

Minor Corrections to Science by Our Pal Asija

There is But ONE Reality. You may not know it. I may not know it. In fact nobody may know it, but that still would not and indeed cannot change the fact that there is but one reality in here and out there. The source, the label and the method used to arrive at any aspect of reality are not important as long as it fits in that reality. Finding that rugged reality requires identifying and expunging erroneous knowledge. Following are a few examples. Non-science and non-sense are not synonyms. All non-science is not non-sense just as some science does not make sense.

In the 4th century B.C. (about 2350 years ago) Greek Philosopher Aristotle intuited - "Heavier Objects Fall Faster". Two millennia later Galileo thought he proved Aristotle wrong by dropping unequal weights from top of the Leaning tower of Pisa which all hit the ground at the same time and therefore concluded heavier and lighter objects travel at the same rate. Later he confirmed it by rolling balls on incline planes.

Perhaps the difference between Aristotle and Galileo can be explained away as comparing apples and oranges as Aristotle could be thinking relative velocity and Galileo absolute velocity notwithstanding he did not have any means of measuring the absolute velocity because the slightly greater movement of the earth towards the slightly heavier object when compared to the lighter object is the difference between two infinitesimals.

Einstein repeated Aristotle's error by restating "Heavier objects fall faster" as a corollary namely, "Faster objects get heavier". So Aristotle and Einstein were in full agreement on this point. Everybody else in the interim between Aristotle and now continues to agree with Galileo that all objects regardless of their size fall or travel at the same rate.

At any rate like everyone else I too accepted the dogma of all bodies traveling at the same rate on 'Blind-Faith' in science and the scientific method. But in retrospect with more careful thought they were in fact both wrong as in the rugged reality of the universe is that the lighter objects travel faster by an amount too small to notice, which is given by the formula $(\text{Mass of the earth} + \text{Mass of the heavier object}) / (\text{Mass of the earth} + \text{mass of the lighter object})$ which is barely greater than 1.

I. Universal Relationships Law

The following table shows the Universal Relationship Law, which in my humble opinion, if given a chance, is likely to contribute as much to our understanding of the universe as did the Newton's Universal Law of Gravitation. As the name implies its universal law that applies to physical universe as a whole as an open system and does not apply to closed systems or even open sub-systems. To be sure it is God's URL as my URL is still OurPal.com (www.OurPal.com)

Universal Relationships Law

Velocity Frequency Clock Ticks Rate Time Contraction Ageing/Life Entropy Order Conductance Energy(wrt Velcoity)	Mass Time Period/Duration Interval between Ticks Time Dilation Volume, Size, Length Entropy-Temperature Resistance Energy (wrt Mass)
Same Column-Direct	Cross Column-Inverse

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Any two parameters are directly proportional if they are in the same column (for example velocity and time contraction or mass and entropy) or they are inversely related if they appear in two different columns for example velocity and mass or velocity and time dilation.

The gamma factor is also simplified and divided into two ranges. For Range I From V_n to C the Gamma factor is $(C-V_n)/(C-V_x)$. Likewise for Range II from V_n to 0 the gamma factor is V_n/V_x wherein C = Speed of Light, V = Absolute Velocity through absolute space, V_x = Value of Quantity at Velocity X ($0-V_n$). It is depicted somewhat graphically in the following table.

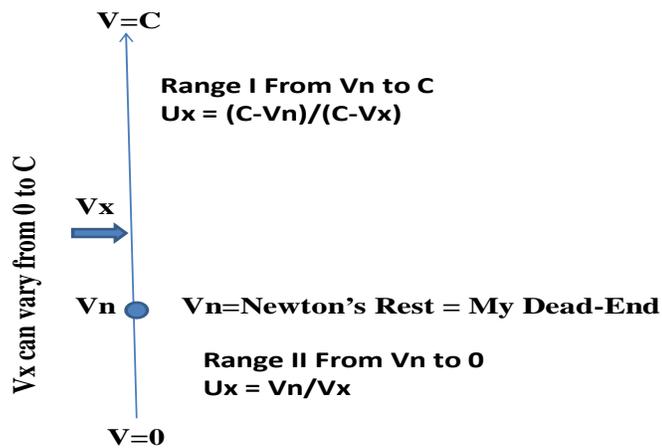
Gamma Factor

U_x when $V_x=C$
 Denominator is Zero
 Ergo Gama factor is Infinity

U_x when $V_x=V_n$
 Numerator=Denominator
 $V_x = (C-V_n)/(C-V_x) = 1/1$
 Ergo Gama factor is 1

U_x when $V_x=V_n$
 Numerator=Denominator
 Ergo Gama factor is again 1

U_x when $V_x=0$
 Denominator is Zero
 Ergo Gama factor is Infinity



C = Speed of Light

V = Absolute Velocity

U_x = Value of Unknown Parameter at Velocity X ($0-V_n$)

V_n = Normal, Natural, Nominal velocity on earth @Rest

Unfortunately Einstein had both Mass and Time Dilation Gamma factors backwards. Also Einstein's Gamma factor is unnecessarily complex in contradiction of Ockham's razor.

EINSTEIN: GPS (Global Positioning System) Satellite Clocks run slower due to time dilation but faster due to lower gravity.

OUR PAL: Clocks run faster both due to lower Gravity and relativistic effects.

EINSTEIN: Earthbound twin ages faster.

OURPAL: Faster Traveling twin ages faster. Earth bound twin and travelling twin are both traveling through absolute space. To determine which twin is traveling faster it is first necessary to compute the motion of the earthbound twin through absolute space. This velocity must be added algebraically vectorially to both the earthbound twin as well as the traveling twin. Depending upon the directional vector of the traveling twin, it is entirely plausible that the earth bound twin may be traveling faster through absolute space than the traveling twin is through same absolute space. With this approach the twin paradox is obviated. Ageing of each twin is irreversible and is independent of the other as time dilation for one twin tantamount to time contraction for the other twin and vice-a-versa. Motion of the twins relative to each other is irrelevant.

II-A. Lighter Bodies Travel Faster

Assuming spherical objects if you increase the mass difference between the heavier and lighter object considerably, then the radius of the heavier object r_h must be greater than the radius of the lighter object r_l . Let us also assume the lighter and heavier object are being dropped concurrently from a tower with height h_T . Even after leading edge alignment (because alignment of both CG – the Center of Gravity and the leading edge at dropping point concurrently is not an option). Consequently the lighter object experiences shorter distance and therefore an additional factor for speeding of the lighter object must be added given by the formula $(R+h_T+r_h)/(R+h_T+r_l)$ which again like the mass factor is also barely greater than 1. In fact the lighter object speed increase is barely detectable even after adding the two small rates. One also needs to multiply the sum of the two factors by G [Gravitational constant = $6.67428+(\text{plus})$ or $-(\text{minus})$ $.00067$] $\times 10^{-8}$ $\text{CM}^3 \text{g}^{-1} \text{s}^{-2}$] which makes it even smaller. No wonder for all practical purposes the lighter and heavier objects travel at same rate. Even in the case of space station the mass ratio to the earth is between one part in 10^{19} and 10^{20} which is small when compared to the ratio of the earth mass to 6 gram pebble is 10^{27} . Aristotle could have easily dropped a one gram and 6 gram pebbles at the nearest beach to prove himself wrong but didn't perhaps because he had a better insight into the outcome. Nonetheless the mass ratio of earth to space station (1 part in 10^{20}) and mass ratio of earth to 6 gm pebble though ten million times greater, is still not large enough for our instrumentation to accurately measure without undue expense.

One is Awe-struck by the obvious universal mega-symmetry of the phrase, "Lighter Objects Go Faster and Faster)Objects `Get Lighter" but to appreciate the mathematical symmetry behind the phrase, "Lighter Go Faster and conversely Heavier Go Slower" let M be Mass of the earth, R the radius of the earth, m_l = Mass of the lighter, m_h = Mass of the heavier, r_l = Radius of the lighter and r_h = Radius of the heavier and h_T the height of the tower or surface to surface distance.

Then the Mass Factor for lighter go faster $MF_{lf} = [\{(M+ m_h)/(M+ m_l)\} - 1]$ + the Distance Factor for lighter go faster $DF_{lf} = [\{(R+h_T+r_h)/(R+h_T+r_l)\}-1]$ with leading edge alignment.

Symmetrically Mass Factor for heavier go slower $MF_{hs} = [1-\{(M+ m_l)/(M+ m_h)\}]$ + the Distance Factor $DF_{hs} = [1-\{(R+h_T+r_l)/(R+h_T+r_h)\}]$ again with leading edge alignment.

The distance factor can be eliminated merely by making $r_l = r_h$. Otherwise $T_{lf} = G(MF_{lf} + DF_{lf})$ & $G(T_{hs} = G(MF_{hs} + DF_{hs}))$

Similar math also applies to bodies in outer-space (beyond the gravitational influence) accelerating with straight-line as at yet to be identified edge of the physical universe. More on this & many other related topics later or visit www.OurPal.com for the latest.

II-B Faster Objects Become Lighter

The formula for - "How Much Lighter" - was given by Einstein as Gamma Factor $\gamma = 1/(1-v^2/c^2)^{1/2}$, which is not only unnecessarily complex in contravention of the Ockham's razor but the great scientist applied it backwards to mass as compared to its application to length contraction time dilation. More elegantly length contraction should be viewed as "Size or Volume Contraction". Unfortunately, as shown in the Universal Relationships Law Einstein also got the arithmetic of Gamma Factor wrong.

EINSTEIN: Rest mass is the lowest, which increases as the relative velocity of the object increases, so as to become infinite mass at speed of light C.

OUR PAL: Rest mass is the greatest, which decreases (by simplified gamma factor) as the absolute velocity through absolute space increases so as to become zero mass (Object is transformed into wave) and the object vanishes at speed of light C.

It should be noted that this change from relative velocity to absolute velocity also resolves the twin paradox. The only exception to this reversibility is if and when you actually reach the speed of light.

III-A: Minor corrections to Newton's Universal Law of Gravitation.

Gravitational attraction is directly proportional to the product of the sum of masses (including any intervening masses) and inversely proportional to the product of the sum of distances. Consider for example two bodies with mass M & m with respective Radii R & r and surface to surface distance between them as d such that the distance D between centers of masses M & m = (R+r+d)

It should be noted that in this analysis Gravitational constant is omitted but remains unchanged. It is unlikely but possible that gravitational constant needs modification or obviated as 1.

$$G_T = (M+m)^2/(R+r+d)^2 \\ = (M+m)^2/(D)^2$$

$$G_m = M/(M+m) \times (M+m)^2/D^2$$

$$= M(M+m)/D^2$$

$$G_M = m/(M+m) \times (M+m)^2/D^2$$

$$= m(M+m)/D^2$$

$$G_T = G_m + G_M$$

$$= M(M+m)/D^2 + m(M+m)/D^2$$

$$= (M+m)(M+m)/D^2$$

$$= (M+m)^2/(D)^2$$

Multi-body Gravitation

This formulation is broad and generic enough that it can be easily applied to computation of gravitation attraction in multi-body configuration such as our solar system. For example in our solar system not only sun attracts the earth but earth (and other planets also) affects the motion of the sun around one of the foci where the sun is anchored. While the two foci may be very close to the center of the circle, there is a small difference because technically the orbits are slightly elliptical and not completely circular.

To calculate the earth's slightly elliptical orbit around the sun the effect of other planets can be added merely by plugging in the sine projection on the vertical and/or cosine projection on the horizontal from each planet regardless of their position and angle and whether the other planet is inside or outside the earth's orbit.

In plain words Gravitational attraction is directly proportional to the product of the sum of masses carefully including any intervening masses as is the case in our solar system, and inversely proportional to the product of the sum of distances. So to calculate the true gravitational attraction between the earth and the sun and hence the precise path of the earth's orbit the following formula may be used.

$$\frac{(M_1+M_2+\text{Sine } M_3+\dots+\text{Cosine } M_4 \dots-\text{Sine } M_5 \dots+\text{Cosine } M_6\dots)^2}{(R_1+R_2+d+ D_3 + \dots D_4\dots\dots+ D_5\dots\dots+ \dots D_6\dots\dots\dots)^2}$$

This formula gives the total gravitational attraction. To divide it into matching pairs, the analysis shown in section III-A needs to be employed. To avoid the clutter the gravitational constant has not been included but is implied. The sign change in the numerator reflects the fact that a couple of planets are within the earth's orbit while 5 are outside since Pluto is not considered a planet any more. However in reality the effect of the Pluto as well as not only the moon of the earth but moons of other planets can also be considered for even greater precision. Again trigonometric functions will need to be employed as most of the planets are not likely to be in alignment. This analysis can easily explain the pioneer anomaly as the effect of a large planet like Jupiter can have enough effect on even the small craft like Pioneer 10 or 11. Not because Pioneer 10 or 11 is a substantial fraction of the mass of the Jupiter but because Jupiter is a substantial fraction of the mass of the sun even though it is still very small but not negligible for our modern instrumentation technology.

III-B: Two Minor corrections to Newton's First Law of Motion.

The natural state of a body is neither 'REST' as Aristotle surmised nor is 'Uniform Motion in a Straight Line' as Sir Isaac Newton enunciated in his first law of motion but, rather 'Uniform Acceleration in a Straight Line'

NEWTON: In the absence of external forces etc. a body continues to be at REST

OUR PAL:body is at Dead-End due to an obstacle & moves when the obstacle is removed.

NEWTON: Uniform motion in a straight line

OUR PAL: Uniform acceleration in a straight line or uniform motion in a circular orbit or elliptical orbit modified by Kepler's Law of planetary motion to traverse equal area in equal time. This can be readily confirmed by observing the solar system where turning is acceleration transformed into uniform speed.

The Challenge

If you still agree with Newton and disagree with me then can you identify a body anywhere in this universe in any frame of reference (I will be much obliged if you would be so kind to identify the frame of reference with particularity) 1) "At Rest" which is not concurrently at dead end due to at least one obstacle such as table, floor, earth etc. 2) having uniform motion in a straight line and not circular or elliptical closed loop orbit. As we all know change of direction is every bit as much acceleration as rate of change of speed. In other words linear acceleration can be converted into uniform speed in a circle. The force that was being used to increase the speed of an object in a straight line is now being used to continuously change the direction.

I submit that nothing in this universe is "At Rest". When some thing appears to be at rest, it is actually at "Dead-End" due to at least one obstacle, otherwise the body, object or thing wants to move and indeed moves as soon as the obstacle in its path (vertical or horizontal) is removed. One would indeed be right in defending Sir Isaac Newton, that a body would continue to be at rest even without an obstacle, if one can be found at rest without an obstacle, Just like a spring-wound toy car moves horizontally, when the obstacle is removed, likewise it would also accelerate vertically downward in a straight line when the obstacle of the table, floor, earth etc is removed. In other words in this respect the entire universe is spring wound or otherwise powered like the man made toys.

Some people erroneously think that a ball floating at the 'Center of Gravity' of a massive object such as our earth would be at rest without an obstacle. While it is 'At Rest' with respect to the earth, it is nonetheless part of and moving with the orbital velocity of the earth, solar system Milky Way galaxy etc., etc.

What Sir Isaac Newton meant to say was that a body continues to be in uniform acceleration (not velocity) in a straight line or uniform motion (speed) in a circle, modified by Kepler's laws of planetary motion for non-circular elliptical orbits so that planets continue to traverse equal area in equal time.

As you already very well know that planets in our solar system are moving with almost uniform speed in almost circular orbits (modified to traverse equal area in equal time) only because turning (continuous change of direction) constitutes acceleration. In other words the constant directional turns transform acceleration into uniform speed.

In fact if our planet were to ever leave the solar system, it would immediately resume uniform acceleration in a tangential straight line at the break away point.

Please do not misunderstand me. I have the same awe-inspiring respect for Sir Isaac Newton as you. Newton is without a doubt the 'Icon of Kinematics' and has attained the status of 'Sainthood' in Science. These two minor corrections to the first law of motion named after him will not detract from his status as the greatest scientist who ever lived. Yes even Einstein will be second to Sir Isaac Newton.

Newton's law of universal gravitation is better viewed as direct product of the masses and inverse product of the distances which tantamount to inverse square. The slight advantage here is that the formula is somewhat simplified for two identical masses as M^2/D^2 multiplied by the usual gravitational constant G. The advantage of viewing the distances as two equal distances instead of square of one distance is that it facilitates the mathematical (geometric and arithmetical) calculation of gravitational attraction among more than two bodies.

IV. Three D or No D

Any body, object, thing or space has either only 3 dimensions or no dimensions at all. As soon as you reduce any one dimension to zero (not just infinitesimally small) but I mean really zero then the other two dimensions instantly by necessity and by definition must also vanish. Accordingly any theory based on N dimensions (where N is NOT 3) is fantastic, erroneous and entertaining figment of imagination. For similar reasons the hidden curled up tiny dimensions are figment of the imagination and properly belong in the 3D space, excluding time, which is not a dimension in the same sense. In spite of my reasoned faith in "3D or No D" I enjoy Non-3D and spiritual books such as:

1. Flatland by Edwin A. Abbott, Oxford University Press, ISBN 0-19-280598-3.
2. 'Trouble with Physics' by Lee Smolin – A Mariner Book of Houghton Mifflin Co., ISBN 13:978-0-618-55105-7 or 10:0-618-55105-0
3. "The Spiritual Brain – A Neuroscientist's Case for the Soul" by Dr. Mario Beauregard & Denyse O'Leary, HarperOne, 2007 ISBN:978-0-06-085883-4

Even though all space and objects are 3D, the motion can be 4D both in our physical universe as well as of the physical universe through the virtual universe. An example of the former is curve ball which has following 4 motions.

- (i) Forward linearly from pitcher to batter.
- (ii) Rotary as the pitcher puts spin on the ball
- (iii) Up and down due to angle of throw and gravity and
- (iv) Yaw as the curve ball is designed to do to throw the batter off.

Similarly one can identify 4 D motion of the earth through space as consisting of rotary on its axis, 2-D orbital and forward/outward as part of the expansion or other motion of the solar system, Milky Way galaxy, local cluster, Virgo cluster and super cluster etc.

V. Gravity is A Local Physical Contact Force

Gravity is not spooky action at a distance. It is local and physical. There is nothing non-local about it. Our known physical universe is mostly non-physical virtual light. Physical part is merely ONE part in 10^{13} that includes all the particles (of the known physical universe), which are less than 10^{125} including sub-atomic particles of each atom and dark matter if any there be. The weight of the entire universe is 10^{100} grams on earth with a tolerance of one order of magnitude. The weight of the universe on moon (lowest gravity = .165 of earth) and on Jupiter (highest gravity = 2.364 of earth) is well within this tolerance. The UVLM (Universal Virtual Light Medium) interacts with everything physical (from subatomic particles to our Earth, Solar system, Milky way, Local group, Virgo cluster and Super cluster of gravitationally bound galaxies etc) through virtual particles.

While our physical universe is finite, notwithstanding we have still not seen the edge of the universe, the virtual universe is NOT and that's where UVLM is 100% and not just 99.9,999,999,999,999% as in our physical universe we all marvel at. Gravity is via locally generated virtual particles but may also be viewed as built in tendency of UVLM a bit like the tendency of a fragrance to diffuse. Nature imparts greater force to bigger bodies so as to result in constant acceleration, which may be different in different types of galaxies.

The attached graphic, (Fig.-1: Obviously not to scale) illustrates the principle behind the earths orbit around the sun, wherein $UVLM_{IN}$ (within each atom) contributes to radial motion and $UVLM_{EX}$ (outside of atoms – intra-molecule, inter-molecule and beyond) contributes to tangential motion thereby resulting in the diagonal motion. As the number of segments increases becomes increasingly circular or even slightly elliptical based upon the composition and distribution of matter (and hence the UVLM) in the orbiting - rotating earth.

UVLM accomplishes this through its unique properties or more accurately lack of such properties as time, temperature, entropy and many more. Unlike physical light the virtual light of UVLM is not subject to absorption, reflection, refraction, scatter etc and therefore not subject to easy detection, especially when our sophisticated high tech instrumentation such as SLAC, cyclotrons or the new European Large Hadron Collider and the even larger ILC (The International Linear Collider) now on the drawing board cannot be placed in close enough to proximity of these UVLM generated virtual particles so as to prove or falsify this hypothesis conclusively any time soon. In my humble and perhaps foolish opinion resources on LISA and LIGO can be better spent elsewhere as there is no such thing as traveling gravitational waves. At one time I was young and foolish and now I am just not young any more.

VI. Light is Never Waves & Photons at the same Instant.

The only way UVLM of the infinite eternal virtual universe knows how to interact with our finite temporal physical universe (including any objects, our eyes, and our scientific sensors and detectors and transducers etc) is through virtual particles. Extrapolating this further one can easily conclude that our entire physical universe is made of virtual particles. The only difference is the size (from sub atomic to light years) and time duration (From Atto seconds to millennia) varies over a big range.

Light is always waves except when it encounters something physical even photons from another light source (AKA Gravitational Lensing). The miracle of vision is made possible by the synergism of light, eye and brain. If you take any one away you are left blind. The only way you can read this or see any object for that matter is because the light waves interact with this paper as photons and gather all sorts of information (including perspective, color, reflection, refraction and much more) as photons and then immediately reconstitute as waves and again travel at speed of light from the object (in this case paper or computer monitor) a very short distance to your eyes.

Obviously there is a lot more to light and eye than meets the eye, but that would be beyond the scope of this short white paper. However for a better lucid and exuberant description may I suggest you to try one of the videos at www.Ourpal.com. Here is a direct link to one of them (One hour long NPA-14 video OUR PAL at Uconn.)
<http://video.google.com/videoplay?docid=-3586385915239405340>

Conclusion

So in conclusion The URL is essential part of the rugged reality of our wonderful universe we all marvel. It encompasses not only “Lighter Go Faster & Faster Get Lighter, but also its corollary “Heavier go slower and slower get heavier. Yes, there is But ONE Reality in here, out there, anywhere, everywhere and even nowhere if there were such a “.....”. You may not know it, she may not know it, I may not know it, nobody may know it except God, but it still would not (as it indeed cannot) change the fact that there is But ONE Reality created by But ONE God.

There are many other errors in science and religion and everything in between: biology, physiology, psychology, meta-physics and everyday garden-variety paranormal phenomenon of all types. Eradication of errors is just one of the many ways to ascertain the illusive absolute reality and even that is not for the timid as Socrates, Bruno and Galileo paid a high price for it. Corrections in religion are a greater and much harder challenge as religion, unlike science, is not open to correction from bottom up or even from peers and relies exclusively on correction from top down (AKA Revelation from God). Another technique is to use LCM (Lowest Common Multiple) and HCF (Highest Common Factor) to identify what knowledge from various labels and sources is harmonious with the absolute reality.

In search of the illusive reality, I personally believe labels hinder and certainly do not help at all. The truth agrees with truth regardless of its source, whether it comes from His Holiness the Pope, Her Majesty the Queen, Nobel Laureates or novices like me. On the other hand per chance falsity may or may not agree with other falsehoods. Another useful tool is to use “Reason” in religion as a pre-requisite to inspiration and revelation after all ‘Glory of God is Intelligence’, which must include both faith and reasoning. Likewise science must also shed some of its dogma and blind faith in mathematical models, big bang singularity, reckless assumption of initial conditions and even Amoeba to Asija. Science and religion are both handicapped in resolving the universal challenges, without the mutual help of each other.