# Symmetry and the Creative Cognition

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**Abstract**

An unconquered conceptual divide related to cognitive perception exists between the physical and biological sciences. The life processes of self assembly and replication are unaccounted for in quantum theory or in the ordinary laws of physics. Lying at the very base element of this confusion is a theoretical wall outlined by statistical generalization on one border, and exact historical evolution on the other. Can inert, randomly oriented, statistically described agents (atoms/molecules), direct the reproduction of like things. If the answer to this proposition is negative, then are space and matter not as assumed (i.e. – as uniformly interpretable statistical entities), but things with a life like evolving history from a unique beginning. For example: if life processes are conceptually tree like, can (must) the processes from which they are created be defined this way also? If one reflects on this question he can liken it to a similar question: can a tree exist with one branch only (i.e. can a tree exist as a simple line verses a line with an origin and history) a conflict emerges that reveals a subtler conflict in the pursuit of an objective interpretation. A simple line always is less complex than the other and does not exist in the life processes or even in the ordinary life of an individual: it's history, in terms of life time, is infinitely

smaller the closer it resembles a simple undefined line. In defining matter statistically, we are objectively claiming that it has no time dependant history, and yet is the objective source of evolution, which by definition has a subjective history. We are left with the alternative to find a new order for the definition of physical processes. In this paper, I wish to show that with very little rearrangement of current notions, a model of space can be created that details the replication, from an origin, and propagation in a tree like manner with a declining potential, of both the evolutionary processes of living things, and space, and matter.

**Introduction: Can the words, What is for you, is the same for me (and visa-versa) (i.e. you and me both), ever be ascribed to a neutral observation?....or in science as a neutral frame of reference?**

The theory of relativity by Albert Einstein, at the beginning of the twentieth century, is interpreted within a framework of multiple (more than one) points of reference projected abstractly to exist at the same time in different places; for example, two men on conveyor belts, moving in opposite directions, and a third man stationary to both are depicted. The men on the conveyor belts are described as perceiving each other moving at twice the velocity that the third man see's either party from his stationary position. These events, the parameters of motion from each perspective, are described by Einstein as all of the same description- i.e. that space (the world) has one common description. In the following argument I wish to both affirm this notion and to add a profoundly confusing contradiction to this example model suggesting that it is in valid and founded on the cognitive perception that matter (solid-material elements) is not unique at each point of reference. In order to accomplish a new theoretical orientation , new definitions and assumptions are applied as stated:

**Definitions:**

**The following three are all unique instances: each implying the other**

**1) An existing point of reference implies existing volume, implies the existence of an            active energy process (i.e. active work). No point in space is identical to another with  respect to the living or inert**

**Points of  reference other than the first cannot be referred to as existing with the same properties ascribed to each other or to a third party inventing the comparison and cannot be included in a model.**

**2) A vacuum, (i.e.) the existence of something with exactly nothing in it, does not exist. The word**

**nothing is left to exist as a social term only**

**3) In order to create a model of space with a deceasing potential, constants cannot be included. The speed of light is treated as a functional variable to describe a decreasing potential.**

**Assumptions:**

**1) Although the elements comprising points of reference – defined as the existence of volume and energy- cannot be referred to theoretically from a second or third party- a <u>visa versa</u> notion can be added to state:**

**a) If there should exist other than one point of reference it can be assumed that, if there exists a fundamental unity in order to determine it must be assumed from the one reference and be testable for its validity. This assumption precludes a common mathematical constant as the primary description, and mathematical applications remaining only as a tool of description(in example to paint relations of form and size, as by definition all points of reference (points in space =F(x,y,z)) must, by definition, be mathematically unique.**

**As a cognitive summary to the definitions and assumptions:**

*An (all) energy process must bear a testable witness in the process of performed work or It (they) cannot be assumed to exist. This is implicated by the mandatory existence of a receiver (reflector/substrate) and effecter(emitter in order to have witness to construct theory-witnessable action and reaction are mandatory components of a viable model and a viable model cannot assume the existence of any component which is described as beyond witness: by <u>visa versa</u> assumption from a single unique existence, the existence of a reflector/substrate and effecter imply the existence of a volume and energy process and visa versa-either the of the existences of any of these components implies the existence of the others and totally excludes the possibility of the existence of <u>nothing at all,</u> or in the scientific case excludes the existence of a <u>vacuum.</u>*

*The existence of a point of reference implies the existence of energy processes, work and volume.  As it is by our cognitive nature to deny the  fundamentality's of a topic itself if we do not comprehend it is possible to have broadly accepted false notions.  All of that of which we do know, of which our art and communications are constructed, are from  cognitive concepts of volume, size, and time  and it is from this aspect that we should approach all theory.*

## *A Cognitive Model of Space*

The two kinds of energy considered in the model are the kinetic energies of motion and the change in potential of electromagnetic radiation, and that these two energies are both capable of performing work and act synergistically via reflection and motion.

To support this view as an inclusive one, if one thinks of all aspects of the world from the physical to the social, the words reflection and motion are inescapable components of the description of anything: the roots and history of these words must also be very important.

If we define the velocity of light as a variable total energy, mathematical mechanics become much simpler:

Work functions become:

$$\text{Work [if } E=m(.5v^2 +c^2)]$$

$$=[d(E/m)dt]= v+2c$$
$$R(radius)^2= v^2 +c^2$$

E=energy m=mass v=velocity of motion c='velocity of light.

If one thinks of a starting (undifferentiated) (energy/mass)/(Radius)^2

$$E/(mR^2)_{start} = (v+c)^2/R^2 = v^2/R^2 +2cv/R^2 +c^2 /R^2$$
$$=\sin^2@ +\sin2@ + \cos^2@$$
$$=1+\sin2@$$

$$(E/mR^2)_{t\neq0} =.5\sin^2@ +\cos^2@$$
$$\Delta \; d[(E/m)/(R^2)]/dt = d[(E/(mR^2)]/dt_{start}- d[(E/m)/(R^2)]/dt_{t\neq0}$$
$$= (2c+2v) – (2c+v)= v$$

$$\text{Tan}@=v/c_{(E/(mR^2)t\neq0}$$

We can then postulate, if (from our definitions and assumptions) the rate of change in energy (composed of, or evolved into light and moving mass is the same as the rate of change of kinetic energy (v) of a moving mass, and that the universe is the same at each point of reference as from

its' beginning (R=0) that an differentiated energy changed to produce work, d(E/m)dt=v.

## DISCUSSION

If one claims the existence of a constant speed of light as a common denominator in a scientific scheme of the world, he might be translated within the framework of this manuscript to have stated that cognition, existence, (or as cognition, existence extended to mean reflective life-the processes of living things) are common denominators (the actual constant) in a scheme involving a relativistic view related to point of reference.

With assumptions (from a unique witness), followed by test and verification, that a certain descriptive uniformity exists that can include mathematical relations or physical law in a secondary position in a cognitive model, a description likened more to a painting than a mathematical equation emerges. For secondary mathematical relations I have chosen those related to geometrical form and size(length, time, and velocity) as they are at the basic roots of all perception: the primary components of a new painting emerge from a contrast of the views painted by mathematics alone that includes a neutral frame of reference and those that can be painted without a mathematical constant.

It is thus imperative, in the generation of a model of, that nature be limited to, in description, the role of an adder and subtractor (multiplier and divider) of simple lengths and a perceiver of shapes and volumes only, and as a composition of lengths, less we include excess mental construction, subsequent reiteration, to allow the cognition of false notions. This makes common sense in terms of the fact that the smallest volume that can be created is from a triangle, built of simple lengths. The sum of any two sides of a triangle is always less than the sum of the third side-in a right triangle the square of the sums of the sides is equal to the square of the longest side. Space and energy must come from the creation of volume in a way that the sum is different from the parts-simple triangular areas or spaces created from lengths are not only the simplest volumes, but are also the basic mathematical units of Einstein's theory of relativity as well as of Newton's dynamics of motion.

The synergistic budding of a radius and component sides from a unit beginning with work accomplished and a volume created can be expressed as follows:

$$X(x \approx x)_{r=0} = X(c+v)_{r=0} \rightarrow X(c,v)_{r \neq 0}$$

Two nearly equal entities(x) (possibly two nearly parallel light like rays) give birth on interaction to c and v. At r=0 the total energy is a function of c+v, at r≠0 c and v become distinct with energies $E=mc^2$ and $V=.5mv^2$ respectively.

The generation of volume (existence of) from a (hypothetical)point (time(0) ,Radius0) can be visualized as the defined generation of energy from constraints resulting from a thesis of the unidirectional linear parameters of which tangible mass is confined and the three

dimensional parameters of the propagation of radiation in two planes.

   The two models of world, energy conservation, and unifying themes,  that of Einstein and the new model proposed are uniquely very distinct and of such different orientation  it is difficult to compare them in the same breath, less one encounters a vast mental chaos comparable to the reflection of a revolving  mirror able to focus on only one subject at a time.  As an aid to help in orientation  and clarification  I wish to draw a parallel from a topic deep in the past, of mankind's attempts to  organize the world with  mathematical notions applied to artistry and structure.


   I wish to refer to the GOLDEN VALUE of the (……) whose formula structure bears a resemblance to the symmetry and form described in this manuscript:

   Golden Value    $a/b=b/(a+b)=(-1+5^{.5})/2=.618……$ $a^2+ab-b^2=0$


 $a(a+b)=b^2=(5^{.5}-1)/2=.618…….$
 This value nearly matches in form the equation

   $(c+v)^2=c(c+2v)=v^2$
      $b^2=a(a+b)=b^2$
                             $=(5^{.5}-1)/2=.618…=2\cos(pi/5)$
   another similar equality that is composed of 2's instead of 5's
                             $(2^{.5}-1)=\tan(pi/8)$




   *In attempts to reduce the very complex descriptions of the atom  to the realms of  ordinary perception, and  the "microcosm" of ordinary experience, I have been seeking a symmetrical relation of trigonometric value and angles   In an attempt to construct a relation of ratio and  proportions with, as a guide, the empirically relevant yet somewhat nonsensical(but operational) with respect to the real world,  the Schroedinger formulations for  a particle in a box and the distributive operations of matrix mathematics.*
*.  However,  in a rejection, of a  first person (all)ness  , one witness, and unevenness I perceived in the arrangement of the expression:*
   *Hψ=HψE (which reduces to the descriptions based on asymmetry-synthesis from contrast)*
*I reorganized the equation to read :*
   *AψB=BψA*
 *(B if and only if A) if and only if (A if and only if B)).  The later expression exists of itself, verses the defining reduction to a difference facet of the former –and a resulting reorganization of all of  the parameters and operations from the former.  I sought to establish  a connection of the following type with velocities/lengths.*

$c^2/(v/(2c+v))\tan(v^2/(c/(2c+v))) = v^2/(c/(2c+v))\ \tan(c^2/(v/(2c+v)))$

**When c=v**

1- $(x/3x)\tan(x/3x) - (x/3x)\tan(x//3x) = 0$

**When c≠v**

2- $c^3/v^3 - \tan(c^2/(v/(2c+v)))/\tan(v^2/(c/(2c+v)) = K$


**and has the general form :**

$\Phi\ \tan(\theta) = \theta\ \tan(\Phi)$

$\Phi/\theta = (\tan(\Phi)/\tan(\theta)) + Value$

**Consider 1-  $\tan(pi/8) = 2^{.5} - 1$   a value very similar in structure to the golden value**

a) $2^{.5}/(2^{.5} - 1) + \tan(2^{.5})/(\tan(2^{.5} - 1) + \tan(k-1)$

$k1 = -0.4800788112\ \vee\ k2 = 2.661513842\ \vee\ k3 = -3.621671464$

$k2 - k1 = k1 - k3 = (k2 - k3)/2 = pi$

b) $2^{.5}/(\tan(pi/8)) = \tan(2^{.5})/pi/8 + \tan(k-1)$


2-  $\tan(5^{.5})/\tan(5^{.5} - 1) + \tan(k-1) = 5^{.5}/(5^{.5} - 1) =$   (twice  the golden value)

$k1 = 2.152955806\ \vee\ k2 = -0.9886368474\ \vee\ k3 = 5.294548459$

$k1 + k2 = -pi\ \ (k3 - k2)/2 = pi\ \ k3 - k1 = pi$

3-  $\tan((5^{.5})/2)/\tan((5^{.5} - 1)/2) + \tan((k-1)/2) = 5^{.5}/(5^{.5} - 1)$ (twice the golden value)

$k1 = -0.6498958054\ \vee\ k2 = 4.141592653\ \vee\ k3 = -2.141592653$

4-  $\tan((5^{.5}))/\tan((5^{.5} - 1)/2) + \tan((k-1)/2) = (5^{.5} - 1)$ twice the golden value

$k1 = -2.141592653\ \vee\ k2 = 3.599953912\ \vee\ k3 = -2.683231394$

**etc…….**

**all of these equations  have solutions of the form:**

$k = (k_a + npi)$ **and the ones that include  the golden value contain  the exact digits of pi in the solutions.**

*In order to potentially fit into a geometrically constructed scheme it is symbolically important that both the golden value and the similar (value) tan(pi/8) used in the construction of these equations are constructed of roots and powers of integers and solutions for the functions are functions of pi-the functions themselves composed of ratios, powers, roots and a trigonometry of angles and lengths-i.e. things that are within the realm of ordinary perception and a world that operates like a tree-two things growing to four, things replicating to create likenesses; as in the relations themselves we have angles and functions of angles acting together to yield angles and functions of angles and a relation connecting them (tan(k+npi) of a fundamental constant of mathematics and resembling in form, as a solution provider to the problem, the problem itself. This kind of relation might be applicable to explain false cognitive constructions, as although, all of the intersections described can be described as unique and conceivably can paint an entire picture alone, none of the possible solutions yield a whole picture-especially visually. For instance, lengths and velocities as they describe energies and volumes are highly angle dependant and not absolute value dependant, either might appear small, equal to one another, or very different from one another, but could be in description, with respect to the integral periods of arcs and thousands of revolutions <u>origin dependant,</u> very different, yet physically indistinguishable depending on the angle of perspective. It is of this observation that it is judged that wholly mathematical descriptions are near to worthless. A false piece from our puzzle solving can easily be mistaken as the whole, and the only footing , (confusingly footing is the only attainable goal), is that which is derived from within direct perception and/or direct perception <u>and</u> measurement with the tools (including scientific) available to us- it's knowing is a matter of insight, artistic creation and communication. That even from our earth bound perspective we might not be at an angle advantageous to look through all the doors and windows of the universe, but that we know of what a <u>whole</u> painting must comprise….. :infinities, things absolutely beyond us should not really disturb us, (as also these appear to be factors and seeds in our frustrations, as well as obstacles to our understanding), as those things of any real instinctual, survival, consequence only are by their whole existence-coexistence with their problems , regardless of possible limitations, apparent complexities, extensiveness, the births and content of our cognition actions and communications.*

Fig(1) Mass A moves from A0 to A1 and reflects light
energy to mass B. The path of the reflected light resembles an ellipse

B
      /
     /
    /           \
  /

A0    -)~-)~-)~ -)~-)~-)~ A 1

B

A0                      A1
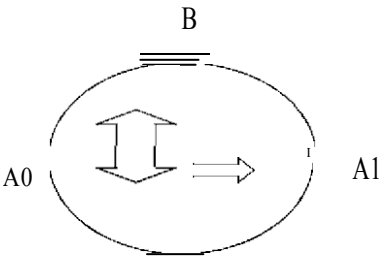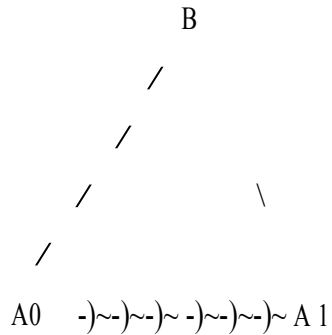
Fig(2)  2c vs 2c+v

$$R= [(2(c+v)-v)^2+(2(c+v)-2v)^2]^{.5}= [(2(1+\sin 2s)^{.5} -\sin s))^2+ (2(1+\sin 2t)^{.5} - 2\sin t))^2]^{.5}$$