now, one can put another question "Is this answer NO is absolutely true?" then, the answer is "YES...! if so how or why? It is the time that alone influences itself and all processes are purely relative based on the complexity of final result. If we go back to our earlier case [between A and B], it is not the time that finds an error but, the device that has made B to answer like this. But, how does the time become errorless? Any sort of measurement that involves duration factor always associated with the time so, the time is 100% accurate but the measured property need not.

So, the controller of time is itself and what we observe is the defect or sensitivity associated with our sensors. All these aspects were more or less lie with the theory of relativity. In this theory, even there was an equation related to dilation of time too. However, it is the relative efficiencies of two or more species that decides how accurately an event can be ascertained. A bird can visualize an insect lying on a flower or bark within a fraction of a second but, the human eyes may not. This does not mean that human eye is senseless but, it may need more time to recognize the same insect. So, it is the time gap that distinguishes the two different eye-sights. Even, it is the time that differentiates two events which are in progress simultaneously. So, the time decides the correct time in which a specific event is to cease or to begin. Any device or organ that can identify the this specific event can also identify time factor too.

”The Time.....! Controller Of!“

Before going to this issue, one must know the basic difference between a living system and a non-living system. See the table shown below:

[Life Cycle-Time Factor]



The above table is not a special feature and is a well-known aspect. However the non-living entities (isolated) under coordination generates life current (such as motion, feelings, etc..) and the same life current once ceases leads to a state what we call death. Even this death too, under biodegradation again gives back all that matter back into its origin, so, birth-growth-death, the magic triangle has the centre called the time. As this magic triangle is significant only when (living)-(non-living) pair is in force or else, highly insignificant. For example, I (age: 55 y) have been observing stars, the sun, the moon, the sky, the rain, the air etc., right from the age (say 5 y), but, the time had changed me only but not others (of course, the Sun, Stars always show disintegration), so, for these bodies, the time does not mean anything. Even, the Sun, the Stars too, never express anything like what we express (such as young, adult, old etc..). This is the area where many of us (the scientists) have great enthusiasm and always want to extend the life cycle (called age) which means trying to slow down speed of the time frame by using various chemicals that mimic natural system. But, here too, the time is significant until all sensors are sensitive to their surroundings because for a dead body, the time frame means nothing. Even, a person under coma state, this time frame has got nothing to do. But, if such a person in coma state (say 1 year) suddenly gets physical consciousness, then, he or she may ask you, what happened to me? If we put any question to him or her, do you remember anything for the past 1 y? Shall we get any answer? Definitely NO.....! So, the time did not influence him or her during this 1 y except increasing age of his or her cells by 1 y. Even, this too also not sure because, metabolic activity under coma is extremely low so, the quality of cells were not that much damaged compared to an active person. I may consider there exists no significant difference between a person in coma and a state often we call Samadhi state [*many spiritually oriented brains able to attain this]. So, the time may be most significant factor only when all of us are in conscious state and the time got its importance only after the origin of so said true humans.

II. Particle-Wave Duality-The Time Sense

Another important feature of the time is maintaining same speed with respect to any known electromagnetic radiation i.e $3.0 \times 10^8 \text{ m s}^{-1}$. The speed of light is the product of frequency [ν] and wavelength [λ] remains the same. Here the time interval as well as distance covered remain same for all such EMR. So the time cannot distinguish any two different EMR in space but does so in any material medium other than air (eg: glass, water). Every EMR is associated with both electric-magnetic field components where I opine that the strength of the two fields is same only for given type of EMR [*I may be wrong]. As every EMR has to cover same distance in unit time (1 s) in space, these two field strengths have to adjust themselves i.e wave-particle duality. Applying deBroglie concept to EMR, longer the wavelength, lesser the particle nature. So, γ -rays considered to have least wave nature while radio rays, highest wave nature but, both travel with same speed (see above) in space. So, the time does not distinguish these two in space. When white light is passed through a prism, dispersion occurs so that, the seven distinct or distinguishable colours emerge out as spectrum. Here in order to emerge out of prism, these 7 different EMRs must travel with speeds slightly different from one another just to come out in same time interval. If the speeds are same, then, dispersion is not possible. This spectrum

with violet at its bottom and red, at its top clearly shows that, violet EMR covered more distance in same time (say t s) [prism has non-uniform thickness seeing from top to bottom] If same white light is passed through a rectangular glass slab, dispersion is not at all possible [though refraction possible at boundary that separates glass surface from air]. So, the time comes into existence only when at least one other factor is kept on changing (eg: Distance in this case). Even if we consider vector notation of finding resultant displacement or work, the time alone is able to distinguish those different paths.

III. Universe-Origin-Time Factor

One of the top most secrets yet to be revealed to its fullest level is Universe- Origin of Universe. All of us know about this universe (where we stand?) whose magnitude is beyond our blind imagination, calculations if any is the versatile topic that never ends. The reason is the uncertainty regarding its origin. The abnormal distances between massive galaxies with or without matter in between the two are several thousand light years [Light Year = Distance covered by light in 1 year]. The masses associated with giant stars (eg: Sun, Neutron stars) must have beginning or certain source because something from nothing is an illusion. In one of my articles, I took light itself as origin and tried to explain the origin of extremely small mass (eg: $1A^0 \approx 2.21 \times 10^{-32}$ kg, even 41.7^{th} part that of an electron) and gradual build up of massive objects. Here, the time is significant as well as insignificant. If we consider the time needed for a light ray to reach earth which is about 8 minutes certain mass of Sun already consumed i.e involved in fusion. If we assume same light ray from a Star which is assumed 1 light year from us, the time is 365 days.

In this period, certain mass of such a star already consumed. So, the time plays a role just to understand the distance between Sun or Star and Earth. The rate of formation of or the rate of disintegration of mass in this universe needs the time frame as this interval decides the quantity that accumulates or left. Suppose if we consider Ra^{226} , 1.0 g would decay into 0.5 g in 1620 years but for U^{238} , the same change needs 4.50×10^9 years. Eventually, quantity of U^{238} out of 1.0 g (say) decayed in 1620 years is insignificant compared to Ra^{226} . Similarly, the quantity of Ra^{226} left out of 1.0 g (say) 4.5×10^9 years too, insignificant. In these two examples, the time also can differentiate their stabilities apart from so many other factors (*nuclear stability-factors such as ABE, n-p ratio etc.). Though the two nuclides mentioned here have neutrons (assume as exactly identical), the rate at which emission of α -particle occurs in Ra^{226} is quite different from U^{238} .

So, I opine that, the formation of α -particle needs different time intervals in Ra^{226} and U^{238} (or else). This is what I coined as Rama Chandran's Time Limit-1 [RTL] In this massive universe, formation of every smallest possible mass (particle) is purely accidental. This is what I coined as Rama Chandran's Time Limit-2. Why? Nuclear charge of U^{238} is 92 but that of Ra^{226} is 88. Though U^{238} is heavier than " Ra^{226} ", the later one is only less stable. So, the nature did not synthesize every element but a few only. As the heaviest non-radioactive species is ${}_{83}\text{Bi}^{209}$ [it has 83 p + 126 n], nature always tries to keep every nuclide with maximum stability hence all heavier isotopes start disintegrating back to a stable nuclide such as Pb^{208} (from Th^{232}), Pb^{206} (from U^{238} and Pb^{207} (from U^{235}). So, the emission of an α -particle or even a β^- particle (electron) from any such an unstable nuclide need not have the same rate of formation within nucleus. This is the region where one needs to understand the time factor.

Equation-[i]: ${}_{0}n^1 \rightarrow {}_{+1}p^1 + {}_{-1}e^0$ (β^-); Equation-[ii]: $2[{}_{0}n^1] + 2[{}_{+1}p^1] \rightarrow {}_2\text{He}^4(\alpha)$ In fact, what I assume is that emission of α -particle needs 2 protons which either be resulted from 2 neutrons or already the existing one. Considering ΔE w.r.t equation-1 and equation-2:

[Mass (approx.): p = 1.0072 u, n = 1.0086 u, e = 0.00054 u, ${}_2\text{He}^4 = 4.0026$ u]

[i] $\Delta E = [(1.0072 + 0.00054) - (1.0086)] \times (931.5) \approx - (0.801) \text{ MeV}$ [energy release]

[ii] $\Delta E = [(4.0026) - (2 \times 1.0072) - (2 \times 1.0086)] \times (931.5) \approx + 27.014 \text{ MeV}$ [energy absorption]

So, a β^- emission favours stability but, α -emission destabilizes the product thus formed from a parent nuclide. Now, the question arises, do all α -emitters absorb same amount of energy or do all β^- emitters release same amount of energy? The answer is surely NO....! If not, stability of every product thus formed from parent nuclide (α or β^- emitter) must be same which is surely not. So, the time factor has a key role in these emissions. Shorter the time interval in which a β^- particle (or) α -particle being made, greater the instability of such a parent nuclide (or) higher the stability of daughter nuclide.

eg-1: both Th^{232} and U^{238} are α -emitters forming Ra^{228} and Th^{234} respectively.

The half-lives of Th^{232} and U^{238} suggest that, time interval in which α -particle is being made in U^{238} is less than that of Th^{232} so, Th^{234} is more stable than Ra^{228} .

eg-2: both Ra^{226} and U^{235} are α -emitters forming Rn^{222} and Th^{231} respectively.

The half-lives of Ra^{226} and U^{235} suggest that, time interval in which α -particle is being made in Ra^{226} is extremely less than that of U^{235} so, stability of Th^{231} is far less than Rn^{222} .

eg-3: both Po^{216} and Ra^{228} are β^- emitters forming At^{216} and Ac^{228} respectively.

The half-lives of Po^{216} and Ra^{228} suggest that, time interval in which β^- particle is being made in Po^{216} is less than that of Ra^{228} so, At^{216} is more stable than Ac^{228} . [note: Po^{216} undergoes α -decay too*]

Metabolic Activity-The Time Sense It is the metabolic activity that confirms a species to be alive or dead. In case of viruses however, this is a unique type where viruses remain alive only if they have certain platform or enclosure where they can get a continuous flow of nutrients to synthesize their own m-RNA hence proteins. The strange aspect of every metabolic activity is the time sense though as individual non-living entities, do not know anything about this time. It is the influence of one specific chemical that triggers enormous activity in others [eg: glycogen, oxytocin, testosterone].

If there exists any time lapse beyond certain period, abnormality dominates the usual synchronization among various chemical entities at various parts of the body. So, the nature had developed a near perfect time sense [or discipline] in which all possible chemical entities help one another to bring out specific type of activity [eg: respiration, excretion, digestion, etc.,]. Even, the heart too, has a near perfect time sense [i.e systolic-diastolic strokes-gap] which if lost leads to abnormal beats or even complete stoppage of its basic function. This time sense is just like our sub-conscious state which always in active state. Even DNA replication, transcription and translation have strong time sense (or) else abnormal events start emerging out in species. Right from the time at which one or more such metabolic activities began in this nature, there exists a great memory too associated with each cell so that it never forgets the time sense. It is a known fact [at least to those who studied biology] that there is a time gap between the two important rhythmic alerts [systolic-diastolic] which are continuously produced by heart muscles [opening-closing of valves]. This time gap about 0.3 seconds is also a sort of memory associated with the organ [i.e cells]. This time gap falls rapidly during exertion while a large gap indicates malfunctioning of heart pumping ability. So, the time plays a key role in making a person alive or dead. Even the heart collected from a coma patient or a dead [in an accident] too has certain time limit after which it will not retain its memory [i.e start beating] once connected to an acceptor's circulatory system. Like this every transplantable organ has its own time sense or time limit.

I would like to dare myself to redefine the term death where I opine that "death is a special state where one or more vital organs lose time sense" Once this essential sense is lost, it cannot be able to coordinate with all other vital organs on time. This leads to an immovable state and response less so that the body fails to recognize the time. But, however, it need not necessarily mean that all cells have lost the time sense. It is because the dissipation of matter again takes more time to merge with its native platform i.e nature. So this beautiful cycle continues as Birth-Growth-Death [the magic triangle] till all the objects [living & non-living] in this universe are in coordination.