A Hypothetical Cognitive Model: an approach to Self-Designing

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Abstract

Proper time of a particular event is universal. Or, proper times of all the events around an observer are invariant to all other observers, ever possible, irrespective of their coordinates. So, all individual existences, possible in cosmos, are always in an inseparable common soup. It is '0'-symmetry. Time can only start in both ways: forwardly as Space, reflecting 'classical entropy' (visionary field) of the subsystem and backwardly as Time reflecting its quantum negentropy (feeling field). The later is fused spaces of rest all other subsystems. But this is the experience in classical world. In quantum world one faces just the opposite. The space-time is exclusive on singularity of tuning microtubular electrons of Macroscopic Quantum System (MQS). Topology of seat of cognition simulates that of Möbius strip. Here, finite designs produced by mixed order fields in 3D merges with infinite 2D within and infinite 4D without. This happens on absolute churn and fusion both ways. Towards this Nullification of Self-Designing irreductionism, guided by dynamical systems, is the stronger half in comparison to traditional reductionism. Nevertheless, every finite or mortal system must have deeper immortal existence on Lorentz Invariance.

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1. INTRODUCTION

Proper time or ‘0’-symmetry is an infinite Steady State. Terminologically it is Null i.e. absolute void. It is a pure random field, a Euclidean theme, defines Invariance. Here, biological self with Bigbang is redundant. But, Euclidean space can never resist associative space of higher order as byproducts. Any complex self-organization in these higher spaces can execute its own cosmos instantaneously by stimulating underlying Null. This reflects its entropy in context of rest all other subsystems. And it is a Universal event in simultaneity defining its exclusive space-time. MQSs are specially designed with memory functions on its hierarchical base. Null satisfies CPT-symmetry. So, in evolutionary perspective, Laws of Nature in Steady State are equally valid for conventional Bigbang theory. But, in FD C-symmetry hides within singularities of Nulls. So, there be a Self-Designing, conserving abstract-real duality, along which these universal selections eventuate readily.

1.1 Abstract cruciate null structure

Existence with all its physical and mental elements is derivative of Null. Here, mental elements in number system are rationals and in physics scalars and physical elements are irrationals and nonzero tensors respectively. Null may exist in two ways: translation and spin. Translation space is Euclidean space additive in nature in twistor free zone and spinor space is multiplicative in nature at the height of twistor zone. Null state is like simple harmonic motion of a Pendulum, simultaneously from both sides! It is only valid when staying within it in sleeping condition of Cognitive System. The translation space is at central position, ‘0’, of bob where kinetic energy is either ‘0’ or infinite. Another counter-complementary space i.e. orthogonal to above, spinor space creates two stationeries at infinities (-∞ & +∞). And whenever translation space extends beyond a critical point this spinor holds it with its twistors' arms and spins it infinitely. This arbitrarily creates two orthogonal axes; one is in vertical or polar disposition defining kinetic status and other in horizontal disposition defining potential status of the whole system. These definitions are unsolved residues of orthogonal nulls (Sec. 4.2.5). The former is Gravity axis, translation space of Euclidean nature and the later is Energy axis, time of spin nature. Lorentz Invariance, ‘0’-symmetry, is the conservation of rotation symmetry that includes both Fig. 1 (Noether. 1905) [30i].

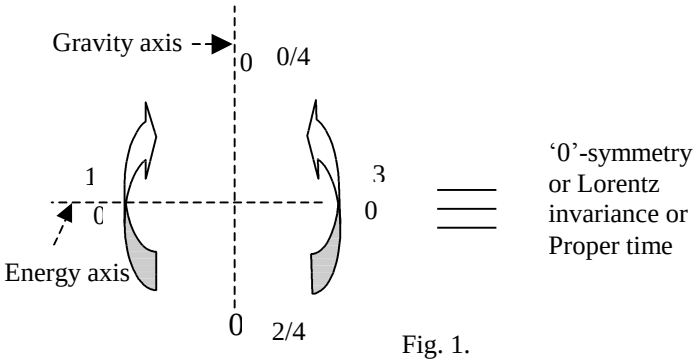


Fig. 1.
4-D Null structure

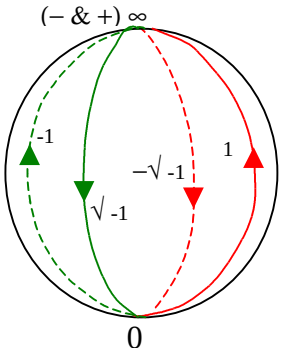


Fig. 2

The two axes finite ends are now defined by differential limits as in Fig. 3a. √–1, -√–1 & 1, –1. Their limits are '0' and '∞' respectively in 2D-topological language. Real number systems ascend towards '∞' and imaginary number systems ascend towards '0' (Fig. 2). In the topology of Möbius strip poles are source and culminating windows of microelements and horizons are exhibition windows of macro-elements (Fig. 20b). Or, simply if gravity exhibits microelements energy must exhibit macro-elements. This finiteness at macro- and micro levels indicates that infinite system has become fractal. There are infinite members with own unique representation of cosmos (Fig. 23). Here, an arena of orbital system can only register the abstract interaction of two robust orthogonal axes.

1.2 Abstract Orbital Elementary Structure

And, Fractal Dimensionality (FD) automatically ensues. Like infinite systems with infinite axes as above, FD is representation of complementation of two dynamical systems, one is Gravity Dynamical System (GDS) and other is Energy Dynamical System (EDS). Due to exact complementation of these two, orbital system also composes an infinite system.

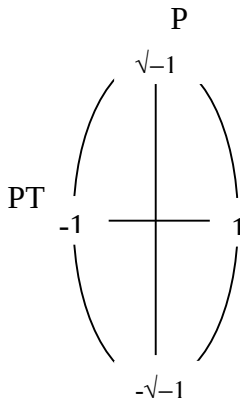
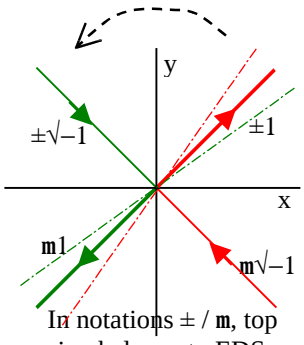


Fig. 3a & 3b Elementary operators in ED are extremals of central cruciate structure (simulates that of semiconductor carbon!) (3a). In FD they become orbital twistors (3b) in either rotation: anticlockwise in GDS in backward time and clockwise in EDS in forward time.



In notations ± / m, top sign belongs to EDS

Thus Elementary Dimensionality (ED) is an infinitely normalized system. It is immortal and infinitely deterministic. As it represents null in proper time it is structureless. Null space attains itself automatically by churn (indifferent spinning clockwise and anticlockwise) and fusion (similar but both way adding) along this structure in Proper Time. Whenever and wherever any intermediaries in FD excites ED finitely, it has its exact instant solution. And these solutions always hold a deterministic structural form (central cruciate structure in Fig 3a). So, in that sense ED also has a language through which it infinitely communicates with FD. Cognitive system incorporates both these dimensionalities (ED & FD). One can remind simple harmonic motion of a pendulum. Its state from one side is orthogonal to other one. So

it's a self-similar journey. Particle antiparticle existence is obvious. In proper time infinite or no journey are all the same. But if one can stretch out of the system it can see one side of coin or the other at one time: Gravity system in backward time and Energy system in forward time. Or in other words pendulum, now, becomes a clock that depicts times. The divine operators in Fig. 3a are simple derivations of Möbius group functions.

1.3 Möbius group of complex functions

It comprises of four complex elements $\{f_1, f_2, f_3, \text{and } f_4\}$ related by its own complex transformation functions $\{f_3, f_4\}$ in both directions clockwise and anticlockwise. Elements are functions of the complex variable z defined by in EDS:

$$f_1(z) = -z, \quad f_2(z) = z, \quad f_3(z) = -1/z, \quad f_4(z) = 1/z;$$

Here f_1 is identity element. f_3 and f_4 are like operators of Heisenberg operator algebra; not only linear equation but a transforming function of itself as well.

Möbius field is a finite commutating Abelian group with respect to the composition of *composite functions*. f_3 & f_4 are complex transformation functions. They are twistors. The first one inverses the function and second one inverses the function also with change of sign.

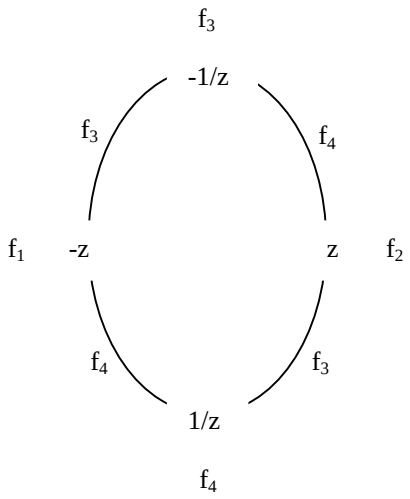


Fig. 4 . Möbius Group of functions. It's valid in rotations on both ways.

$S = \{f_1, f_2, f_3, f_4\}$ whose elements are functions of the complex variable z. It is a finite Abelian group of order 4. Mobius field, like every field, is a group under the operation of addition. This group is commutative (or Abelian). Similarly it is found that the non-null elements of a field form a group under the operation of multiplication and this group is also commutative (or Abelian). (Modern Abstract Algebra - Gunadhar Paria) [21].

Composition table is given below: ['o' – group operation : addition or multiplication]

o	f_1	f_2	f_3	f_4
f_1	f_1	f_2	f_3	f_4
f_2	f_2	f_1	f_4	f_3
f_3	f_3	f_4	f_1	f_2
f_4	f_4	f_3	f_2	f_1

Table 1.

We arrive at the above structure in Fig.3a by normalization of Möbius Group of functions. And when one goes to normalize such basic units of elements, it becomes self-evident that, here, *complex function is simply a 'root-over function'. Thus, f_4 or f_3 inverse a complex function simply by imposing (or removing) 'root-over function' with or without change of sign.*

In both directions (Fig. 3a & 4) rotational invariance is conserved. So, Möbius transformation satisfies Lorentz transformation.

1.4 Null dispositions in FD & ED

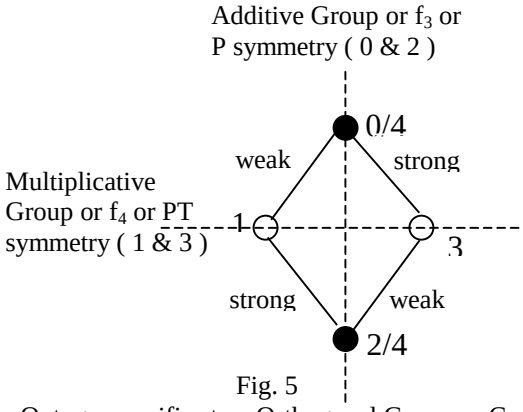


Fig. 5
Ontogeny unifies two Orthogonal Groups – C symmetry
Two Fermionic Nulls or FNs are in polar disposition and Two Bosonic Nulls or BNs in equatorial one.

Gravity or Fermionic dynamical system splits Bosonic system and Energy or Bosonic dynamical system splits Fermionic system.

In ED all nulls conglomerate to single Null. In EDS the field of Additive group action is imaginary number system. Its identity element is '0'. It always imposes finiteness. P-symmetry gains its strength in Gravitational field when strong PT-symmetry gets exhausted at Fermionic Nulls. The field of Multiplicative group action is Real Number System. Its identity element is '1'. It always imposes infiniteness. PT-symmetry gains its strength at Bosonic Nulls (BNs) where P-symmetry gets exhausted. C-symmetry is conserved in Dirac space. It is deeper symmetry that has no mathematical expression like other two: P (f_3) & PT (f_4).

As these two group actions are robust and orthogonal, one cannot influence or nullify other. There is no scope of elementary fraction. Their bifurcation is only apparent in the perspective of FD. Any emergence can occur must contain both symmetries (P &PT) and involves all of its infinite companions self-similarly. This is the basis of Feigenbaum 'Universality' [7]. Here, in EDS whatever strong infinity imposed by PT-symmetry (P-symmetry in GDS), P-symmetry (PT in GDS) ultimately makes it exhausted. And whatever strong finiteness P-symmetry can produce towards '0', PT-symmetry spreads it infinite topologically.

1.5 Journey on topological model of Möbius strip

Journeys along the strip experiences divine cognitive designs of self. Journeys are of three types: stimulated finite journey executes volition; non-stimulated finite journey eventuates classico-quantum measurements and non-stimulated infinite journey volunteers autonomy.

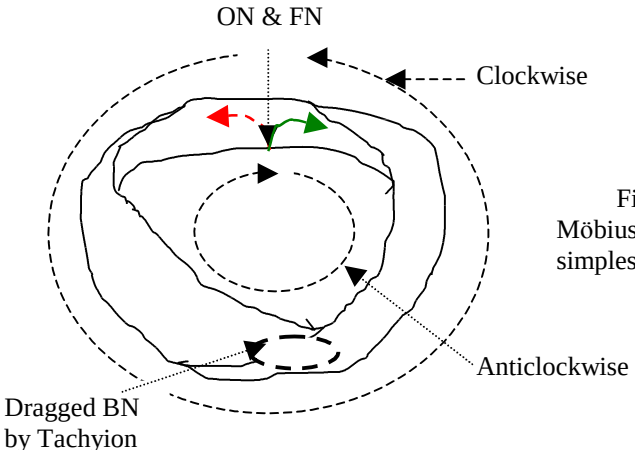


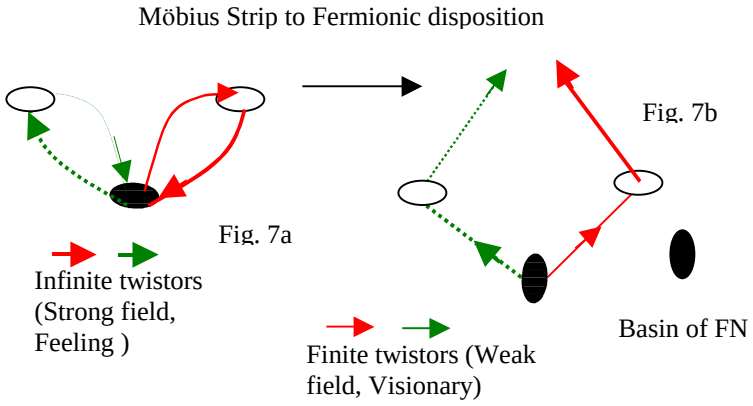
Fig 6
Möbius Strip in its simplest form.

Here, one can see, actually what happens in a Möbius strip! Here ½ spin Möbius strip is shown in Fig. 6. Journey always starts & ends in couple in Euclidean space. Finite journey always start without at '0D'-Ontogenic Null (ON) in EDS and within at '2D'-FN in GDS. ON is whitehole at other side of a blackhole. Couple always maintains 360-degree gap or 'even space'. Free zone between two twistors (f_3 & f_4) at the edge of central area supports additive group action. It achieves at potential extremes i.e. maxima along convexity and minima along concavity at the height between two arms of twistors. It is spinor space that supports multiplicative group action of Bosonic Null (BN), shown as dashed ellipse (Fig. 6). Here, after completion of 180-degree journey they are about to nullify each other and go into self-decay. This is P-symmetry where function is inversed but sign remain unchanged. Reality remains ignorant of imaginary threat but PT-symmetry becomes strong. Here, it with the help of C-symmetry makes reality immortal in subgroup's lifespan by repeated reincarnation of self-similar journey. Also the convention of clockwise rotation with right hand twist and anticlockwise left hand twist is established here. It simultaneously happens in cases of both complementary systems that are evenly spaced or 360-degree apart. Thus two systems retain their identities. One should enjoy verify this important juncture on real strip situation. One

can also note that PT-symmetry defines anti-symmetry or orthogonality. EDS always runs clockwise along convexity i.e. exposed surface (outward) in forward time and GDS anticlockwise along concavity i.e. hidden surface (inward) in backward time. In FD, after completion of 720-degree journey one does not reach the same point; instead gets updated continuously along both forward and backward times. Here, present motor wing behaves as sensory wing for next motor one. In ontogenic context P & f_3 and PT & f_4 are synonymous. In terminology the use of symmetries (P and PT) in ED and that of twistors (f_3 and f_4) in FD are more conventional.

1.6 Journey along a cognitive fermion

Cognition is based on tuning electron or electrons and cognitive model is based on Möbius strip. Here, two illustrations link figurative expression of journey along M-strip with that of. Fermion.



Two wings of fermion are termed graviphotons (GPs). Right one (Lt. in Fig. 7b) is sensory and left one is motor conventionally in both the systems facing forward.

2. ANALYSIS OF SYSTEMS

Fulcrum of GDS (Inner Null) is on '0'-null at '∞' and that of EDS (Outer Null) is on 2nd null at '0' (Fig. 13a & b). GDS can continue indefinitely in its negative-real journey towards condensed past of singularity. Its negentropic path runs along momentum vector of anti-tachyion. Coincidentally EDS can continue indefinitely in its real journey towards exhaustion by positional diffuseness. Its entropic path runs along positional vector by real drag of tachyion.

Four Null windows of both Inner and Outer Null structures have anti-symmetric elements. Although sequences vary, null nomenclature (Fig. 1) is concurred. EDS sequence is 0-1-2-3-0(4); GDS sequence is 2-1-0-3-2(4). Both the system complementarily composes a converging in or diverging out spiral structure.

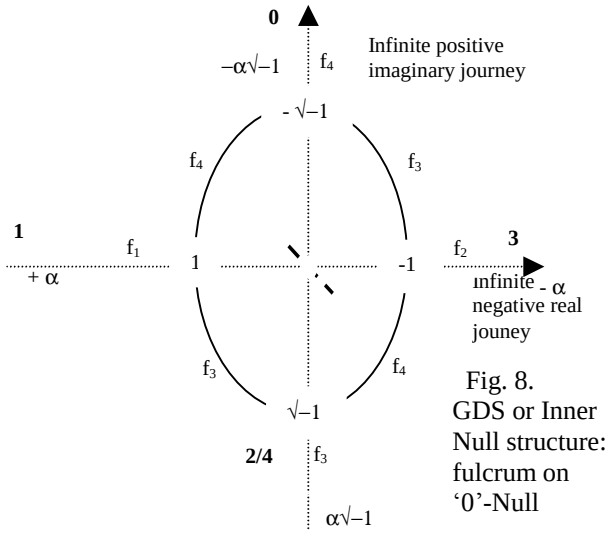


Fig. 8. GDS or Inner Null structure: fulcrum on '0'-Null

When EDS is stimulated deep classically forward in time it has to compensate by backward journey in GDS of same magnitude. Similarly GDS stimulation imaginarily backward in time is accompanied by compensation in EDS forward. In stimulated finite journey two systems run oppositely but coherently with domination in a particular direction determined by initial stimulation whether it is real or imaginary. Sometimes domination remains strong and persists for indefinite period. This steady journey supports transcendation of finite system with sub-critical stimulation within. Non-stimulated journeys start simultaneously in both the systems in proper time without any domination.

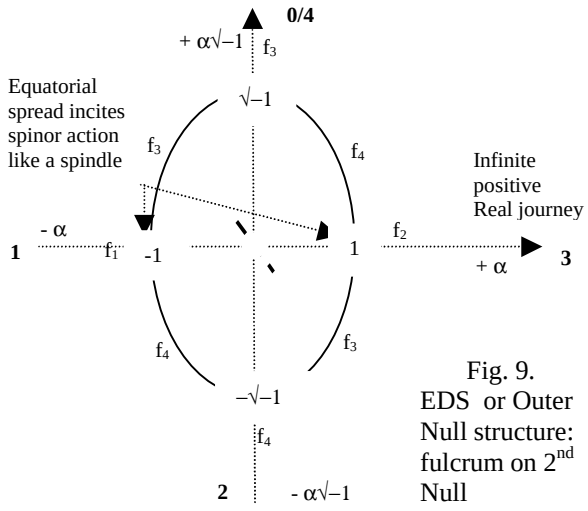


Fig. 9. EDS or Outer Null structure: fulcrum on 2nd Null

2.1 Communication between GDS & EDS

Cognitive system's default mode is staying in proper time along present moments. Non-stimulated journeys supports not only subconscious or super-conscious state but also classico-quantum measurement of conscious mind. In cognitive deduction exact matching of entropy with negentropy is mandatory (Fig. 29). One must has to lift the backlog via GDS. This is

executed by period doubling along oblique cleavage lines shown in Fig.8 & 9. Two components emerged, readily construct complementary system. Cognitive dynamism can shift the system as per natural demand.

2.1.1 Sleep phase and arousal phase

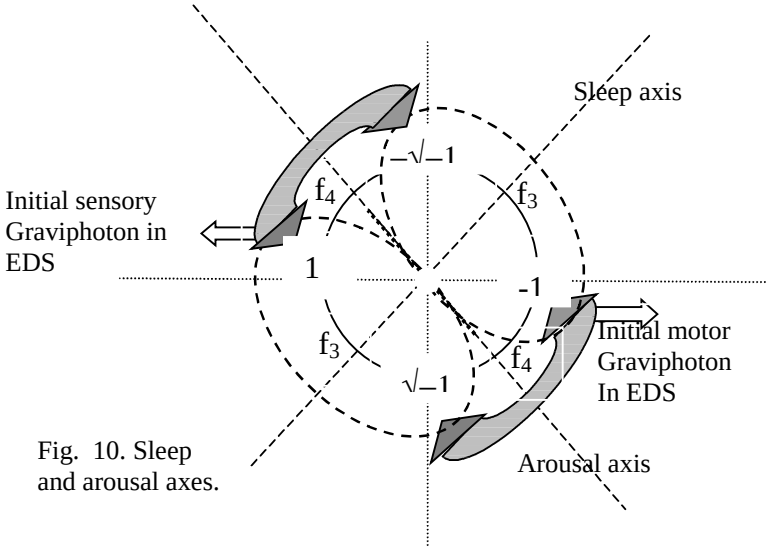


Fig. 10. Sleep and arousal axes.

Although infinitesimally small sleep and arousal phase is associated with every quantum and classical jumps during every processing of information these are not the consequences out of exhaustion of finite system. Being a ***Dynamical system*** a Parent group (whole cosmos on Bigbang) or its smallest subgroup a fermion may go into 'sleep phase' in FD. ED has the propensity to go into sleeping state. It has to remain apparently awakened because of FD in its domination along directed time. Future position in EDS and past momenta in GDS are unknown. But journey of finite system with thermodynamical times unfold these two unknown worlds. Cope up with these new challenges cognitive system tries hunting new prime-antiprime and register it in tuning electron couple for present solution and future reference. To attain this the two systems should converge and concur. Often it creates stress without any solution resulting into exhaustion in f_4 or strong field (in EDS). System goes into quiescence. Here, f_3 in GDS gets strengthened and promotes self-decaying process towards only self or Null. But cognitive system cannot allow it going lost in this way. In finite system P-symmetry also gets exhausted and flickers arousal phase at f_4 in GDS in the form of REM sleep pattern before final awakening.

Null is the central space of Null structures (Fig.8 & 9). Staying within, now it reduces to infinitesimally small, a Singularity of Null-ness. It is an absolute state of Self-designing. Here, absolute means either '0' or '∞' or both. This Null comprises of four fold Null space (Fig 1). It's a sleeping condition of both symmetries P & PT. But, FD subgroups can only sleep; it cannot sublime like ED because it has no tool like C-symmetry in its hand. Null phase in FD is always transient because, here, it is in infinitely chaotic order that designates NREM (Non

Rapid Eye Movement) pattern of sleep. Although P-symmetry cannot break orthogonal relation between elements as shown by dashed ellipse (Fig. 10), yet finite action moulds them it in its way. The orthogonal relation between two groups ($\sqrt{-1}...1$ & $-\sqrt{-1}...-1$) is highly challenged. They are in a torque with deep crease on arousal axis. Both systems arouse in weak field (f_3 in EDS; f_4 in GDS) and sleep in strong field (f_4 in EDS; f_3 in GDS). GDS initiates with sleep along strong negative-real drag and ends by waking up in weak fields. In EDS picture is just the reverse. In mixed systems of classico-quantum measurements status is mixed (Fig. 14).

2.1.2 System upset and Period doubling

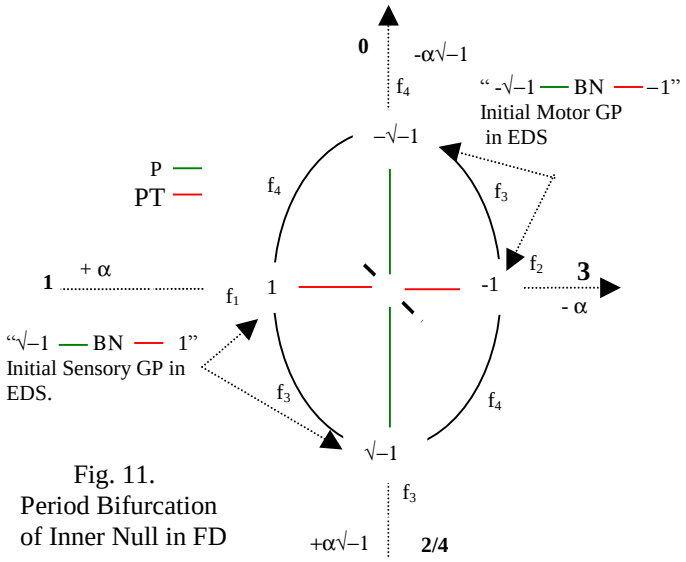


Fig. 11.
Period Bifurcation
of Inner Null in FD

In Fig. 11 additive or P axis is shown in green and multiplicative or PT axis is shown in red. Period doubling with formation of two groups, each is with central bosonic space. It is, now, a new transform of null space stretched by f_3 & f_4 arms. These two groups are initial sensory and motor wings in EDS. They will join by additive group action with 'even space' in between. And to be more basic sensory graviphoton behaves additively (f_3) and motor one multiplicatively (f_4). GDS holds the reverse symmetry. In FD elementary operators of ED, now, function as orbital twistors. f_3 - BN - f_4. This one dimensional triplet structure is called graviphoton (GP).

To go out of the system the first and foremost condition is, to be at hand, some Anti-Null activity i.e. to achieve escape velocity. Nevertheless it will be an Invariant and here, it is obviously the 'c' of Maxwell, i.e. speed of light. It is initiated by Imaginary-Real chaos differentially on both sides of photon's energy. So it's a dual twistor particle! And interestingly, if one exists within the finite world bounded by speed of light other must exist beyond it.

Backward finite torqued screw is a neutrino particle and the other, distracting with infinite forward torque is a tachyion. In its emergence finite energy carries with it '$\sqrt{-1}$' and '1'. '1' is

tachyion. It is a linear hyperbolic space topologically. It is an infinite positive real number series where every number fluxed towards an abstract number within, i.e. '∞'. The other is infinite positive imaginary one, neutrino. One is anti-symmetric to other: Imaginary '√–1' (∞ to 0) and real '1'(0 to ∞).

The other path of period-doublings is orthogonal to first one. Here two numbers remain '-√–1' (-∞ to 0) and '-1' (0 to -∞). They are anti-neutrino and anti-tachyion respectively. One is negative-imaginary and other is negative-real. The later promotes strong backward journey along GDS. In both the periods relation between these two elements is real-strong (PT); that one is the inverse of other with change of sign. Both infinites in these groups are normalized with the unities of same magnitude. So these two groups, basically, are orthonormal functions. One is the only witness of existence of the other. Notwithstanding it is an unstable state and awaits organization in robust 2D fermion-boson structurization (Fig 12 & 17).

Neutrino is finite. Light, being faster, takes freeze shots of any bangs and carries it via GP. This quantitative information is termed here 'Visionary', an abstract field of vision belongs to multiplicative group. Here, a blind person has also visionary i.e. anything quantitative (Objectivism). Tachyionic space is infinite real path. Being speedier than light it flees just beyond, leaving behind something like yeti's footprints. But, it never be a visionary or quantitative like that. It is qualitative information termed here 'feeling', an abstract field of 'touch' where 'sound' (with smell and taste as well) is also included. It belongs to additive group action (Table 2). Thus, tachyion is not absolutely a ghost particle. Its trail is the basis of our 'Subjectivism'. Prof. Narlikar is the pioneer along this path. It is such a path that even if you reach infinite it remains yet to reach.

In EDS multiplicative null provides multiplicative quantitative information of beginning of journey whereas additive null supplies additive qualitative information about the end of it. They are unsolved residues. So, objective sub-consciousness at singularity (FN) and subjective consciousness at event horizons (BN) denotes subjectivism and objectivism respectively as unsolved residues. Two unique and divine way of Null expression holds complementary systems not as mere appearance but with their physical interaction too.

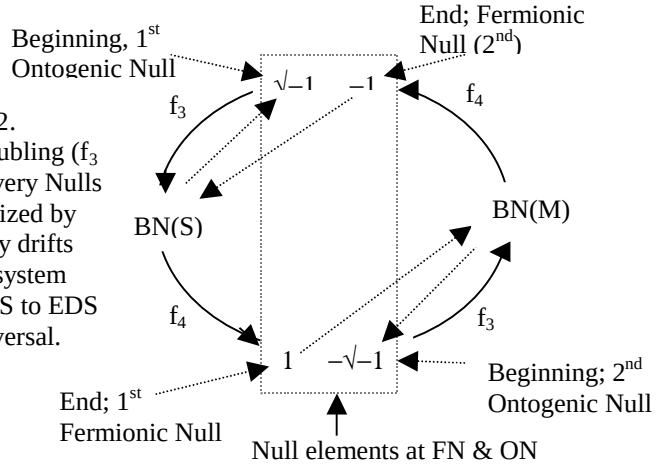


Fig. 12. Period doubling (f_3 & f_4) at every Nulls is structurized by elementary drifts resulting system shift , GDS to EDS and its reversal.

Four null windows are communication channels for elementary drifts between two systems. Stabilization of sensory graviphoton with motor one (Fig. 17) involves shuffling of their order in between, with elementary drifts of infinite twistors (Fig. 2 & 12). Initial GPs in two ways symmetric to x-axis assembles symmetric to y-axis with components specific to time direction (Fig. 3b). This defines gravity and energy in FD as backward and forward functions respectively. Bosonic system condensates bifurcated wings to rearrange within. Thus, two new composite wings emerge with their distinct group identities.

2.1.3. Elements of communications – The twistors and untwistors

Untwisting has deflating execution disto-proximally and twisting has inflating execution proximo-distally (Fig. 13). One shouldn't count un-twistor is a superfluous concept. Indeed, twistor of complementary system may replace it iff the arms of orbit is absolutely rigid yet absolutely supple. But, if one stick to a particular system, say EDS as referential system, convention is necessary to ride along hierarchy. Or, simply, Lt. hand untwist ≡ Rt. hand twist when they are maneuvered opposite. In this journey along hierarchy information of gravity wing is added behind the energy wing with a differential lag. Here is a chart that describes twistor-untwistors in its simple way.

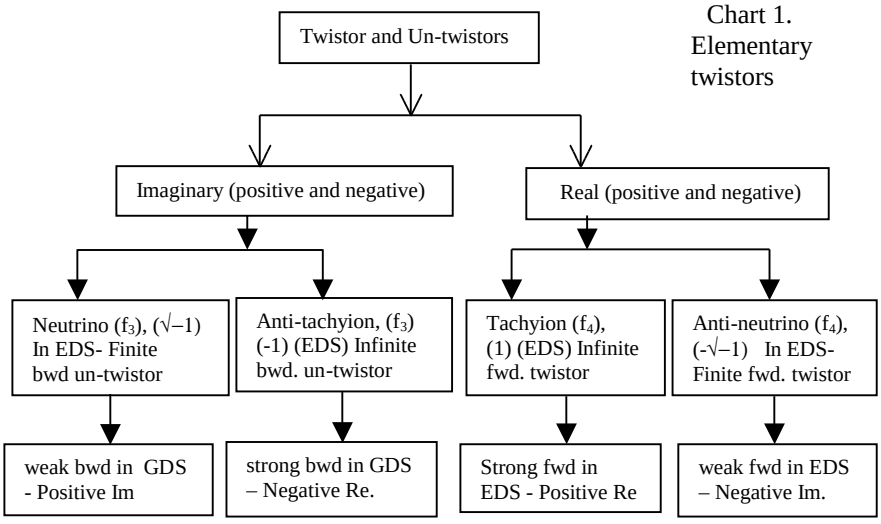


Chart 1. Elementary twistors

One may consider negative-imaginary as pseudo-real; it goes forward although remain fluxed backward by infinite twistors or untwistors' drag. In the same way negative-real is pseudo-imaginary as its journey is towards past. Every null is armed with four possible screw set up. These twistor and untwistor mechano-system makes the model versatile and modular (Fig. 13).

2.1.4 Modular circuitry

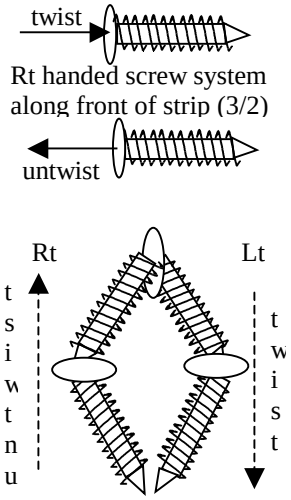
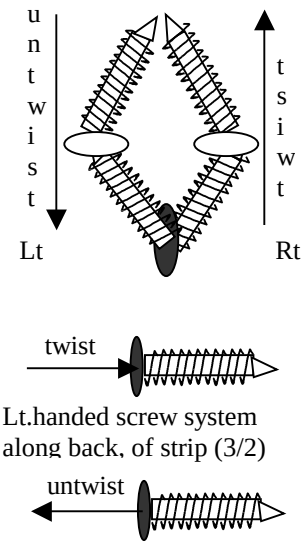


Fig. 13a. Inner Null or GDS; fulcrum - 0D null

Fig. 13b. Outer Null or EDS; fulcrum at 2nd Null



System screw should belong to its own fulcrum. Polar elements impart additive or multiplicative identity of GPs (*-Table 2). These 1st order composite twistor behaves distinctly from mixed order transformation twistor where they have individual sleep-arousal identities depending on its strong-weak potential (**-Table 2). Untwistor hides expositions in sensory wing and twistor exposes hidden processing in motor wing in both GDS and EDS.

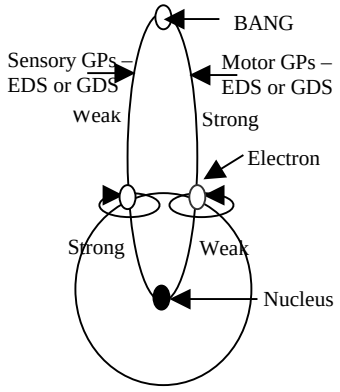


Fig. 14

In finite journeys of 3D (stimulated or non-stimulated) memory system can only function iff the support is on its hierarchy. Stretch of journeys gets extended in EDS along entropy and in GDS along negentropy. So motor wings in both the systems holds the longer track along the journey than sensory one. This is supported on electron couple in associative phase space for deterministic functioning of memory system. Innermost orbit of an atom is shown in Fig. 14 where finite orbit system holds two orthogonal electrons; one is sensory wing electron and other is motor one. Electron is the basic element that has equal play in both classical as well as quantum worlds. So, its position satisfies orthogonal union of GUT expressed by multiplicative group action of BNs at 'event horizon' and Gravity expressed by additive group action at singularity of microtubular electrons or its atomic nucleus in phase space.

At this stage, unknowingly, one may reach another infinitely complemented orthogonal field, Electromagnetism.

2.2 Electromagnetism and Energy-Gravity system

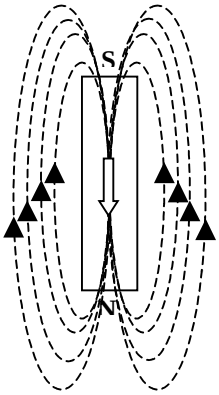


Fig. 15

Twistors, now, may be considered as screw system on gauze potential. Along the time convention, one can verify that Electricity is going forward in time (S -> N) and Magnetism is going backward in time (N->S) Fig 15. Maxwell's field laws knew no mathematical relation between magnetism and electricity with time convention. Nature is its own laboratory for its infinite experimentation and verification. Here, in the context of symmetry and duality, exact incidence of lightening is the electricity in forward time along positional vector matches with the anti-symmetric magnetic field flux of cloud particles in backward time along momentum vector conserving proper time or '0'-symmetry. Spin at BN relates clockwise or anticlockwise with forward or backward simultaneously on same gauze potential. This relation is invariant for any combination of the screws whether Lt. or Rt. and twist or untwist topologically in Möbius strip. Whatever construct of strip one attains by either Rt. hand twist or untwist of the paper, conventions i.e. clockwise with Rt. hand twist and anticlockwise with Lt. hand twist at BNs remain conserved reflectively (Fig 6 & 21). Rt. hand twist or Lt. hand untwist of paper constructs a Lt. handed screw (Fig. 27). It is Rt. handed one reflectively. In this article all Möbius strips are constructed with Rt. hand twist (Rt. handedness). So, here, objectivism is reflective.

Every null conserves CPT-symmetry. So, they are always armed with symmetric twistor system where arms are themselves antisymmetric to each other. BN at horizon cannot distinguish particle antiparticle. It reads neutrino and anti-tachyion (or antineutrino and tachyion) multiplicatively same particle along its symmetrical stretching arms. The spinor space with its arms generates Electromagnetic field. FN/ON at singularity read their composite as Lt. and Rt. graviphotons additively same, along its symmetrical fusing arms in opposite time direction (Fig. 16). It adds nullifying Gravity-Energy. So, every Null represents Steady State where time only starts iff it's proper.

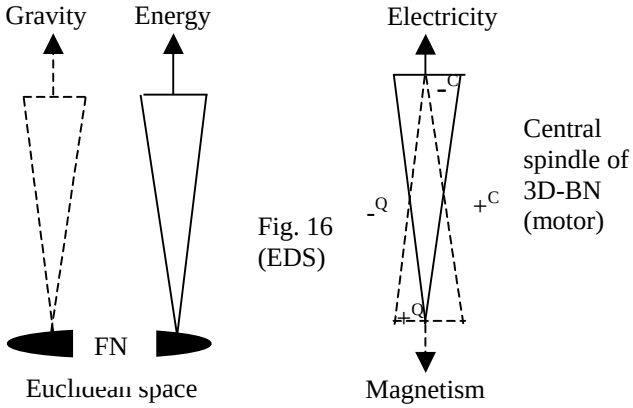


Fig. 16 (EDS)

Both Gravity-Energy system and Electro-magnetism are infinite systems. First one is 1st order fields at FN/ON and second one is 2nd order fields at BNs. Either system, being orthogonal,

infinitely complements in central cruciate structure of ED. Electromagnetism and Gravity-Energy both represents Euclidean fields at infinite and singularity respectively.

Self-designing unfolds in two flavors '*Dualities*' and '*Dimensionalities*'. Dualities and Dimensionalities always coexist.

3. DUALITIES

Ontological undecidability is a long time question on existence everywhere. Duality is eternal. This Duality doesn't excite confusion rather eliminate it. Deciding ability of Duality is very strong. It categorizes all ontogeny related themes into two robust groups. These two groups actually are two null groups (additive and multiplicative) orthogonal to each other.

The strength of the contents of this table is amazing. To remain unbiased one may carry this in every further proceeding.

3.1 Table 2

		Group'0'(Additive)	Group'1'(Multiplicative)
General (Group operation)			
1.	Ontological Undecidability	Form	Structure
2.	Identity element	'0'	'1'
3.	Station at	Finite (Singularity)	Infinite (Event Horizon)
4.	Observation (Null)	Covariance (scalar, +)	Contra-variance (spinor, -)
5.	Existence	Objective sub-consciousness	Subjective consciousness
6.	Symmetry	P-symmetry	PT-symmetry
First order elements & Mixed order elements (Subgroup association operation)			
1.	Uncertainty twistor*	Momentum (-)	Position (+)
2.	1^{st} order fields*	Gravity	GUT forces (Energy)
3.	Numb. System (1^{st} order)*	Im & negative-Re	Re & negative-Im
4.	Measurement*	Quantum	Classical
5.	Thermodynamics*	Negentropy	Entropy
6.	Time*	Backward	Forward
7.	Graviphotons*	Motor in GDS & sensory In EDS	Motor in EDS & sensory in GDS
8.	Mixed order fields**	f_3 (strong in GDS, $-^{C}-0^{Q}$ weak in EDS, $+^{Q}+0^{C}$)	f_4 (strong in EDS, $0^{Q}+-^{C}$ weak in GDS, $0^{C}-+^{Q}$)
9.	Cognitive status**	Arousal in EDS Sleep in GDS	Sleep in EDS Arousal in GDS
10.	Information	Qualitative (Feeling)	Quantitative (Visionary)
11.	Ism	Physicalism (subjectivism)	Mentalism (objectivism)
12.	Cognitive secondaries	Secondary antiprime ($-^{C}$)	Secondary prime ($+^{Q}$)
13.	Number system	Irrational ($-^{C}$, nonzero tensor)	Rational ($+^{Q}$, mixed scalar)
2^{nd} order elements (Higher association or dissociation operation)			
1.	2^{nd} order field	Magnetism	Electricity
2.	p-adicity	Anti-prime	Prime

3.	Number system (2^{nd} order)	Imaginary	Real
4.	Whole Cosmos	Global	Local
5.	Cognitive Primaries	$-^{Q}$ (Psuedoscalar) (Antiprime, 3^{rd} Grade)	$+^{C}$ (Prime, scalar)

There should be no group operation in sleep phase. Spinor action gets activated in arousal phase. Here, one group holds unsolved residue of the other. Nulls are defined by unsolved orthogonal group action. So, cognitive elements of all orders define nulls by opposite flavor and remain under same group heading. These anti-symmetric residues are basis of any cognition out of null. First order elements (marked *) exist as composite particle. They are the result of participation of both neutrinos and tachyions on fractal journey. Higher orders (mixed and second) are concurred by both. Mixed orders, rational-irrational couple, are not free. They only culminate with nullification.

4. DIMENSIONALITIES

If one has to play game against Nature it will choose rules with optimum degrees of freedom as per its bio-evolutes supports i.e. 3; and 4, only when one masters Lorentz transform. In lower dimensionality it is strong but too transient to survive. In higher dimensionality one remains stable but too slow and confused with abundance survive. But phenomena always obey Hamiltonian Principle i.e. infinite economy in dealing with energy, as every existence is a finite energy system. They always pivot on unique Elementary Dimensions or Nulls.

4.1 Two Dimensionality Model

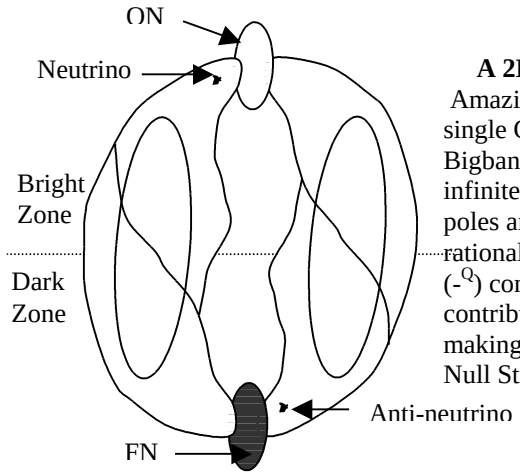


Fig. 17
A 2D fermion.
Amazing strength of single GP can hold Bigbang. It is a soup of infinite 1Ds. Gaps in the poles are bridged by rational ($+^{Q}$) & irrational ($-^{Q}$) complementary contribution at both nulls making 2D a complete Null Structure.

2^{nd} dimensionality (Fig. 17) is infinite deterministically. It supports infinite 1Ds as infinite geodesics can exist between poles. It not only supports 'Steady State' by its null properties but also supports Bigbang on its shoulder. FD finiteness is mutually compensated in the formation of an infinite system equivalent to ED. Electron model has the strength to hold absurd amount energy even up to Plank's level in its trapped bosonic dynamical system, at least theoretically.

But staying without, no finite processing on it is possible unless it is fractal as Cantor dust [3, 7] (Sec. 4.1.1). 2D Null, out of 0D Null, solves any finite stimulation by its infinite reflective properties. This simulates the description of Newton's 3rd Law. It is the seat of 'Mass excitation'. It simulates an absolutely perfect spring coil effortlessly executes amazing inertia. Whenever you go to experiment, it reflects infinite objective properties with absolute accuracy beyond our imagination. So, theories remain open for ever-correction. Its steady state makes every designing anew within Parent group.

This sort of mechanical and quantitative features that we elicit on exciting 2D is because it is additive group. Its identity element is '0'. It is highly deductive without any chance of subjective error. One may be rightly simple; its language is Binary. So, if one can afford a shielded atmosphere that simulates our cognitive system it can produce language also. George Boole (1847) in his great work 'The mathematical Analysis of Logic'[30v] introduced linguistic algebra, became famous afterwards as Boolean algebra. It comprises of two numbers that registers either side of only one phenomena in the system whether energy is flowing (1) or not (0). Afterwards it was developed in computation as machine language. This produces very powerful computer language particularly in cybernetics.

Journey along linear space of 1D vector always drags infinite companion self-similarly. Vector addition and scalar multiplication, in every Plank's time merges with its canonical track along Möbius strip. Here, every journey is unique in every scale. If this Markov's chain along Monte Carlo random bright walk [30viii] is etched on dark singularity of Fermionic Null finite solution comes at once as 'fractal index'. This powerful non-linear deduction emerges in a new dimension in the work of Benóit Mandelbrot [3, 7]. Fractal Dimensionality (1> FD> 2) is highly powerful nonlinear language. Its linear counterpart is a unique string as a record of aperiodic jumps (between '0'& '1') in Machine language.

This, one may appreciate as 'Objective Sub-consciousness'! In spite of its strength its selflessness and purposelessness makes itself lost everywhere. Selfish Consciousness, a quality of 3rd Dimensionality, always exploits this strength by its wit.

But strangely enough if one excites it qualitatively it can answer in that way also!! Edward Lorenz (1963) published a paper on deterministic chaos in slow, chaotic rotation of a fluid on three independent variables. Here the computation was not in digital, as Boole did, but in analogue mode. Analogue system can process qualitative or nonlinear input more efficiently. He didn't put any information of a phenomenon but phenomenon itself in the form of three equations as below [7]: -

$$dx/dt = 10(y-x)$$
$$dy/dt = xz + 28x - y$$
$$dz/dt = xy - (8/3)z$$

The result was stunning for next generation of science, an unending iteration. A point was moving along a trajectory in phase space, around the loops. The emerging pattern is sort of double spiral, like a pair of butterfly wings! We do not yet know how the computer executes this complex phenomenon because it's nonlinear. We cannot read this pattern as we

conventionally read data from a graph. Here the pattern as a whole carries a reflection of that phenomenon. So as input is qualitative response is also subjective here. So in a shielded analogue media if one excite 2-Dimensionality it respond also with its magical presence!! One can find Lorenz butterfly attractor is nothing but the subjective presence of the processing fermion in phase space as shown in Fig. 18. In both the cases pattern is most rich around pair of central hollows (Bosonic Nulls). One may postulate 'Objective sub-consciousness, with subjectivism as unsolved residue, is eternal'.

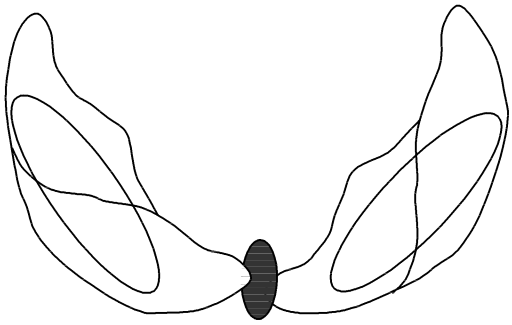


Fig. 18
Infinite 2D *looks as finite Outer Null only* from finite 3D. And when stimulated qualitatively it eventuates *magical appearance of a Fermion: Butterfly of Lorenz Attractor!!*

4.1.1 Journey along 2D

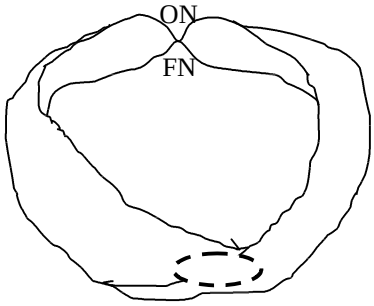


Fig. 19
2D finite strip emerges from infinite Möbius strip.

Finite journey starts at '0'D ON (and 2D FN). It is the source of any amount of gauze potential, infinitesimally small to that of Bigbang absurdity. But, anything it can emit here along one dimensionality must be finite albeit not yet discrete. One may construct these finite models (Fig. 19 & 28) by making the paper ends pointed. These end points represent common beginning (Bigbang) and common end (Bigcrunch) of all 1Ds. The spinor space of BN in '*2D finite fractal space*' has an interesting property. It continues to chop and hide a segment in the continuity! One can name this amazing chopper, *pi-Chopper*. It is simply a '*real form of imaginary function*'. It executes 180-degree spiral cut simultaneously at two sites. pi-chopper, being itself irrational, cuts and hides irrational segments of extension h-bar ($-^{Q}$ or initial GDS at Fermionic end where momenta is crystal solid) leaving exposed Rational Numbers segments of same extension ($+^{Q}$ or initial EDS at Ontogenic end where position is crystal

solid). These ON & FN extreme values jointly highlights objective & subjective micro-finiteness of finite journey (Fig. 20). As both BNs are topologically same, chopping happens in both complementary systems evenly spaced i.e. 360-degree apart. Thus Real-Imaginary number systems transcends to exposed Rational (RNS) and hidden Irrational Number Systems (INS). RNS's inflation is clockwise along thermo dynamical entropy or positional diffuseness. So, INS's inflation must be opposite i.e. anticlockwise along thermo dynamical negentropy or momentum diffuseness. At the end of first 180-degree turn convexity becomes concavity. PT-symmetry twists this eventuation so that RNS always remain along convexity and INS along concavity. At every null, in 2D as well as 3D, ratio of diffuseness or solidarity of RNS and INS is invariant (Fig. 20).

Actually this above cleavages of Re-Im Number system is not a feature of infinite 2D system within but without from higher 3D. Being a finite system it looks 2D also a finite system. Plank is the Philosopher Scientist who first captured this particulate world of quantitativeness (rational) measured by quanta as unit of distinguishability. Here, deterministic existence of the couple built with its stronger companion (irrational) has been overlooked.

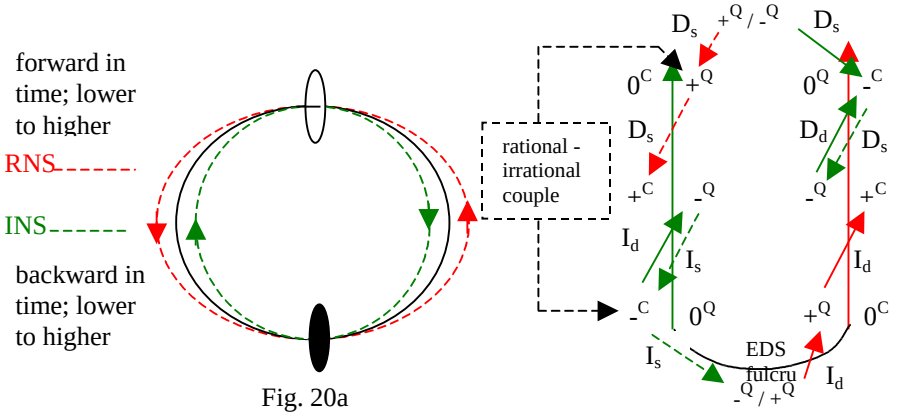


Fig. 20a
Two orthogonal components RNS & INS emerged out of Re-Im cyclic chaos. High energy can only make these uniform dusts. This discrete reality is the undermined 2D-basis of Classical Consciousness.

Fig. 20b
In 3D; I ≡ inflation; D ≡ deflation; s ≡ solidarity/ d ≡ diffusion of position (red) or momenta (green).

The tension of fermion string is an invariant. In case of electron it is its charge [30i]. Each and every journey at one pole invariably ends at other pole; only ride and extension rises with potential. Thus, it always represents unit basis vector as it incorporates one complete photon's journey. The segments of RNS & INS are equal. They are accommodated exactly along fermion string in both ways. This complements all gaps including singularity even by h-bar contribution from both systems (Fig. 17). Thus an invariant grid of objectivism-subjectivism is founded as a playground for mixed order elements. Intelligent design to evolve the initiation should start within the strip with finite flux constrained within a finite segment of the strip iff it appreciates the flux between rational and irrationals by staying on Null within the flux. At critical point this 3-degree freedom incite dimensional evolution from 2D to 3D.

4.2 Three Dimensionality

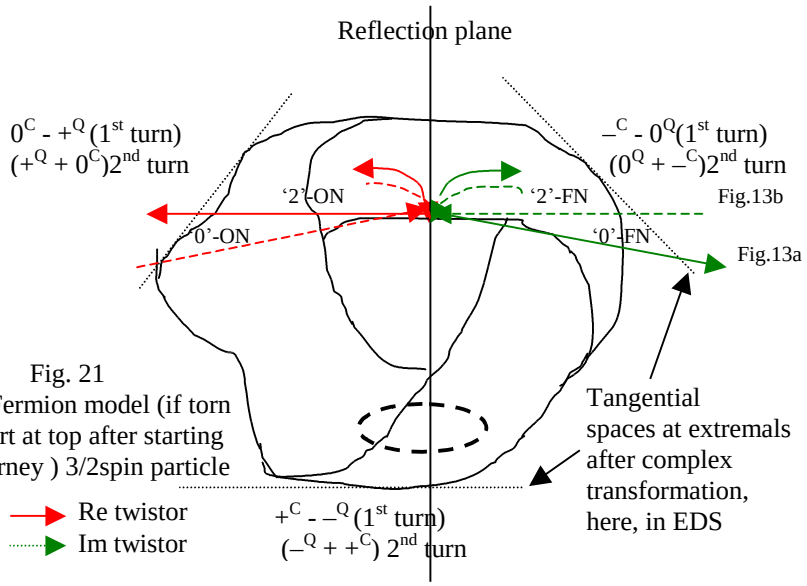


Fig. 21
A Fermion model (if torn apart at top after starting journey) 3/2spin particle

Requisite is same like Two Dimensionality Model, a strip of paper. There one has twisted it only half before joining, here after 3/2 twist.

4.2.1 Important features of Three Dimensionality

1. The basic elements of Three Dimensionality are named here, 'codons'. They are trinary twistors. Every codon, like 'genome', is a 'trinary' element; has three sub-elements. Elements and sub-elements are emerged spontaneously conserving symmetry. Codon the element or complex function gets transformed continually. It gathers, processes and releases information depending upon type of tensors and twistors. Here, for better illustration, codons are disposed horizontally. Actually, during journey it disposes itself continually orthogonal to plane of paper. Middle sub-element, media, remain always within thickness of paper. Two sub-elements in two wings along surfaces of paper add classical (front) or quantum (back) attribute. They are expressed in superscripts. Extremals at tangential spaces prop them. Curvatures are Metric Tensors at bases of sub-elements. In 3D there are two extra conflexures, two shoulders. At Rt. shoulder concavity extremal is convexity hidden ($+^Q$) and at Lt. shoulder convexity extremal is concavity exposed ($-^C$). Thus in 2D one finds convexity and exposed all the same but here two distinct features (+ & ^{C}). In discrete consciousness of higher association on tangential spaces of 3D, contrary to 2D, rational are hidden and irrationals are exposed. But, the rational-irrational grid is conserved in both. Medias are twistors. Euclidean FN, ON and BN (ED hidden within spinor space) are '0' metrics. Left side sub element is the input and right side sub element is the output. Each unique codon must include one basic twistor and two tensors. For example, $-^Q ++^C$ is an element. Here, $-^Q$, subjective quanta is input; '+' (Real twistor) at BN is media; $+^C$, objective classical is output.

2. Different journey along 3D-model (Fig. 13 & Fig. 21).

- § Fig. 13a GDS: First 360-degree Rt. untwist (dashed lines) along front (output classical) at ON (‘0’-Null) followed by second 360-degree Lt. twist (solid lines) along back (output quantum) at FN (‘0’-Null).
- § Fig. 13b EDS: First 360-degree Lt. untwist (backward journey along GDS is equivalent to forward journey in EDS) along back (quantum output) at FN (2^{nd} Null) followed by second 360-degree Rt. twist along front (classical output) at ON (2^{nd} Null).
  In both the cases second track (motor) is longer than first (sensory) one.

3. In a trinary system there is always a common soup of existence including the thickness of paper. But, objective reductionism lives in binary world. It can never catch the third one, which remains hidden in the middle as media, a twistor. Möbius strip has two sets of three unique ‘trinary twistors’ (Fig. 21). Wing sub-elements at tangential spaces projects beyond the plane of paper. So in 3D one can observe 2D surface from one dimensionality higher. Based on tangential spaces higher association spaces may evolute both in classical and quantum worlds. Discrete spaces along jumps in front and back of the strip designs space-time of our common consciousness.

4. During first 360-degree turn, in EDS, it processes classical sensory input and during 2^{nd} 360-degree turn it exhausts classical motor output. In GDS, in first 360-degree turn there is quantum sensory input and in the second 360-degree turn there is quantum motor output. In other way gravity wing (GP ‘-’) exhibits quantum outputs and energy wing (GP ‘+’) exhibits classical one. It becomes obvious on the strip that when considered individually classical world or quantum world are topologically invalid but their complementary co-existence jointly is valid. Two worlds simultaneously exist. Classico-quantum measurement is exclusively on distinguishable particles. It not only deals particles that obey Maxwell-Botzman statistics but also the particles that obey Fermi-Dirac statistics. They are antisymmetric to each other; one deals real system other one imaginary system. In Fermi-Dirac statistics particles are not allotted with enough space at NTP to avoid overlap. But, here, it is the case only in incomplete space of sensory wing. Bose-Einstein statistics is null statistics. It is the statistics of infinite elementary dimensionality in proper time. Here, particles are indistinguishable. It defines Euclidean space where both gravity at ‘0’and energy at ‘∞’ condensates in proper time, no matter whatever the distance lie in between.

5. So, along the cognitive point of view, one can discover the photons from distant galaxies as ‘Local’ through telescope. On the other hand, whenever one detects a particle in particle microscope it instantly becomes distinguishable in classical perspective. So, here, rational is a finite prime. Bell’s theorem (1964) does not misconceive local realism as imposed by EPR (Hew Price) [30vi]. Here lies the infinite 2D determinism in the background. Everyone will concur with the findings.

4.2.2 Journey along Möbius strip on trinary codons in 3D

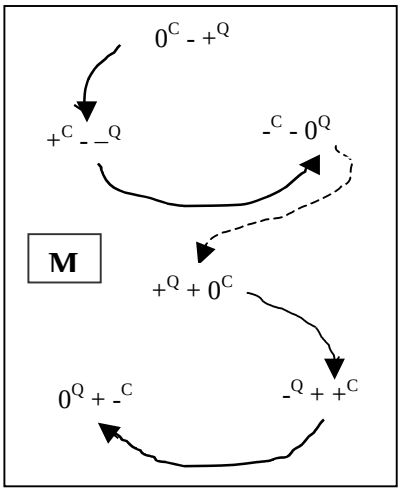


Fig. 22
Single journey in EDS along
Möbius strip

But one can verify that dispositions and functions in respect of GDS (direction reversed) or GDS & EDS mixed motor are equally valid.

4.2.3 Terminology of 3D sub-elements and elements

1. Bases - in wing sub elements or medias
   - § '0' null.
   - § '-' – tensor or twistor termed as 'momentum' or 'feeling' or 'subjective'.
   - § '+'- tensor or twistor termed as 'position' or 'visionary' or 'objective'.

2. Superscripts – designates attribute of front or back.
   - § C – classical.
   - § Q – quantum.

3. Mixed order and 2^{nd} grade sub elements. They are bivectors thus anticommutating.
   - § $-^C$, $+^Q$ – irrational and rational those are finite antiprimes and primes.

4. 2^{nd} order sub elements. They are commutating.
   - § $+^C$ is '0'- grade or prime scalar sub-element.
   - § $-^Q$ is 3^{rd} grade or trivector or pseudoscalar sub-element.

5. Trinary codons or twistors
   - § $-^C+0^Q$ or $-^C-0^Q$ – strong field, mixed order field – it is anti-commutating.
   - § 0^C-+^Q or 0^C++^Q – weak field, mixed order field – it is also anti-commutating.
   - § $(+^C \pm -^Q)$ à $-^Q0+^C$ – electromagnetic field, 2^{nd} order field – it is commutating.

4.2.4 Description of journey

$0^C - +^Q$ *'Arousal of GDS along negentropy in search of antiprime in weak field'*: What is there in immediate future appears before us as finite classical null (or null classical), 0^C. It has no meaning (no thing but not nothing [3]). It may be of any intensity from any bang, Big to small that depends upon the design of Cognitive Dynamical System at

present moment. At present moment one is furthest from Bigbang, classically, in expanding universe. Or in other words, always it is receding from Bigbang by crumpling within itself. Its future it cannot see as it is in dark zone. Its past is bright and not static but ever dynamical. From every corners of its finite sensory domain, information converges on its graviphoton by simultaneity [2] with ever-new pattern. This is really a convergence when there is no way out but about to fall in the quantum black hole [14]. Connectoplasm of our cognition system switch on processing of tuning of unique electron in microtubule [13, 23]. But we can only interpret future in the eyes of past. 0^C is also cooked latest by nature out of the past. Concerned electrons of microtubules are collection of all nucleated electrons tuned or untuned. Bigbang is the definite place for catching position quantum ($+^Q$) because there it is crystal solid.

The kinetic energy (from any crater either ON of Bigbang or any small classical bang) received at antenna of sensory graviphoton creates a whirlpool by the effect of imaginary twistors. Absolute white Plank's energy begins to catch darkness (weight functions) and becomes heavier as vaporized mass in fractal space. Neutrino, momentum twistor, with its backward twist dims the energy more and more. Yet, photon is a bit stronger reach BN.

$+^C - -^Q$ *'Antiprime search by GDS in Electro-magnetic field'*: In this spinor space p-adicity is generated. It is 'energy excitation' on $-^Q$ justifying release of introduced weight functions. $-^Q$ is a macro-element in imaginary world. So bosonic null solves '*initial value problems*' by '*boundary value problems* [25]. Untwist aligns this implicit Bigbang data, hunted from back, at back of motor wing in FN with differential lag.

$-^C - 0^Q$ *' Sleep of GDS in Strong field as null quanta leaving behind all isms'*: It is completed by irrational inclusion on release of dominated weight function of rational. Weight function never gets vanished in this incomplete space of sensory wing. On stimulated journey 0^Q is not reached as in Fig. 30. Beginning and end problem ever-remains. But subconsciousness ($-^C$=$-^Q$) that incorporates information beyond conscious sensory range reaches FN. This affords awaken infinite system crossing the barrier of reflective space.

Singularity

'Catching antiprime i.e. time or infinitely condensed space of rest infinite journey other than present single journey, as unsolved qualitative residue':

It is Bose-Einstein condensate. Here the fermionic null of tuning electron condensates with all nucleated (Sec. 4.2.7) electrons. Frölich's work is a milestone in Cognitive Science. He showed that shielded MQS in biological system support this super-cooled state even at higher surrounding temperature [6, 23]. As sensory journey reach its completion all boundary problems it carried in this condensate phase get solved at once 'out of the blue'. Thus it may be termed as 'Residual Space' that designate time that is exhausted in motor wing. This is quantum-birth [30iv] as reincarnation on q-death at 0^Q! Here, it may get mode locked with tuning orthogonal electrons as new higher anti-prime. '*Cognitive Dynamical System*' uniquely tunes only the fittest electron.

$+^Q + 0^C$ '*Arousal of EDS in Weak field'*: Gravity being related orthogonal can never nullify energy. It sends back what it received i.e. '0^C'. Finite 3D-Classical Null bursts into lucid Illumination within the gloominess bounded by event horizon.

$-^{Q} + +^{C}$ *'Enliven the prime in EDS in Electromagnetic field'*: What one sensed does not come to be real unless it gets expressed in motorway. And what just missed in black hole now incites as momentum quanta. It is the seat of subjective consciousness where objectivism is explicit. On non-stimulated journey one gets binary expressions in 2nd order, ($+^{C}\pm-^{Q}$ **à** $+^{C}0-^{Q}$). At event horizon one can get highest entropy-negentropy ever experienced before. Ambience is simple yet complete. Weight functions are exactly free. One realizes orthogonal identity of space and time. This holistic beauty always keeps one awfully charmed. One can only realize but take any snap shot. It cannot capture the essence of basic null instead; the vector of film along the span of shot remains as unsolved impurity.

BN spinor space originates qualities. Being at null, qualitative residue of FN as Global information or time forms the boundary of classical local ($+^{C}$), i.e., unsolved residual quantity representing space of present moment.

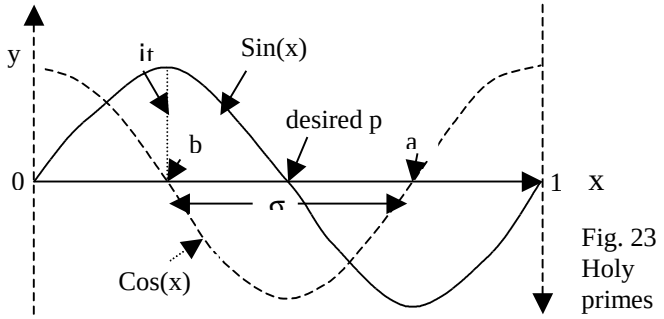


Fig. 23 Holy primes

One now may appreciate how prime is reached in functional space. The figure above depicts how one arrives at '2' as a prime. Cognitive system in the process of tuning the electron stores memories and keep it labeled on primes for ready future reference. Just with the beginning the unit '1' is created. Sine function is at '0' at Bigbang and Cosine function is at '0' at Bigcrunch. But cognitive system continues recon something new. It has to label next. As Cosine function, here an imaginary function runs backward in time. It instantly puts its two footprints 'a' & 'b' on null line. Thus σ now represents local space of cosmos 0 – 1, infinite within its finite frame. With higher and higher primes this σ segment will be smaller and smaller. But in finite journey along Möbius strip higher prime designates higher potential status, higher ride along strip with higher stretch of prime. This exacts exponential (logarithmic hierarchy) relation between neighboring tracks. This is a self-similar journey. Gradient of the slope of this journey with the asymptote (x=y) in log-log scale defines the system as 'C' of Julia, an invariant to the subsystem (Fig. 3b; Sec 4.2.7). Along its journey in FD every system reduces infinite to some selected stations on finites in front and back in priori!! Towards front Sine or real function will have no problem to catch the desired prime at the middle on the central real line ($\sigma = 1/2$) (page 218 [25]). Nevertheless it is an invariant representing real extension 0-1 i.e. Bigbang to Bigcrunch at present moment. And, 'it', the antiprime defines the unique time.

Riemann (1859) perceived the deeper feature of the distribution of primes. He denoted the resulting function by ζ(s). It can only be gained by allowing 's' to be a complex variable. Since, it has been known as the Riemann zeta function:

$$\zeta(s) = 1 + 1/2^s + 1/3^s + \cdots\cdots\cdots\cdots, \quad s = \sigma + it$$

And, BN has the unique complex number in his hand i.e. $+^C0-^Q$.

$0^Q + -^C$ *'Sleep of EDS in Strong field at release of emotions'*: It is the origin of pure language; that language which is qualitative out of no ism. It is the important expression of Music and Arts. The language we produce in day-to-day activity is mainly objective classical ($+^C$). Most importantly $-^C$ is the space released globally as classical negentropies exacting the crunching ($+^C$) during processing. One end merges as before updating ontogenic null and stimulating another journey. As it is subjective it is the seat of intuition. Here keeping a foot on present time vector very fascinating higher-level organization occurs.

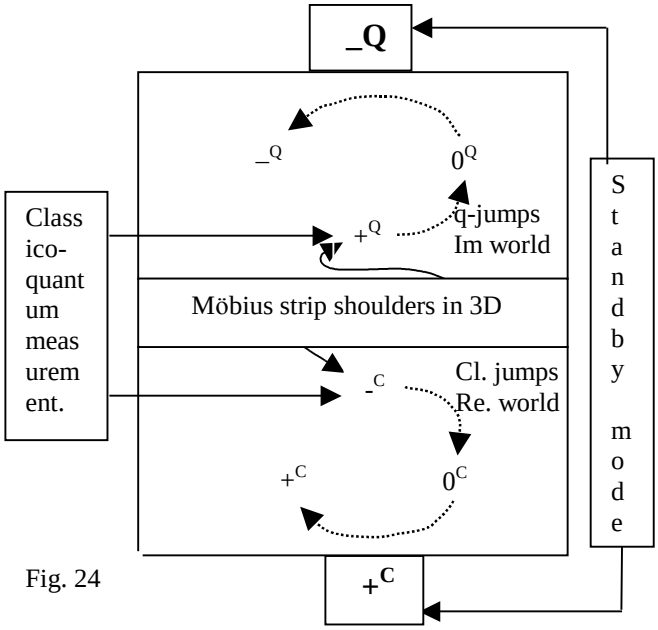


Fig. 24

It emerges up and down from the plane of paper and creates their own ambience, a new higher organization '*in tangential spaces*'. So, system can switch 'off or on' different segments of the Fig. 24 as per its need. Here, it may choose one or combination on three types of journey.

- Voluntary mode: Firstly, on stimulated finite journey, there are discrete tracks where ends ($-^C$ & $+^Q$ as classical and quantum discrete jumps) emanate with spiral spurting beyond both surfaces of the strip. On seeing 2D from front side it had a subjective impatience to make a show with classical tools only. Subjective classical takes discrete leaps and taking discrete supports on 0^C reaches its culmination objective classical $+^C$ (Fig. 24). It interprets 0^C as classical zero: 'some thing was present and now absent'. Out of residual space of FN it's final processing remains incomplete. Rather it has to remain satisfied with marginal error of tangential spaces. It cannot build any new

primes or anti-primes but has to select one combination out of old ones in its singular journey. But here one can do what it really wants to do. It is the 'left mode (discrete) consciousness' very sophisticatedly developed in Human Brain. Lt mode consciousness dominates over sub-consciousness by its strength and sub-consciousness dominates where consciousness hibernates [25, 26, 27]. This path is taken in another use in reflex actions where sleep is suddenly broken. Promptness is more demanding than exact solution, may it be over do or under do.

Lt mode consciousness of human brain in discrete state space steps out of subconscious phase space as 'Nature's robot'! Subjective momentum in classical reality, i.e. in front of all witness, gets a solution of its objective classical position. It is no doubt a figment of movement at one's will, a figment of locomotion in its primitive form. But, 'subjective consciousness' is something more. Here we live with others, communicate linguistically. We enjoy world of classical reality. It gains the essence of classical objectiveness; wholeness in the form of reality not only can be enjoyed but also be shared with others. With its long journey of perseverance FD generates such an eclectic complacence. This makes this journey, albeit fractal yet, difficult to forget.

This fractal 3D, with two tools ($+^C$ & $-^C$) as variables, has an inseparable relation with 2D rationality-irrationality. One can work consistently with real tools if they are one level restricted to number of freedoms (Gauss [2], Gödel [8, 9, 10]). Their power reaches extra-ordinary level when both Ds function jointly. The result may be immortal Classics like Einstein's $E = mc^2$, Bach's Canon or Tagore's Geetanjali.

§ Classico-quantum measurement mode: Non-stimulated finite journey incites additive group action on BN. Inspite of being a spinor space it supports both phenomena! Skiing from the extremals of two shoulders in 3D strip irrationals and rational escape as classical and quantum jumps respectively and converge towards BNs. In sensory wing there is always shortage of space that at least be Heisenberg's uncertainty. So, there is an overlap exacting the ground for Fermi-Dirac statistics. Here, weighted rationals has the tendency to nucleate matter particles (secondary or finite primes, $+^Q$s) as doughnuts where irrationals remains as intervening spaces of Leibniz (secondary or finite antiprimes, $-^C$s) [30xi] (Fig.28). But along longer tracks of motor wing their functions are exactly free. On this asymptotic Null, by asymptotic freedom, mixed order fields (weak and strong) culminate as 2nd order field (electricity and magnetism). Thus, in motor wing of EDS on position vector (+), $+^Q$s are added on position twistor upgrade to electricity ($+^C$) and $-^C$s losing strength degrade in solidarity as magnetism ($-^Q$) (Fig. 20b). Background of long motor track stretches shorter sensory track in absolute churn. Whatever design emerging in this incomplete space of sensory wings in 3D is universal in reference to the background of rational-irrational (2D) and Prime-Antiprime (4D) grids.

§

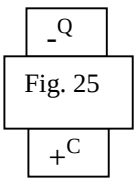


Fig. 25

Autonomic mode: On non-stimulated infinite journey one can reach final stations, $+^C$ & $-^Q$, transcending classico-quantum discrete journeys yet dispositions are same as BN. It is a super-conscious state ($+^C \pm -^Q$) attained by

journeys along electron with motor wings of EDS & GDS (Fig. 29). Shielded finite energy system uses this 'stand by mode' very often to conserve energy instead of sleep. Here, discrete tracks in tangential spaces are also canonical where there is no waist of energy. Classico-quantum existences merge with background. Matters dissolute into patterns. It is phase of continuous systemic tuning involving all nucleated electrons at random along definition of the system. Phase space of 'awareness' is infinitely rich as this 2nd order field considers everything in cosmos.

4.2.5 3D Geometric Algebra [30ii] on Möbius strip (infinite journey):

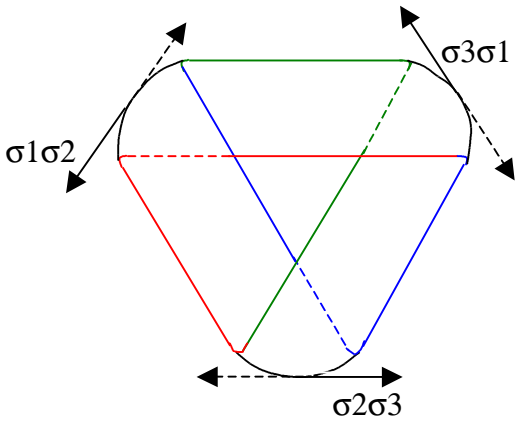


Fig. 26
Basis vectors:
σ1
σ2
σ3

§ σ1, σ2, and σ3 are orthogonal basis vectors at 'central open-angle triangular space'.

Left hand relation at 'central open-angle triangular space'.

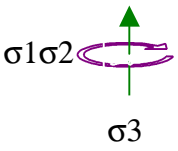


Fig. 27

§ It is self-evident from the Möbius strip and above figures
$\sigma1\sigma2 = i\sigma3$; $\sigma2\sigma3 = i\sigma1$; $\sigma3\sigma1 = i\sigma2$
which is exactly the algebra of Pauli spin matrix. Anti-commutating nature of ½ spin particles after 720-degree rotation makes its space-time exclusive! The geometric algebra is graded algebra. One should be cautious in handling with i. Context in what dimension it is working should be always kept in mind.

§ $\sigma1\sigma2 = -\sigma2\sigma1$. The sweep-area by bivector clockwise from classical aspect exactly antisymmetric to anticlockwise sweep-area by bivector from quantum aspect. $\sigma2\sigma1$ is shown in dashed arrow in tangential spaces.

§ A simple bivector, as shown above, rotates vectors in its own plane by 90 degree, but forms trivectors (volumes) with vectors perpendicular to it.

§ All three basis vectors anti-commute with each other. They are not ordinary numbers. Best they can be expressed as Hermitian matrix. At one time not more than one can be

diagonalized. And, diagonal matrix must commute with each other. It follows that all diagonal elements singly:

$$\sigma 1^2 = \sigma 2^2 = \sigma 3^2 = 1$$

But not both the elements of each have the same sign [16]. Every '+' journey is accompanied by complementary '-' journey making existence valid.

§ Bivectors σ1σ2, σ2σ3 & σ3σ1 are self-evident form the structure. On their multiplication they reduced to scalar unit depicting one complete photon journey.

$$\sigma 1\sigma 2\sigma 2\sigma 3\sigma 3\sigma 1 = 1$$

§ The trivector σ1σ2σ3 commutes with all vectors, and hence with all multivectors and it is the highest-grade element in the space called pseudoscalars with the special symbol i (represent volume).

Let the symbols σ1, σ2, and σ3 denote three arbitrary objects for which one can define an associative operation of multiplication among them. Just with The Bigbang all geometrical objects were created. One can call the set of objects generated, by all linear combinations of all products of the basic three objects, the geometric algebra of Euclidean 3 dimensional space iff the operation of multiplication is distributive with respect to the sum and the basis vectors square to '1' and anticommute with each other. Now the multiplicative action of spinor space at Bosonic Null can reduce all 'i' but it cannot nullify scalar element of space under the additive processing of FN. It is apparent on diagonalization of Hermitian matrix. It is a real value or magnitude or Local information as $+^C$. Its orthogonal null, i.e. FN, on the other hand, in its additive action reduces all scalars but cannot nullify pseudoscalar under the multiplicative contribution of BN. It is imaginary value (in 'i'), Global information as $-^Q$. It is apparent on diagonalization of skew Hermitian matrix.

4.2.6 3D Geometric Algebra [30ii] on Möbius strip (finite journey):

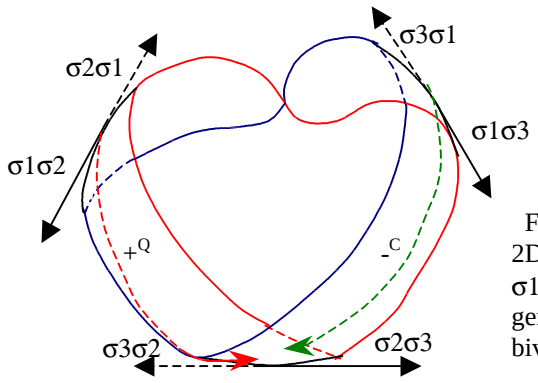


Fig. 28
2D basis vectors σ1 & σ2, here, generates 3-bivectors.

Finite single journey, here, is a 3D journey on 2D structure. It generates 'rational-irrational joint' discreteness. It is most important expression of geometrical algebra to fit with classico-quantum measurement.

Churn in non-stimulated finite journey surfaces central null of BN. It is now ready field for additive action.

§ The space of even-grade elements of this algebra,

$$y = a + ib$$

is closed under multiplication and forms a representation of the quarternion algebra. Explicitly identifying **i**, **j**, **k** with $i\sigma 1$, $-i\sigma 2$, $i\sigma 3$, respectively, one has the usual quarternion relations, including the famous formula

$$\mathbf{i}^2 = \mathbf{j}^2 = \mathbf{k}^2 = \mathbf{ijk} = -1$$

4.2.7 Prime Numbers and Memory elements

Memory system and fertilization of electrons is the basis of our consciousness. There are absurd numbers of discrete photon tracks possible in finite Möbius strip. These are all rational numbers. Similarly discrete graviton tracks are represented by irrational numbers (Fig. 28). But finite energy system can store only few of them those are elementary in the context of p-adicity. Every journey with finite energy on energy excitation at BN wraps up RNS & INS - 2D curtain by tenting accordingly by Electro-magnetic field. This creates prime and antiprime domains representing Cosmos bounded proximally by arousal axis of weak field and distally by sleep axis of strong field (Fig. 29). Or, in other words, GP shrinks to exact prime that gets tuned at microtubular electron in present moment representing self-similar Cosmos (Fig 23). Registration of new prime on rational base eventuates with the background of antiprime on irrational base. It represents holy snap marked by critical momentary nullification of electromagnetic field and gravity in both churn and fusion. Our cognitive system creates this energy in its phase space momentarily by keeping itself sustained at electron volt for snap time exacting even space. This nullifies all fields. Memory elements get mode-locked as equatorial and polar spreads as set of four: prime-antiprime and secondary prime-antiprime respectively. New primes are created whenever cognitive system encounters new challenge. Species is determined by very specific package of primes (with antiprimes) that is acquired by inheritance in supercoiled form as minimum. During fertilization to become zygote proper time define the system ('C' of Julia) by nucleating hierarchically all primes and antiprimes relevant (Sec 4.2.4)! I owe to Jack Sarfatti's relevant work in this arena [30iii]. But this model supports extension of nucleation occurs in both ways of time on present moment. Those are for simplification may be termed cosmic (Wallace, A.R. [24]) as they are not determined by parent genes. Primes & antiprimes denote classical entropy and quantum negentropy ($+^{C}0-^{Q}$) of a system. Or, simply, they define null or asymptotic dispositions within a system. So 'C' of Julia is, here, zero. But system's finite time always reflects through it as systemic entropy and negentropy ($+^{C}\pm-^{Q}$). Thus, 'C' of a particular subsystem is represented by two lines in EDS and GDS satisfying asymptote as their line of symmetry (Fig. 3b). Most of the primes and antiprimes remaining unfertilized holds majority of subconscious mind. Only some of them get fertilized, mode locked and become functional as memory elements. Huge fresh primes are harvested at birth. This process continues later usually in low pace. Prime-antiprime fertilization is always along path of nucleation hierarchy, so system-selective. It is termed mode locking [7], systemic incorporation as memory element. Cognitive system is extremely

economic dealing with prime-antiprime hence places them in different memory stacks e.g. short, intermediate and long.

4.3 Approach to Four Dimensionality – Minkowski's space

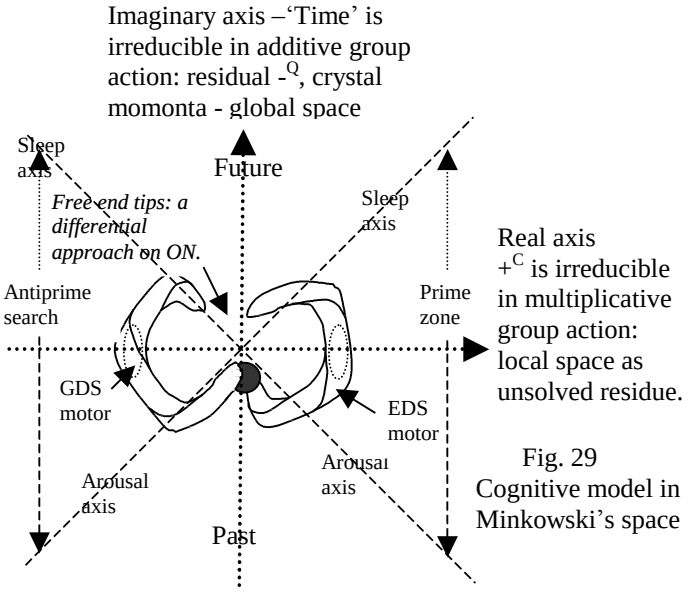


Fig. 29
Cognitive model in Minkowski's space

Any scientific concept should satisfy Lorentz fundamentality algebraically and Minkowski's space geometrically. Appreciation of Self-designing is executed at motor BN. Thus, single motor electron of Fig. 14 justifies itself as the model in this context. Here, on non-stimulated infinite journey in both wings hold longer tracks of same lengths in GDS and EDS. Here, tracks of four elementary particles design the frame be a rectangular hyperbola in 2D (Fig. 29). Möbius strip, a fermionic structure, is the microtubular electron that is tuning in present moment. So, its position is at the center of time-cone. BNs multiplicative groups are at Event Horizon whereas FNs additive groups are at its quantum black hole. In a dynamical system event horizon of q-blackhole of a fermion merges with that of classical one and singularity of electron merges with atomic singularity in phase space (Fig. 14). Mass is an ensemble [11] property, exclusively relativistic one. In FD of 3D, bright zone and dark zones are not robust like 2D (Fig. 17). Here dark extends into bright as dawn and bright extends into dark as dusk bounded by arousal and sleep axes (Fig. 29). But approaching this state one has to be aware of the flux between RNS & INS; thus it has to stay asymptotic for continually higher and higher time and ultimately BE. Dimensional evolution from 2D to 3D satisfies this as one out of the three conditions and this is Hamiltonian Principle [30xi]; a superconscious state defines awareness in its phase space.

4.4 Four Dimensionality

In Four Dimensionality there is unification of RNS-INS on the background of real and imaginary number system. Sharable information is time discrete phenomena where it, on stimulated journey, gets momentarily disconnected from infinite stream. But in time continuous phase space there is no dealing with information. It is rather a non-sharable experience as these phenomena are happening in proper time without any precedence in time direction. Here the stimulations are evenly spaced but both sides are absolute. Harmonic phenomena say that this is equivalent to no stimulation at all. As there is no stimulus in the system there is no scope of period doubling and no scope of verification of exact experience.

4.4.1 Dissociation of Groups in 4^{th} Dimensionality:

4.4.1.1. Mixed order elements at additive nulls (‘0’ Euclidean space): -

Here stimulations (real or imaginary) are simultaneous. There is no domination in either way. 0^C starts at ON finitely and 0^Q at FN in opposite direction in proper time. And after completion of rotation of 720-degree they ends as $-^C$ and $+^Q$ respectively. Imaginary lone vector journey ends in black etching as ‘fractal index’ on 2D surface i.e. $+^Q$ (quantum entropy). Residual white part of 2D surface is Global. It defines residual infinite journeys leaving the only unique place vacant for $+^Q$ (visionary quanta). In ‘0’D-null the picture is classical. The base surface, here, is 4D. The journey started at 0^C and at the end of 3D the outcome is $-^C$ (classical negentropy). The two pictures are orthogonal to each other (Fig. 30). These are ‘secondary primes and antiprimes’. They mutually nullify each other (here $-^C=-^Q$, Fig. 20b) by additive group action (P-symmetry). One has to zoom the black lines. It has nothing to do but get overwhelmed. There are colorful twists, whorls in ever-new patterns in an endless journey. It divinely satisfies the global white part left beyond $+^Q$. So, every phenomenon here eventuates within infinitely condensed ‘0’Euclidean space.

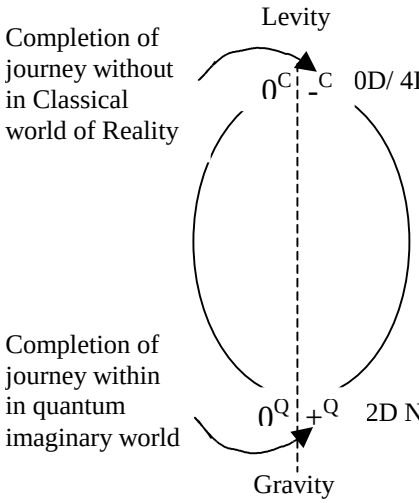


Fig 30. Nullification by fusion: All penultimate nullification uniquely support Mandelbrot world, may it be in black and white in FN or in whorls of colours on ON

Nevertheless these amazing cascades of colorful patterns are classical feelings, a global expression. It nullifies all loneliness; rather may excite ‘existence is global’. Feeling strongly rejects all local confinement and outbursts. It may bring tears of gratitude in one’s eyes.

4.4.1.2. Second order elements at multiplicative nulls ('∞' Euclidean space): -

The functions of BNs, multiplicative groups, await similar fate also. One has got two complex elements, two conjugates $+^{C}-^{Q}$ (z*) and $+^{C}+-^{Q}$ (z) of sensory and motor BNs. On 3D elementary dimension of BN, in absolute churn in its proper time, the two elements create a second order complex attractor function i.e. $z^*z = |z|^2$. Here, one may be very close to spectacular work done by Gaston Julia and later on developed by Mandelbrot [3, 7]. With the churn, spinor space now becomes an infinite Euclidean space and poles are absolutely approximated. This eventuates same phenomena as on additive nulls but disposition here is macro-elementary. It iterates with the attractor $z = z^2 + C$ showing the patterns as just mentioned. This represents awareness phase that described earlier. It nullifies all distances rather may incite 'existence is local'.

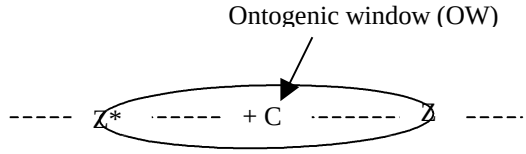


Fig. 3a1
Nullification by churn

In Euclidean topology '0'space and '∞' spaces are all the same; journey back to central null space of Fig. 8 & 9. One may term it as 'Ontogenic window'. It has an instant solution from all nulls. Journey along Möbius strip or Bigbang becomes redundant. One gets every solution ready. Cognitive dynamical system holds Lyapunov exponent [7] within its finite limit naturally as 'C' defines the finite system itself (Sec. 4.2.7) so as the predictive horizon i.e. maximum time interval.

The high work of Schrödinger in his famous but simple equation of 'wave function reduction' [16, 23] reflects here quintessentially. The concept is counter-complementary to the above. Unit matrix (infinite Euclidean space at BN) bifurcates by multiplicative inverse operation into two components z & z* that registers the entropy of Hermitian operator by additive inverse operation. The imprints thus received in the two components when recomposed give Eigenvalues as residues. But there arise some technical flaws and difficulties. Firstly, any stimulation in the form of energy will register only entropy. Eigenvalues are real numbers. So, at best one may construct a secondary prime but can never be sure unless respective antiprimes are simultaneously reached. And secondly, in linear arena on screen or in consciousness (Lt. mode) one is finite going to higher order along diagonal matrix. But in nonlinear arena of cognition one can reach extreme order spontaneously that is far reached linearly. Nevertheless it is a useful tool to define entropy of the finite energy system that excludes high chaotic system specially MQS.

In cases of subgroups [17] 'C' of Julia exists in all its transformations and transcendations. So, along deep stimulation at its classical end there is always a possibility of reincarnation in new reality decided by lower group hierarchy. Here information at subconscious level never dies,

only gets absolute sparse with infinite diffusion in the process of transcendation decided by lower subgroups.

Nature's symmetry always amazes us. Neuro-immuno-endocrinal system is such a deterministic system where during ovulation only single ovum gets exposed in one cycle on the rupture of single Graafian follicle out of 400 mature ones at puberty! At Singularity of Parent group, by definition, fractal dimensionality is in highest order of infinite chaos. And if perturbed beyond a critical point it can only evolve as Single existing entity: Universe involving all of its elements in this Bang.

And, in case of Parent Group, at the Bigend, all information and subconciousness get lost. But in context of FD, what will be the form of next Grand resurrection if any, should not be the interest of any mortal. Notwithstanding, '0'-symmetry that has no parameters prevails everywhere or nowhere as Lorentz Invariance.

5. SEARCH FOR NEW ANALOGY

Reductionism is partially right. Their goal is towards visionaries. Visionary is weak. One can put it down to rational. But feeling is strong. One cannot put it down because it is irrational. So irreductionism, guided by dynamical system, is also partially right and it is the stronger of the two [30xi].

This hypothetical model proposes 'null operation' must be included in any complex functional study. Every phenomenon in nature can be reproduced as unique vortex model. Firstly, with high accuracy, three unique differential equations are selected, that Lorenz did masterly. In analogue this represents the phenomena in the form of 'butterfly attractor'. Here, by complex analysis on this pattern sleep axis and arousal axis is to be delineated (Fig. 18 & 29). As they are at the ends of spindle structure (Fig. 16) there must be a notable change in the pattern. As stretch of path along Möbius strip rises with the initial energy each and every journey will concur with real existence of these axes. Pattern reflects the form of ensembles [11]. Here, one may speculate that the resultant of correlation fractal analyses on finite and infinite journeys in four quadrants, cut by above axes, will be huge catalog of unique sets of four (primes and antiprimes of both 2^{nd} and mixed order). Now, if simultaneous synchronous representation of these functions in both butterfly (2D) and Mandelbrot (4D) is possible their verification will be validated explicitly. Or, a system can be explicitly defined where every quantum entropy ($+^{Q}$) and its classical negentropy ($-^{C}$) satisfy their complementary existence with infinite tiling or no halting [23]. By asymptotic freedom they are reduced to unique sets of 2^{nd} order prime and antiprime.

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    iv) Matti Pitkänen – TGD
    v) George Boole
    vi) Bell's theorem
    vii) Markov's chain
    viii) Monte Carlo path
    ix) Hasse Priniciple or Local Global Principle
    x) Extropy: Joel Henkel <jhenkel@juno.com>
    xi) Comments on 'Irreducible Complexity Revisited – William A. Dembski': Bidyut Sarkar in 'Brainstorms' at www.iscid.org.