Exploration

Complex Möbius Field: The Web of Consciousness (Part I)

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Abstract

The proper time of a particular event is universal. Therefore, all possible individual entities in the cosmos coexist within an inseparable common system; this is zero-symmetry. Time can only begin in two ways: forward as space and backward as time, reflecting the "classical entropy" (visionary field) and quantum negentropy (feeling field) of the subsystem, respectively. However, in the quantum world, completely opposing behavior is observed. Space-time is exclusive on the singularity at which microtubular electrons of a macroscopic quantum system (MQS) are tuned. The topology of the seat of cognition simulates that of the Möbius strip. Here, finite designs produced by mixed-order fields in 3D merge with absolute 2D within and absolute 4D without. This occurs through absolute rotation, i.e., churning and fusion in both directions. Towards this nullification of self-design, complexity is the comprehensive approach, in comparison to traditional reductionism. Nevertheless, every finite or mortal system must have a deeper immortal existence via Lorentz invariance.

Part I of this two-part article includes: 1. Introduction, 2. Fundamental Geometry, and 3. Analysis of Systems.

Keywords: Complex Möbius field, consciousness, self-designing, classico-quantum measurements, Fermion-boson structurization, fertilization of prime, geometric algebra.

1. Introduction

Consciousness is the state of being aware of and responsive to one's surroundings. So, it defines self existentially. However, how this natural software of life evolves within the physical hardware remains undefined. Freeman Dyson[1] argued that "mind, as manifested by the capacity to make choices, is to some extent inherent in every electron." Many researchers worked on science of consciousness, to name, relevant, a few: Chalmers[2], David Bohm[3], Karl Pribam[4] and Stephen P Stitch[5]. Hameroff[6] pointed out that microtubuler electron is responsible for consciousness. Later on Roger Penrose[7] and Hameroff worked together on this subject[8]. In present work it is seen that seat of consciousness is on tuning (processing at present moment) microtubuler electron whose topology simulates that of self-organized Möbius strip.

Proper time or zero-symmetry is an absolute steady state. Terminologically, this state is null, i.e., it is an absolute void. It may be a pure random field (absolutely unbiased discrete series) at the equator. Hence, this is also invariance like a Euclidean space (absolutely unbiased continuity) of

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the pole. Here, the biological self-resulting from the Big Bang is redundant. However, Euclidean space can never resist the emergence of higher-order associative space as a byproduct. Any complex self-organization in these higher spaces can execute its own cosmos instantaneously by stimulating the underlying null state. This behavior reflects the entropy of this state in the context of the remainder of all other subsystems. Further, it is a universal event in simultaneity, defining its exclusive space-time. Macroscopic quantum systems (MQSs) are specially designed with memory functions on their hierarchical bases. The null satisfies charge, parity, and time reversal (CPT) symmetry. Therefore, the laws of nature in the steady state are equally valid for the conventional Big Bang theory. However, in this evolutionary Big-Bang world, C-symmetry is concealed within the singularities of the nulls. Therefore, there is a self-designing, conserving abstract-real duality, along which these universal selections eventuate readily.

In this study, self-designing, conserving abstract-real duality, is examined and discussed in detail, beginning with the fundamental geometry and considering a complex Möbius field. Hence, a model indicating the structure and behavior of consciousness is determined and examined, along with real-world scenarios to which this model is analogous. In Sec. 2, the fundamental geometry is presented. Then, in Sec. 3, system analysis is discussed, while Secs. 4 and 5 present analyses of the system dualities and dimensionalities, respectively. In Sec. 6, a brief discussion of relevant analogous scenarios is presented.

2. Fundamental Geometry

2.1 Cruciate elementary structure (Elementary Dimensionality (ED))

Reality (Re) is the unique multiplicative association at the equator in the case of absolute churning (multiplication) and fusion (addition). This association consists of the coupling of rationals and irrationals derived from opposite poles. Existence, with all its physical and mental elements, is a derivative of null. Here, mental elements are rationals in the number system and in physics, i.e., scalars, whereas physical elements are irrationals and nonzero tensors. Null may exist in two forms: translation and spin. Translation space is Euclidean space, which is additive in nature in the twistor-free zone. Spinor space is multiplicative in nature at the height of the twistor zone. The null state is comparable to the simple harmonic motion of a pendulum, simultaneously from both sides. This behavior is only valid in the absolute state of the cognitive system and oscillates with it. The translation space is at the central position, 0, of the bob, with the kinetic energy being either 0 or infinite i.e., absolute. Another counter-complementary space, i.e., orthogonal to above, spinor space, creates two stationary points at the horizons. Whenever the translation space extends beyond a critical span, this spinor holds it with its twistor arms and spins it absolutely. This behavior arbitrarily creates two orthogonal axes: one having a vertical or polar disposition and the other having a horizontal or equatorial disposition. In the existential real world, the former is the gravitational axis, with the translation space of Euclidean nature defining the kinetic status, and the latter is the energy axis, where time (having spin nature) defines the potential status of the subsystem. These definitions are second-order unsolved residues of orthogonal group nulls. Lorentz invariance, i.e., zero-symmetry, is the conservation of rotation symmetry that includes both (Fig. 1).

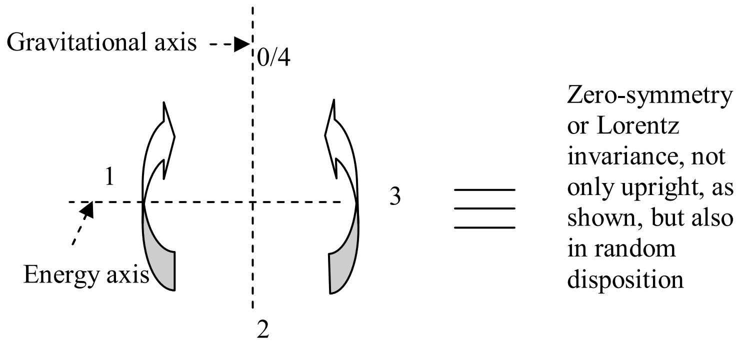


Fig. 1. 4-D null structure.

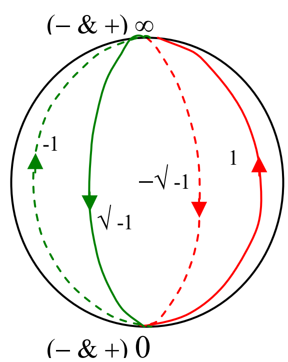


Fig. 2. Re and Im number systems

Re number systems ascend towards ∞ (forward) and Im number systems ascend towards 0 (backward) along the foundation of the 0-∞ conjugate (Fig. 2). This abstract fundamental design is self-fabricated from coupled ring system of h-bar girth (with slit of h-bar length, one slit in each ring, at complementary poles: north and south[9]), mutually settled in orthogonal relation. The two absolute axes' elementary functions are now defined as $\sqrt{-1}$, $-\sqrt{-1}$ (additive axis) and 1, −1 (multiplicative axis), as shown in Fig. 3a. Their differential limits are 0 and ∞, respectively, in 2D-topological language. In the Möbius strip topology, poles are sources and culminating windows of microelements or consolidated elements, and horizons are exhibitions and culminating windows of macro-elements or diffused elements in accordance with their orthogonal relationship. In other words, if gravity exhibits microelements, energy must exhibit macro-elements. This finiteness at macro- and micro-levels indicates that the absolute system is fractal. Further, infinite members with their own unique representations of the cosmos exist. Here, the arena of an orbital system can only register the abstract interaction of two robust orthogonal axes, corresponding to finite or fractal elements in 3D association space. Finite group activities are operations in fractal dimensionality.

2.2 Orbital pseudo-elementary structure (Fractal Dimensionality (FD))

FD automatically ensues upon *"group untwisting"* of a Möbius strip, i.e., *alignment of the pointed ends of paper after odd untwisting,* which corresponds to operation at the same fulcrum. Like absolute systems with absolute axes, such as those discussed above, FD (Bigbang and Bigend at the two extremes) provides representation of the complementation of two dynamical systems. Here, one is the backward-directed (anticlockwise) gravity dynamical system (GDS) and the other is the forward-directed (clockwise) energy dynamical system (EDS). As a result of the exact complementation of these two systems, the orbital system may compose an absolute system.

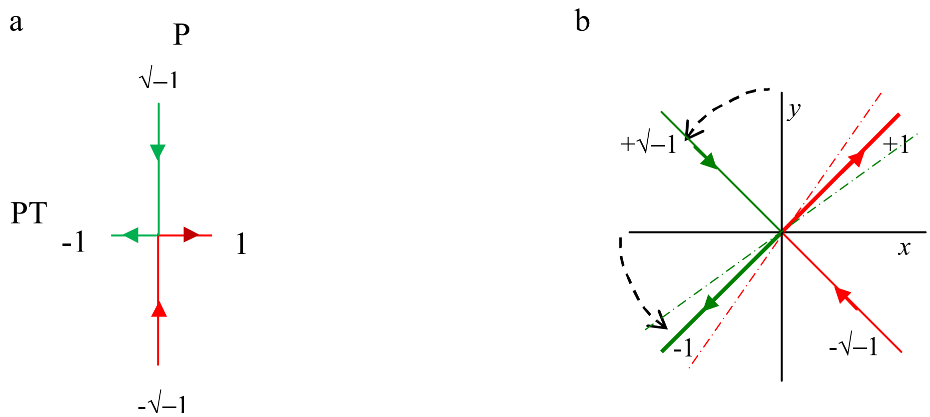


Fig. 3. (a) In ED elementary operators are extremals of the central cruciate structure (which simulates that of semiconductor carbon). (b) In FD they become orbital twistors. Here, both cases, shown, are in EDS. For GDS, the signs, direction, and color are reversed.

The elementary dimensionality (ED, the Steady state) case is a normalized system that is absolutely deterministic. As it represents null in proper time, it is structureless. Null space manifests automatically via absolute churning (indifferent spinning clockwise and anticlockwise) and fusion (indifferent addition in both ways) along this structure in proper time. A cognitive system incorporates both these dimensionalities (ED and FD), diagonal to each other. In other words, FD (a two-axial orbital twistor basis) is associated with ED (two-axial unitary basis) both additively and multiplicatively, in such a way that the neighboring axes of a specific dimensionality are set 180° apart rather than 90° (Fig. 3b). Thus, 4D emerges from 3D, where topological freedom of choice regarding the relation between the axes in terms of collinear or orthogonal behavior coexists. Here, the multiplication peak eventuate addition initiation, where the polar (or rotational) axis contracts in size. Further, the addition peak eventuate multiplication activation, where the rotational axis expands. This inertial stretching-compression behavior occurs automatically when ED accepts FD diagonally (Unimodal coupling).

One may consider this as simple harmonic motion of a pendulum. Hence, a pendulum also pursues a self-similar journey, forward or backward. Its internal state (GDS) is orthogonal to the external state (EDS). In proper time, there is no difference between an infinite journey and no journey. However, if one can stretch in or out of the system, it can witness only one aspect of the strip primarily: either the energy system in forward time (outward) or the gravitational system in backward time (inward). In other words, the pendulum becomes a clock depicting time.

2.3 Möbius group of complex functions

The universal operators shown in Figs. 4, 6 and 7 are simple derivations of the Möbius group functions. This group is comprised of four complex elements $\{f_1, f_2, f_3,$ and $f_4\}$ and related by its own complex transformation functions $\{f_3, f_4\}$, in both the clockwise and anticlockwise directions. The elements are functions of the complex variable z, defined in the uncompromised GDS as

$$f_1(z) = z, \quad f_2(z) = -z, \quad f_3(z) = 1/z, \quad f_4(z) = -1/z. \tag{1}$$

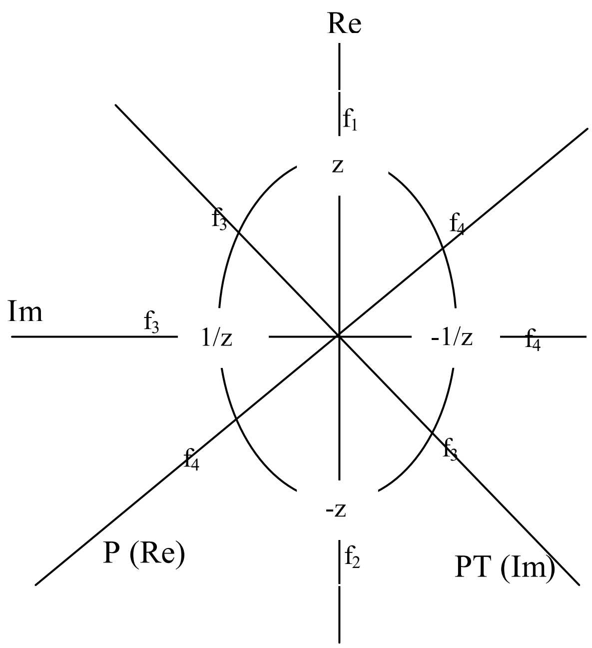


Fig. 4. Möbius group of functions in uncompromised GDS

Here, f_1 at the upper pole is the identity element (Fig. 4), whereas f_3 and f_4 are similar to operators of Heisenberg operator algebra, yielding not only a linear equation, but also a transforming function of itself. Here, f_3 inverts the function, whereas f_4 inverts the function with a change of sign.

The Möbius field is a commutating Abelian group with respect to the composition of composite functions. Further, f_3 and f_4, which are complex transformation functions, are the twistors. When one goes to normalize Möbius group of functions it becomes self-evident that they are simply *unitary function in ED* (Fig. 3a). Here, z represent 1 (Re unit) and its inversion ($1/z$) define the transformation of 1 to $+\sqrt{-1}$ (Im unit) or vice versa where there is change of sign as well as imposition of transformation function i.e., *'root over function.'* So, when one goes to normalize such basic units of elements, it also becomes self-evident that, here, the complex function is simply a *'root-over function.'* Thus, in GDS, f_3 inverts the function with a change of sign (i.e., PT-symmetry), whereas f_4 inverts only the function (i.e., P-symmetry) (Figs. 4, 7; Sec. 3). PT- is designated as strong and P- is designated as weak functions.

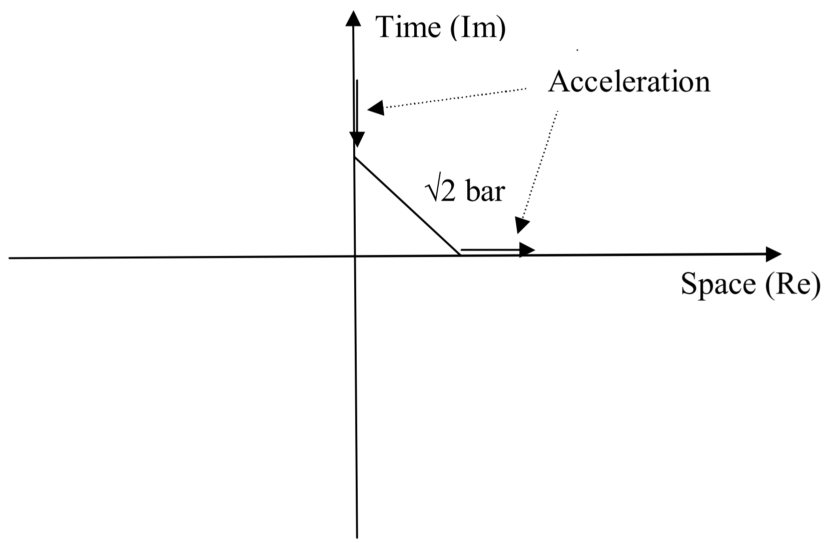


Fig. 5. Space-time on log-log scale. Effect of acceleration on slanting of √2 bar.

Hence both infinities of Re and Im axes are normalized with unities of the same magnitude. Therefore, these two are not only orthogonal but also essentially orthonormal functions. Fig. 5 shows that the unitary relationship between space and time under stressed conditions (acceleration) also conserves the *'root over normalization'*. Further, the transformation of this unitary relationship on rotational acceleration conserves angular momentum.

We define $S = \{f_1, f_2, f_3, f_4\}$, the elements of which are functions of z. This set is a finite as well as an infinite Abelian group of order 4. Like every field, the Möbius is a group under the addition operation. This group is commutative (or Abelian). Similarly, it is found that the non-null elements of a field form a group under the multiplication operation, and this group is also commutative (or Abelian). The composition table for uncompromised GDS is presented as Table 1.

Table 1. Composition table in uncompromised GDS. Note that *o* indicates a group operation, i.e., 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

The functions of the complex variables in EDS are

$$f_1(z) = -z, \quad f_2(z) = z, \quad f_3(z) = -1/z, \quad f_4(z) = 1/z. \tag{2}$$

Here, f_2 is the identity element. Further, f_3 and f_4 (in EDS) correspond to P- or weak symmetry and PT- or strong symmetry, respectively (Fig. 6; Sec. 3). The composition table in the case of EDS is presented as Table 2.

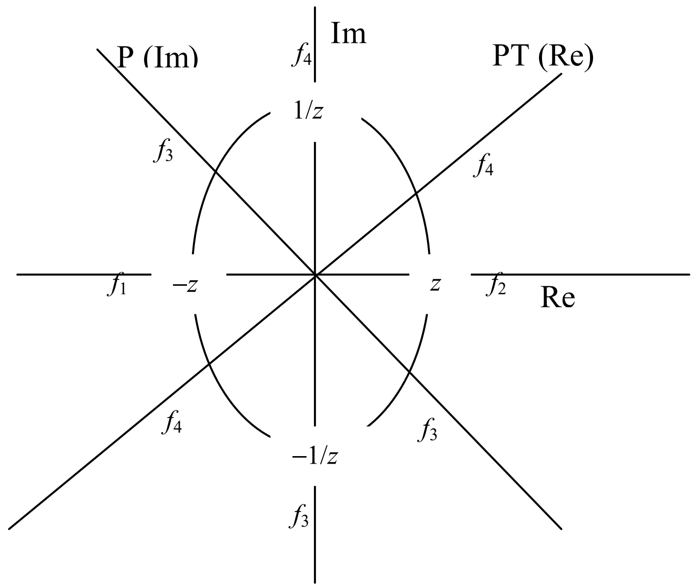


Fig. 6. Möbius group of functions in EDS in odd strip.

Table 2. Composition table in EDS case.

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

The Möbius strip is constructed when symmetric functions operate on the same pole, i.e., the mixed singularity (fulcrum). In ED, where the spin is even, the Möbius strip becomes structureless (flat strip after even spin under group untwist operation fails to confine media (here, paper substance) within, topologically); however, in FD, where the spin is odd, its structure emerges (pointed strip after odd spin under group untwist operation always entrap topologically exclusive media within). Left (Lt)-hand untwisting and right (Rt) hands twisting construct an EDS strip whereas Rt-hand untwisting and Lt-hand twisting construct a GDS strip. The EDS strip exhibits the real world, where Re is along the equatorial spread and Im is along the polar stretch. This is the existential world where we exist and may interact with each other. Topologically, Re dominates the EDS strip, as it diffuses along the convexity. On the other hand, in the case of the GDS strip (Fig. 4), Im dominates, as it also diffuses along the convexity. Even spin (absolute unstimulation) indifferently creates both handed strips in an unbiased manner, i.e., even strips. However, as regards stimulation (critical or subcritical) of FD, odd spin generates an EDS strip, i.e., an odd strip, only. Hence, all illustrations in this work are presented on the EDS strip structure. Here, EDS is primarily associated with the strip convexity, while GDS is primarily associated with its concavity. Therefore, in the context of the Möbius group of complex functions, EDS dominates (conventionally, "out"). However, the GDS must compromise (conventionally "in,"). Here, the polar identity element (f_1) of uncompromised GDS (Fig. 4) shifts to the equator, as shown in Fig. 7. Hence, in both the systems in FD, equator belongs to Re (track: in EDS $-1 \rightarrow 1$; in GDS $1 \rightarrow -1$) and poles belong to Im.

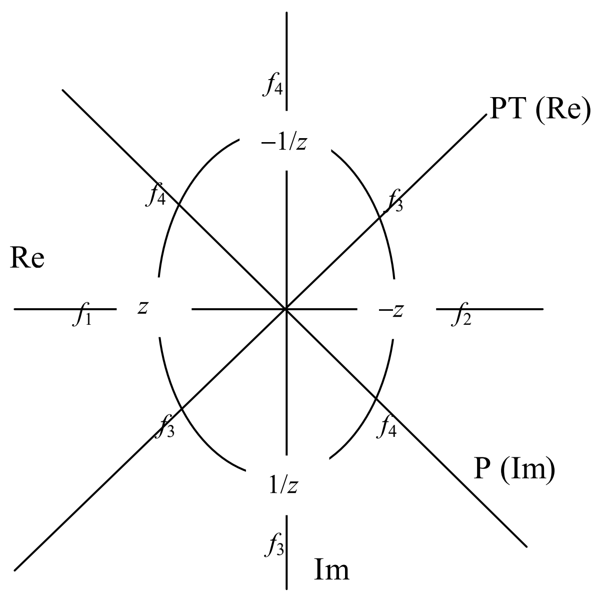


Fig. 7. Möbius group of functions with compromised GDS in odd strip.

The Re and Im axes along the group of functions in last two cases shown in Figs. 6 and 7, are stable. The axes system shown in Fig. 4, which is absolutely unstable in FD (here, imaginary axis is strong one) and instantly reduces to that of Fig. 7. In odd strip Re axes, which are the strong axes, define the asymptotes in both ED and FD. Further, rotational invariance is conserved in both directions in all cases (Figs. 4, 6 and 7). Therefore, the Möbius transformation satisfies the Lorentz transformation.

Even spin, by default, designates the strong PT-symmetry (the opposite handed functions i.e., parity symmetry in opposite time-directions i.e., time reversal symmetry). Its stance is *back-to-back relative to the present moment*. CP-symmetry (opposite handed functions in charge conjugation but in the same direction of time i.e., in the direction of entropy) adjusts this stance to *face-to-face to the present moment*, by shifting the position of the f_1 of the GDS from the pole to the equator of the odd strip. This is accomplished via a group untwisting operation. Here, the symmetry functions are pseudoelements or orbital twistors of FD context. These symmetry functions are distinct from *unitary function in ED* (described before) that defines the axes whether it is Re (strong) or Im (weak). In absolute rotation the oblique pseudo-elementary structure of FD culminates into upright one. The later one is C-symmetry. This is ED or, more specifically, "odd ED." Recall that P-symmetry is weak, where the opposite function is in the same direction.

2.4 Null dispositions in ED and FD

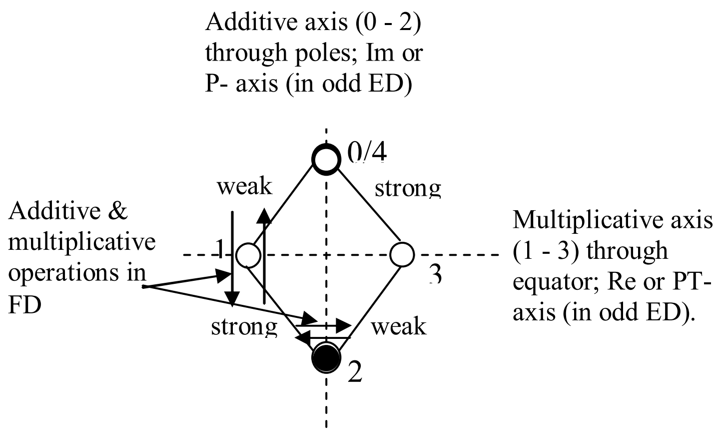


Fig. 8. Two pairs of orthogonal groups: C-symmetry. FN/ONs (mixed singularities) are in polar positions and BNs (white dots) are in equatorial positions.

Here, the ON (Ontogenic null) is a white-hole singularity, i.e., the other face of a black-hole singularity (FN, Fermionic null). Opposite nulls always maintain a 360° gap or "even space." Here, polar elements (f_3, f_4) of EDS dominate over that of GDS (Figs. 6, 7 and 8).Thus Re (white) dominates over Im (black) in levity pole and reverse happens in case of gravity pole.

The multiplicative (equatorial) axis and central multiplicative axis are not the same, instead orthogonal to each other. The later merges with the additive axis to define the rotational (polar) axis. Both multiplicative (mult.) and additive (add.) functions have FD and ED phase (Sec. 2.6). In both the systems they are executed in the sequence: mult. (FD) → add. (FD) → mult. (ED) → add. (ED).

In ED, all nulls conglomerate to a single null. However in EDS, the additive function adds finiteness and the multiplicative function magnifies the infiniteness; in GDS opposite happens. In EDS, which is associated with the real world, the field of additive group action is the imaginary number system. Its identity element is 0, which always imposes finiteness on the real world. Here, the field of multiplicative group action is the real number system having 1 as the identity element, which always imposes infiniteness. On the contrary, in GDS they reverse. In both systems, PT-symmetry (f_4 in EDS; f_3 in GDS) gains strength at bosonic nulls (BNs), where the P-symmetry (f_3 in EDS; f_4 in GDS) becomes exhausted, and P-symmetry gains strength at fermionic nulls, where the PT-symmetry weakens. Therefore, the EDS-multiplication culminates in GDS-addition, and the GDS-multiplication culminates in EDS-addition. This occurs during absolute rotation. Thus, 4D and 2D, which are even dimensionalities, are equivalent.

Nevertheless, the C-symmetry is conserved in Dirac space. This is deeper symmetry that has no algebraic expression such as that provided by f_3 and f_4.

As these two group actions in ED are robust and orthogonal, one cannot influence or nullify the other. There is no scope for elementary fraction. Their bifurcation is only apparent from the perspective of FD. Any emergence that can occur must contain both symmetries (f_3 and f_4) and involve all of its infinite companions self-similarly. This is the basis of "Feigenbaum Universality[10]." Here, again, whatever utmost infiniteness is imposed by the f_4 symmetry, f_3 symmetry ultimately renders the emergence compact. Further, the f_4 symmetry diffuses whatever rigid finiteness is created by the f_3 symmetry in a topological manner. Their unimodal coupling at BN elucidates the deep buffering mechanism.

2.5 Journey on topological model of Möbius strip

Journeys along the Möbius strip are of three distinct modes. A stimulated (critical) finite journey executes volition, an absolute unstimulated journey generates autonomy, and an unstimulated finite journey eventuate classico-quantum measurements. The latter is a local finite reduction of an absolute journey. The awareness mode is a hybrid mode that diagonalizes ED with FD. Autonomy ($|+^{C}\ 0\ -^{Q}|$; Sec. 5.1) alone is an ED phenomenon, but the remaining modes are associated with both FD and ED. Here, the actual behavior on a Möbius strip is demonstrated.

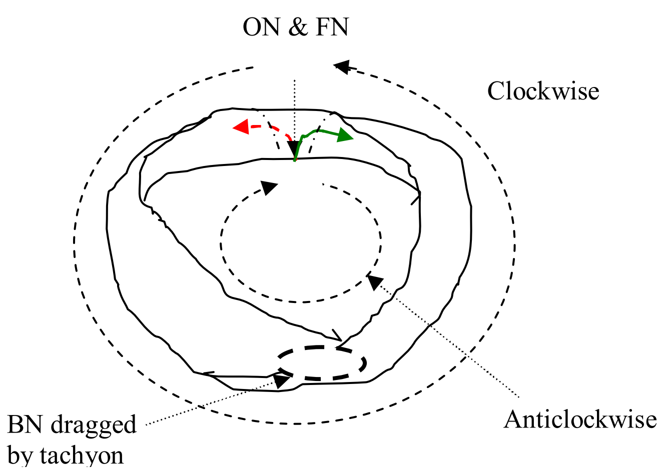


Fig. 9. Möbius strip in its simplest form.

Pointed ends (shown at the top of the figure) act as a pivot that helps in self-organization of odd strip (here 1D) out of its flat ends under group untwist operation.

Consider a ½-spin Möbius strip, as shown in Fig. 9. A journey always begins and ends in Euclidean space of pole. Nevertheless, the incitation of stimulated (critical or subcritical) journey is always generated at a sensory BN i.e., f_1 (initial track: -1 in EDS; 1 in GDS) (Figs. 6 and 7). A stimulated journey begins either at 0D (ON) in EDS (without) or at 2D (FN) in GDS (within) and both within and without simultaneously in the case of autonomy (ED phase). In the case of "superficial awareness ($|+^{C} \pm -^{Q}|$; Sec. 2.6)," where f_1 is under *persistent subcritical stimulation*, the journey alternates precisely between the sensory wings of the two systems. The free zone between two twistors (f_3 and f_4) at dot centrals in the upper part of the strip supports additive group action. This behavior achieves potential extremes, i.e., maxima and minima, along convexity and concavity, respectively, at the height between the two twistor arms. This is spinor space that supports multiplicative group action of the BNs (dashed ellipse in Fig. 9) where unique extremals ride against the central open-angle doughnut.

In a real strip scenario, the strip plane of multiplicative zone is orthogonal to that of the additive zone (Fig. 9). Here, after completion of a 180° journey, the momentum or weak twistor, (neutrino) dragged forward along the convexity by a strong twistor in EDS, is dropped free along the concavity of the strip. The f_3 (or P-) symmetry in EDS during dragging, where the function is inversed but the sign remains unchanged, then violates the real pull command and retrieves the original relationship. Re remains ignorant of this Im threat; however, the PT-symmetry becomes strong. Here, with the help of C-symmetry, the PT-symmetry creates immortality for Re in the subgroup lifespan through repeated reincarnation of a self-similar journey carrying information (unique rational: $+^{Q}$) across the Bosonic null. However, in the case of GDS, f_3 symmetry spontaneously follows f_4 symmetry in a backward journey along the concavity rather than being dragged, because f_3 corresponds to PT-symmetry in GDS. Hence, this course does not involve a symmetry violation. Thus the information processing of irrationals at BN are significantly different from that of rationals (Sec. 5.1.2).

2.6 Features of cognitive fermion

The two wings of a fermion (sensory and motor) are termed graviphotons (GPs). The sensory wings are formed by an untwisting operation (Lt and Rt untwisting in EDS and GDS, respectively) and the motor wings are formed by a twisting operation (Rt and Lt twisting in EDS and GDS, respectively). This generates two unique wing-flow patterns, where Rt- and Lt-hand behavior fabricates energy (Re output, outward, at the equator) and gravity (Im output, inward, at the equator) wings, respectively (Fig. 10).

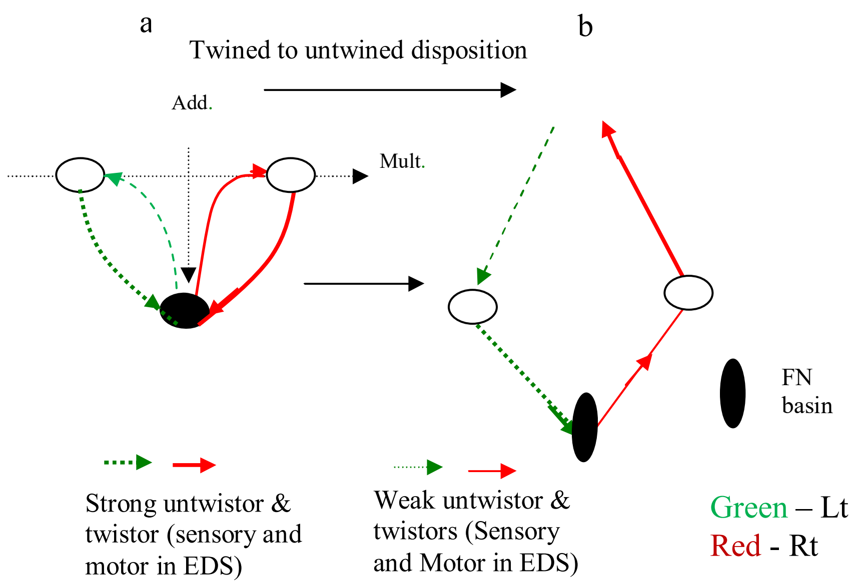


Fig. 10. Figurative expression of journey along Möbius strip (odd), i.e., a fermion.

In ED, the axes denote its unitary reference. Here, strong quadrants become aligned with the weak polar axis of ED, while weak quadrants are aligned with the strong equatorial axis (Fig. 11).

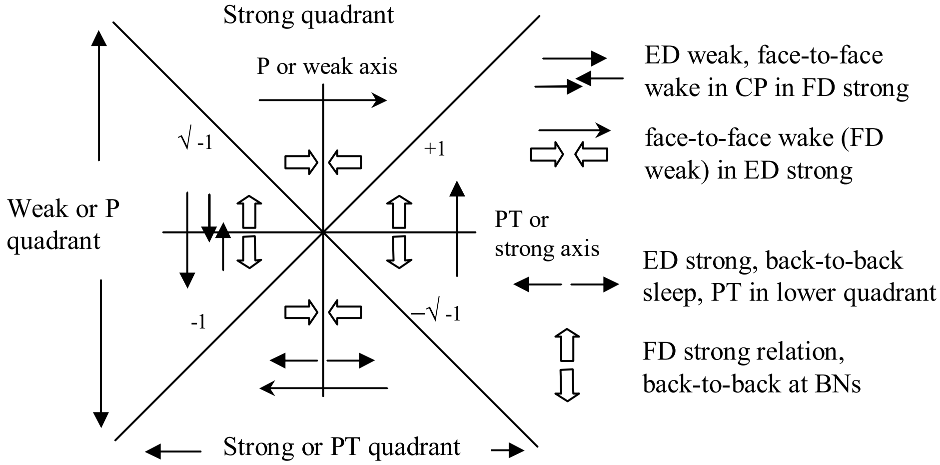


Fig. 11. Alignments and face orientations in FD and ED.

The symmetry of the quadrant elements changes with dimensionality shifting (ED to FD). In ED, the elements (√–1, 1, –√–1, and –1) are read as cardinal units (Re-Im with signs). In FD, the pseudo-elements are read as basic cognitive particles, i.e., neutrinos, tachyons, antineutrinos and antitachyons for √–1, 1, –√–1, and –1, respectively. So, strong relation between the two in ED becomes weak in FD and vice versa (Fig. 11).

In the case of volition *critical stimulation* causes system upset and period doubling bifurcation (Sec. 3.1.2) that settles into EDS (Fig. 12c1) or GDS (Fig. 12c2) by group untwist operation (Figs. 12a1 and b1 or 12a2 and b2). This involves symmetry break. On the other hand, in the case of awareness there is no critical stimulation at subsystemic level. However a subtle *evolutionary or subcritical stimulation* (f_1, Sec 2.5) does occur at systemic level. The FD-asymptote (1, –1) oscillates by 180° on either side, similar to a perturbed inertial system (Figs. 12c1 and c2). In this sense, this precise cosmic pulsation involves no typical bifurcation; hence there arises no issue of settling under group untwist operation with symmetry break as in case of volition. Its execution manifests as alternating journey along two systems: EDS and GDS. The two systems run in opposite directions in space-time. Interestingly, both dynamical systems support linearity about the fulcrum and nonlinearity about the equator. This orthogonal complementation unifies unitarity with diversity.

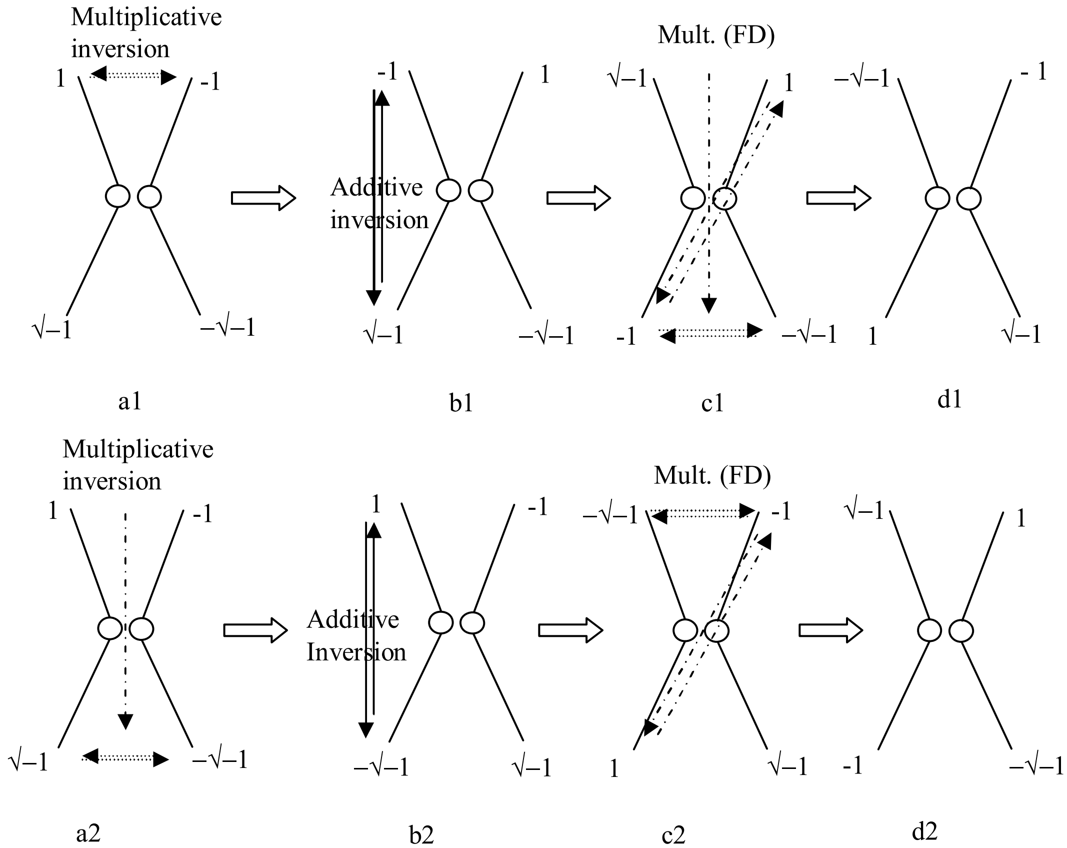


Fig. 12. Group operations in Möbius strip in various systems (1-series EDS; 2-series GDS).

One diagonal turn of FD-asymptote is equivalent to complete cycle of all four group functions where mult. (FD) → add. (FD) → mult. (ED) → add. (ED) divided in two phases: FD and ED. In Mult. (FD) back-to-back PT symmetry (-√-1 and -1) acts behind the additive axis and stretches it periodically (Figs. 12c1 and c2). Mult. (FD) function is the active one and soon accompanied with add. (FD) function, the passive one. FD-phase functions jointly executed as the distoproximal "system untwist" operation (Fig. 10). Both FD-phase functions are executed in sensory wing and are operated from gravity pole in EDS (levity pole in case of GDS). At a polar couple, this untwisting is released in a flat ended motor wing. The behavior, mentioned above, becomes exhausted and ED phase ensues. The ED phase causes the elementary particles in the opposite direction in PT to suddenly yield a face-to-face scenario (CP-symmetry). BNs take their respective Cl-q (classico-quantum) snaps of the designs created at the equator. *All possible subsystems simultaneously take periodic exclusive Cl-q snap only when they are entangled in upright position (odd ED) that may be equivalent to an absolute state of pure ED.* Both ED-phase function are executed in motor wing and are operated from levity pole in EDS (gravity pole in case of GDS). This involves no space-time journey (instant execution on sensory input in flat ended infinite motor wing). Interestingly, on execution of the four group functions, structure of one system changes to the other one through the stages of some unstable random intermediaries (Figs. 12c1d1 and c2d2). Thereafter with turning back of FD-asymptote the system oscillates back in opposite direction and this cycle continues indefinitely with the subcritical stimulation. Hence, the "system untwisting" is a wandering journey along the alternate sensory wings of EDS and GDS. This behavior creates a state suitably referred to as "superficial awareness." The distinction between the two untwisting behaviors mentioned above should be clarified here, i.e., system untwisting and group untwisting (the formation of an odd strip). The distinction between the two states of awareness, i.e., superficial and deep (analogous to the strip situation after a multiplicative inverse operation; Fig. 12b), should also be clear.

2.7 Symmetry expressions in Möbius topology

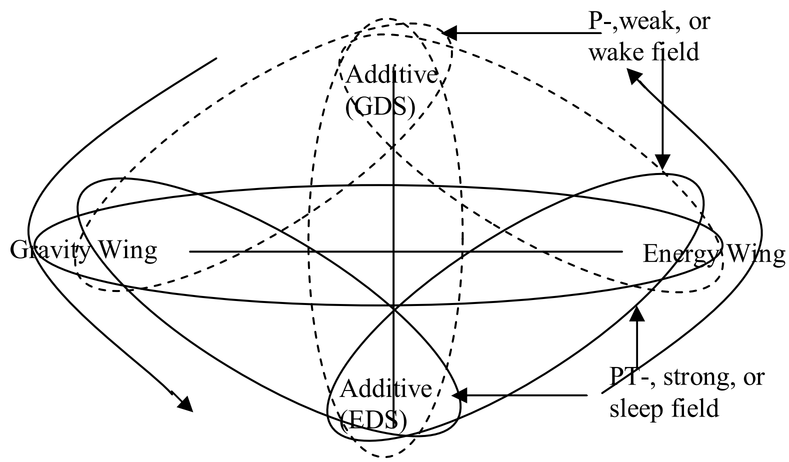


Fig. 13. FD phase is represented by orbital sensory wings and ED phase by vertical axis.

Although P- and PT-symmetry, along with f_3 and f_4, are all ruled by functional symmetry, precision is required when selecting their domain. Here, one finds that P- or PT-symmetry define whether the functional nature is primarily weak or strong, respectively. In contrast, f_3 or f_4 symmetry defines whether the domain is primarily additive or multiplicative, respectively. The final behavior emerges out of complex collage of these properties.

When FD-phase culminates in exhaustion, ED-phase along the vertical axis begins. Fig. 13 supports both these operations. Nevertheless, at the end of the EDS sensory journey, the next motor journey (along with the alternate GDS sensory journey) also advances along the nucleated electron series (Sec. 5.1.5). Being an energy wing, the EDS motor wing supports the GDS sensory operation. Reverse happens in case of the gravity wing. In these cases the pole (fulcrum) must be shifted. The ED-phase and the journey along motor wing are simultaneous. Odd ED supports orbital FD-phase whereas even ED (Fig. 2 and 12a) supports vertical ED-phase (Fig. 13). In case of latter, the simultaneous coupled journeys in both the systems in absolute unstimulation converge on the equator of the current electron at the present moment. The series of present moments are in the entropic direction only. Hence, entropy always dominates negentropy. So, the functions those are, by default, backward in time in PT-symmetry (e.g., momentum, gravity, time, magnetism etc) are registered, in the real perspective, as forward in the present moment in CP-symmetry.

ED can be simplified as follows: In odd ED, the 0–∞ conjugate is in a complex cruciate disposition (Fig. 3b). In even ED, the 0–∞ conjugate is in an upright disposition (Fig. 2). Finally, in pure ED, the 0–∞ conjugate is in a random disposition.

3. Analysis of Systems

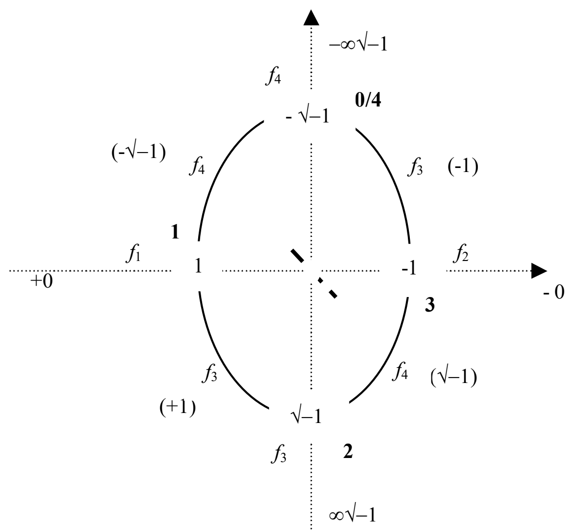


Fig. 14. GDS centrally supported on odd ED.

The GDS fulcrum is on 0/4-null or levity null (0/∞; hence, bipartite) and that of EDS is on the second null or gravity null (∞/0). GDS (input f_3, Re; output f_4, Im) can continue indefinitely in its positive imaginary journey towards a diffused past. Its negentropic path runs along the neutrino (momentum vector) towards infinite imaginary. Coincidentally, EDS (input f_3, Im; output f_4, Re) continues indefinitely on its real journey through positional diffuseness. Its entropic path runs along the position vector as a result of real drag of tachyon towards infinite real.

In group untwisting, the global FN becomes hidden at the GDS fulcrum, i.e., at the North Pole, where there is no imaginary (Fig. 12c). The ON becomes fully exposed. In the same operation, the ON becomes concealed at the EDS fulcrum and the FN obtains the complete face at these infinite imaginaries. Thus polar nulls related to sensory wing (1st ON and FN) dominates over that of motor wing (2nd ON and FN) (Fig, 8). This means the evolutionary world created within the sensory wing is upside down in respect of that of the motor wing. Further, when the subsystem is deeply stimulated classically forward in the EDS towards objectification, compensation in the form of a backward journey of the same magnitude in the GDS is autonomous. Reverse happens under GDS stimulation.

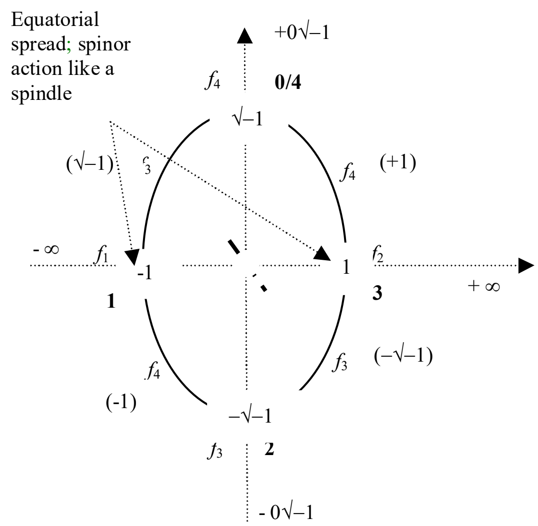


Fig. 15. EDS centrally supported on odd ED.

Four null windows conserve C-symmetry. Although the sequences vary, the null nomenclature (Fig. 8) is concurrent for both systems. The EDS and GDS sequences are 0-1-2-3-0(4) {√-1…-1… -√-1…1…√-1} and 2-1-0(4)-3-2 {√-1…1…-√-1…-1…√-1}, respectively (Figs. 14 and 15). In absolute rotation under a strong relation, sensory BNs blend with gravity nulls, constituting the finite end of the FD-asymptote. Further, the motor BN merges with the levity null at the infinite end. In stimulation, the sensory wings cannot reach the poles and remain confined within the fractal world of their wings. Only under subcritical stimulation may it unveil hidden BNs. Thus, FD is associated with the odd nulls (1 and 3) of the equators. This bi-dimensional oddity supports nonlinear determinism and wakefulness of the sophisticated MQS, yielding consciousness out of the even ED of the poles. In EDS BN is at '0' and in GDS BN is at '∞'.

Here, it becomes apparent that the FD axes in both systems are generated by ED axes on 90° clockwise (dominating direction) rotations (Fig. 3b). Further in FD-phase multiplicative operators (−√−1, −1) are central components (PT-symmetric in ED or elementary operation and under even spin (within 3/2 spin, Sec. 3.1.2) is hidden with C-symmetry in Dirac space) and additive operators (√−1, 1) are terminal components (CP-symmetric in FD or pseudo-elementary operation under odd spin) in both the systems (Figs. 14 and 15). This executes Cl-q measurements in ED phase, also, where central or elementary (PT) components function in motor wing and terminal or pseudo-elementary (CP) components function in sensory wing (Sec. 3.1.4.).

3.1 Communication between GDS and EDS

3.1.1 Sleep and wake phases

The cognitive system default mode remains in proper time along present moments. In cognitive deduction, exact matching of entropy with negentropy is mandatory. One must lift backlog (negentropy) via GDS. Volition is executed by period doubling along oblique cleavage lines, as shown in Fig. 16, below. Two components (initial sensory GP and initial motor GP) emerge, which readily construct a complementary system. Cognitive dynamism can shift the system as per natural demand (Fig. 12).

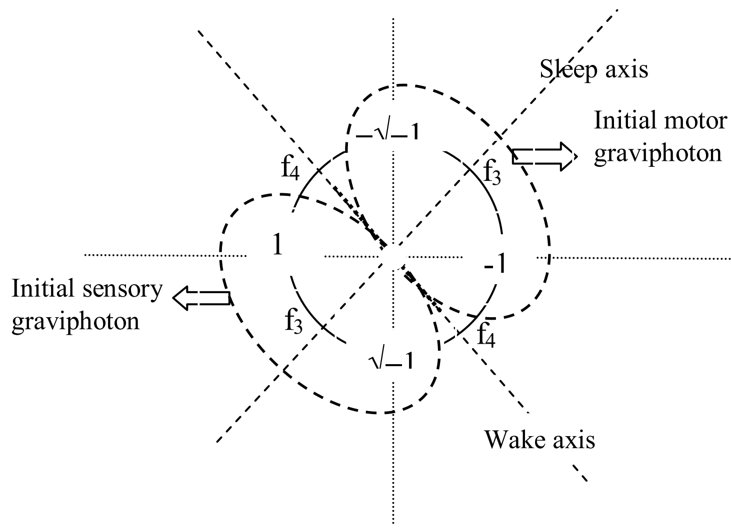


Fig. 16. Sleep and wake axes.

The pure null is the central space of null structures (Fig. 16). This is an absolute state of self-design. Here, "absolute" means 0, ∞, or both. Under system upset and group untwisting operation, the singularity of nullness blossoms into four-fold null space (Fig. 8). This is an indifferent state of both P- and PT-symmetries induced by hidden C-symmetry comparable with the sleeping case. However, FD subgroups can sleep but cannot sublime like ED, because there is no tool similar to C-symmetry at hand.

Nevertheless, both systems wake in weak or equatorial quadrants and sleep in strong or polar quadrants (Figs. 14 and 15). Note that strength and weakness are always synonymous with sleep and wakefulness, respectively. At a strong or sleep axis, GDS-sleep ends and EDS-sleep begins. Further, at a weak or wake axis, GDS-wakefulness ends and EDS-wakefulness begins. Weak quadrant of the sensory wing denotes the wakeful phase in ED (Fig. 11).

By virtue of ontogeny, ED functions (elementary or unitary) are more fundamental in comparison with those of FD (Fig. 11). Hence, the pole and equator are the seats of sleep and wakefulness, respectively, because of the basic functioning of ED-sleep and ED-wakefulness, respectively. FD interference with the above yields some complex outcomes that fabricate the underlying sleep-wakefulness structure of an individual. Nevertheless, at the equator, the strong relation in FD secures rest of the subsystem, but it cannot induce sleep here.

Being a dynamical system, parent group (the entire cosmos in the Big Bang) or its smallest subgroup, i.e., a fermion, may enter a sleep phase in FD. ED has the propensity to enter a sleeping state. It must remain apparently awakened because of the FD along the directed time. The future position in EDS and the past momenta in GDS are unknown. However, the journey of the finite system with thermodynamical time scales causes these two unknown worlds to unfold. To accommodate these new challenges, the cognitive system attempts to search for a new primeantiprime (P-AP), which is registered through tuning of the electron couple for the present solution and for future reference. To attain this result, the two systems should converge and concur. For conscious deductions, both information faces are constantly aligned towards the present moment along CP-symmetry. This often creates stress with no resolution, resulting in fatigue and sleep through relaxation along the PT-symmetry. The system enters quiescence. In the sleep phase, the subsystem becomes free from the even Cl-q mode, i.e., with the least mass involvement and slipping through the polar quadrant, it becomes shifted towards the central longer axis of the massless motor wing. The velocity is increased, achieving that of the autonomic path, i.e., a random light path or zitterbewegung. This is NREM (Non Rapid Eye Movement) sleep, a phenomenon in PT. In FD, the cognitive system cannot allow it going lost in this manner. The mass of the subsystem in the dragged sensory wing is also increased in the direction of the dominant axis of highest anisotropy. This is a threat to the definition of the subsystem. Therefore, in the finite system, ED becomes exhausted and stimulates the arousal phase along the FD briefly in the form of the REM sleep pattern before final arousal. There is a strange similarity between the basic operations of REM sleep and awareness. In REM sleep, both FD-wakefulness at the poles and FD-sleep at the equators function simultaneously. Further, in awareness, both FD-wakefulness at the poles and ED-wakefulness function concurrently. REM sleep may be interrupted by dreaming, whereas awareness may be interrupted by final arousal. The swing between REM and NREM sleep naturally continues in a favorable situation and may be referred to as "sleep inertia."

3.1.2 System upset and period-doubling bifurcation

Initial sensory and motor GPs (graviphoton) are connected back-to-back (PT-symmetry) at central null point behind (by C-symmetry). This ever-resonating virtual hybrid structure in pure-random state is the default mode. This is designated as Pure ED.

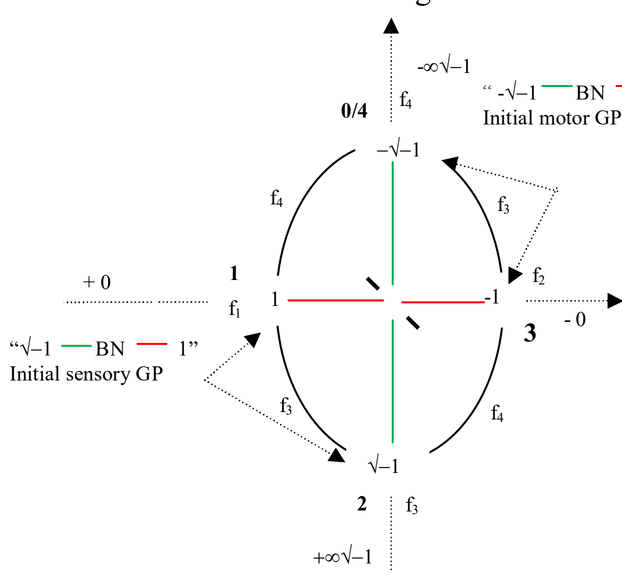


Fig. 17. Period bifurcation of GDS.

When the stimulation is critical a breaking event happens resulting system upset and period-doubling bifurcation. In case of parent group the most significant event is the Bigbang. In case of minor groups it may happen with smaller bangs. But more importantly, from cognitive point of view, it also happens in case of volition where a titanic state is called on ad hoc basis on the tuning electron of MQS at present moment. In the case of upset, the system is never split through the strong quadrants (√−1...1 & −√−1...−1) between the elements within the dashed ellipses; it is always split through the weak quadrants (√−1...−1 & −√−1...1) (Fig. 16). System breaks into two paths: initial sensory GP (√−1−BN−1) and initial motor GP (√−1−BN−1). In Fig. 17, the additive or f_3 axis is shown in green and the multiplicative or f_4 axis is shown in red. Period bifurcation is associated with the formation of two groups, each with central bosonic space. This is now a new transform of the central null space (open-angle dough nut, Fig. 9) and is always stretched by the referential arms: f_3 and f_4. They afterwards may get stabilized into a new system structure (here, GDS into EDS) after coupled group inverse operation (group untwist): multiplicative and additive (Figs. 12a1b1 and a2b2).

To exit the system, some strong anti-null activity must occur. That is, this activity is necessary for the escape velocity to be achieved. Nevertheless, this latter will be an invariant; here, it is obviously the *c* of Maxwell, i.e., the speed of light. This behavior is initiated by Im-Re chaos differentially on both sides of the photon energy. Neutrino exists within the finite world bounded by *c*, tachyon must exist beyond that world. The choice of particles here, neutrinos and tachyons, is determined by borrowing the positivism of Mach[11] and employing Ockham's razor.

The backward weak-torqued screw is a neutrino particle and the other particle, which is distracting with a strong forward torque, is a tachyon. Here, √−1 and 1 correspond to the emergence of the initial sensory wing of both systems (Fig. 12a). 1 (0–∞) corresponds to a tachyon. This is topologically a linear hyperbolic space. It is an infinite, positive, real-number series where every number is fluxed towards an abstract external number, i.e., ∞. It promotes a strong forward journey along EDS. The other series is an infinite, positive, imaginary series, corresponding to a neutrino (∞–0). Here, complementarily, every imaginary number is fluxed towards an internal number i.e., 0.

The central group or the other path of the initial period-doubling is orthonormal to the first. Here, two numbers remain: −√−1 (−∞–0) and −1 (0– −∞). They are anti-neutrino and anti-tachyons, respectively. However, the above is an unstable state and awaits organization in robust 2D fermion-boson structurization.

A neutrino is finite. Light, being faster, takes instant images of any bangs and carries them via GP. This quantitative information is referred to as "visionary" (rationals, $+^{Q}$s on the weak field, local) here, as an abstract field of vision belongs to the multiplicative group. Note that a blind person also has visionary capability in this sense (objectivism). Tachyonic space is an infinite real path. Being speedier than light, it travels ahead of light, leaving behind something similar to yeti's footprints. However, tachyonic information is never visionary or quantitative. This is qualitative information, which is referred to here as "feeling" (irrationals, $-^{C}$s on the strong field, global), being an abstract field of "touch," where "sound" (with "smell" and "taste" as well) is also included. This behavior is classed as additive group action (Table 3). Vectors, which are elements of tachyonic space, become absolutely crunched regardless of distance. Thus, a tachyon is not absolutely a ghost particle. Its trail is the basis of our "subjectivism." On such a path, even if one reaches infinity, the tachyon remains out of reach.

The GDS fulcrum provides multiplicative quantitative information on the beginning of the journey. In contrast, the EDS fulcrum supplies additive qualitative information about the end of the journey. BNs may catch the weak local and strong global. Therefore, the objective sub-consciousness at the singularity (FN) and the subjective consciousness at the horizons (BN) elucidate subjectivism and objectivism, respectively, as unresolved residues. Two unique means of null expression hold complementary systems, being not merely concern with their appearance, but also with their physical interaction.

The parent singularity (central null space, pure ED) in null-upset becomes split under the influence of stimulation. First, it is divided into two poles: north (Re field, inner null) and south (Im field, outer null). This is even ED. Here, Re (former) is at the center and Im (latter) is at the periphery; this is an "inside-out" perspective, which is analogous to a flat strip. This is now subjected to a group untwisting joint operation. The first operation is multiplicative inverse (Figs. 12a1a2). The parent system is divided into infinite subsystems and the horizontal component of the unique subsystem mass (distinct from physical mass) is generated. The pure randomness (of the infinite stretch) breaks into innumerable *selective randomness*, as the stretch of random discrete path is uniquely defined yet undecipherable before each subsystem, in advance. Here, only, ED-asymptote or null track within the subsystem, is in vertically up disposition (in odd ED it is in horizontally right disposition). This may be interpreted as "deep awareness" and is subjected to the second operation, an additive inverse operation (Figs. 12b1b2). Spontaneous symmetry breakdown causes these phase transitions where three types of bosonic force particles (electromagnetic, weak, and strong) are created. We now know that these three different force particles are essentially different expressions of the same particle. Moreover, the complex influence of neutrinos and tachyons on photons reduces the sensory track into one unified force particle, which is not a simple photon but a GP. The inner and outer nulls are transformed into GDS and EDS fulcrums, respectively, where the outer null is at the center and the BNs are at the periphery. Here, the perspective is "outside-in." This operation generates the vertical component of the subsystem's mass. Thus, at first, the central nullness becomes a central saddle solution. Further, the latter is ultimately upset to include two further complementary saddle points at the BNs.

Coupled group untwisting has two byproducts. First is fermion boson structurization where absolute 2D (Bosonic space) is incorporated within 3/2 turn of the strip. This supports not only the steady state by its null properties, but also the Big Bang on its shoulder. And, second one is π-chopping at BN. This chopper executes a 180° spiral cut simultaneously at two sites. π, being itself irrational (the Re form of the Im function), cuts and hides irrational segments of the extension h-bar ($-^{Q}$ or initial GDS at the FN end, where the momenta are crystal solid), leaving exposed rational number (the Im form of the Re function) segments of the same extension ($+^{Q}$ or initial EDS at the ON end, where the position is crystal solid). In this cyclic chaos Re and Im numbers transcend to Rational (RNS) and Irrational number system (INS) respectively. At BN there is possibility of change of surface. However PT symmetry restores surface identity in both systems. In 1D model RNS belongs to convex surface clockwise and INS belongs to concave surface anticlockwise. These mixed residues complement each other bridging all gaps including that of singularity also. Planck first encapsulated this particulate quantitative (rational) world, which is measured by the quantum as a unit of distinguishability. Here, the deterministic existence of the couple constructed with its stronger companion (irrational) has been overlooked.

3.1.3. Elements of communication: Twistors and untwistors

System untwisting has deflating execution distoproximally, whereas twisting has inflating execution proximodistally. In a stimulated journey of volition within a sensory wing, finite twisting (different from infinite twisting of motor wing), rather than untwisting, is the ideal behavior. Here, in EDS, the gravity wing (Lt untwisting) becomes the energy wing (Rt twisting). It's the real volitional journey, forward i.e., clockwise. In GDS the energy wing becomes the gravity wing. It's the imaginary volitional journey, backward i.e., anticlockwise. To accomplish this, the fulcrum with hand function is changed within the same wing. With the significant strength of the stimulation in volition, this lag cumulates with cycles within the same wing till the titanic stimulation becomes exhausted. Here, the equatorial quadrants expand and the polar quadrants shrink hiding beginning and end problems.

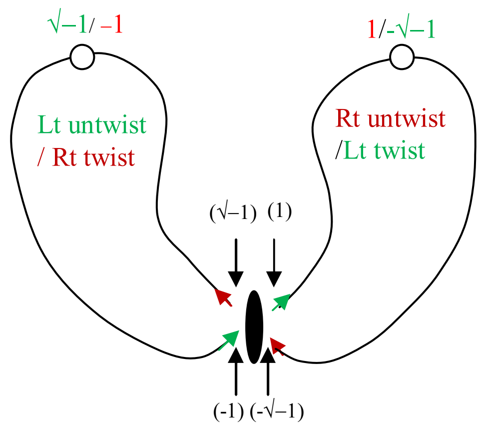
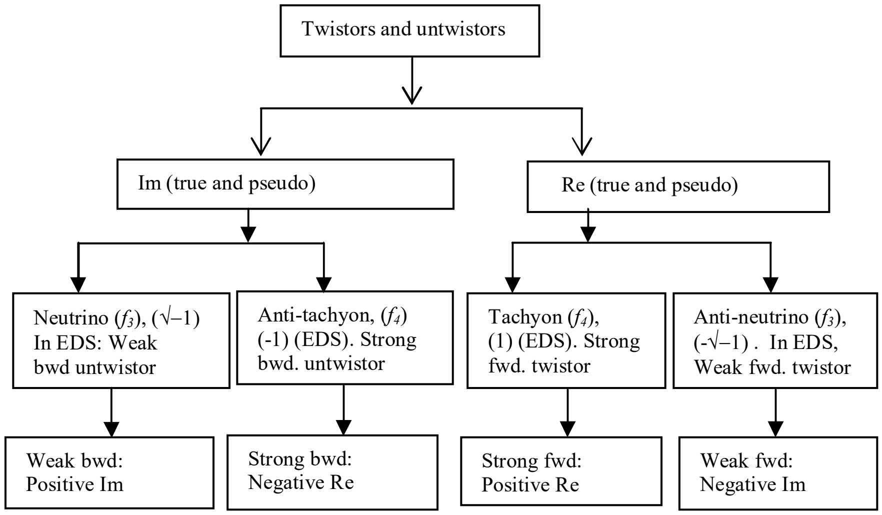


Fig. 18. Sensory wings for journey: Volitional (twists) and evolutionary (untwists).

Therefore under stimulation of FD there may be distoproximal journey along sensory wings alternatively operated at fulcrums of EDS and GDS in case of cosmic pulsation as well as cyclic journey within the same wing in case of subsystemic volition. In both the cases of stimulation system changes from one to another (Figs. 12 and 17). Here, the computation was in analog rather than digital mode. An analog system can process qualitative or nonlinear input more efficiently. Lorentz did not incorporate any phenomenon-based information but considered the phenomenon itself in the form of three equations. Therefore, as the input is qualitative, the response is also subjective. In phase space, stimulated journey (critical or subcritical) has the collective appearance of a Lorenz attractor (Fig. 18). One may find that the Lorenz butterfly-shaped attractor is the subjective presence of the processing fermion in phase space. Thus, one may postulate that objective subconsciousness, with subjectivism as the unresolved residue, is eternal.

Both the unknown or diffused past and future are in the future. Additive inverse operations yield unknown diffused past momentum and position as the local future ($-^{C}$) and past ($+^{Q}$), respectively before universal yet exclusive snap of the present moment where they transcend into local past permanently.



Scheme 1. Pseudo-elementary twistors in EDS (bwd and fwd indicate backward and forward, respectively). In GDS with change of hand function twistor becomes untwistor and vice versa.

Every null is armed with two possible screw setups. These twistor and untwistor mechano-systems render the model versatile and modular.

3.1.4 Modular circuitry

The untwistor hides expositions in the sensory wing and the twistor exposes hidden processing in the motor wing in EDS (the reverse function with change of sign occurs in GDS).

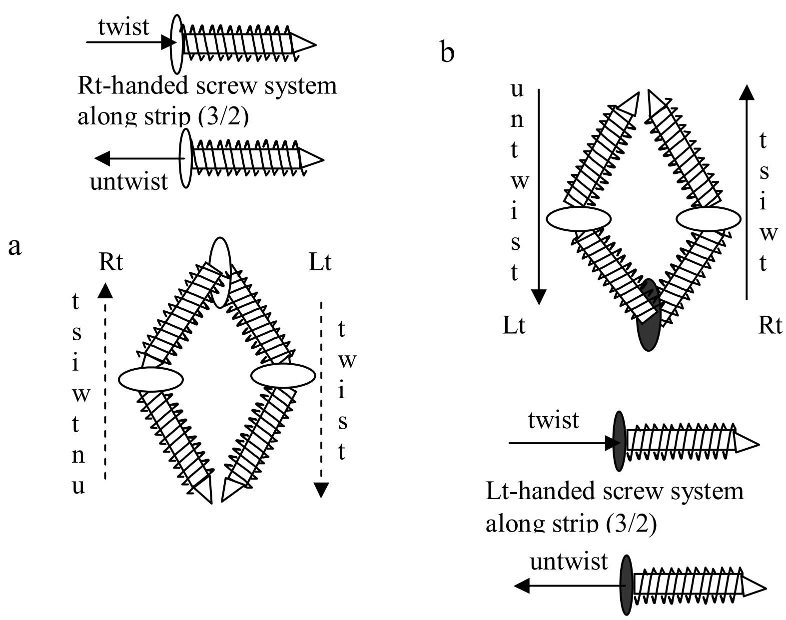


Fig. 19. (a) GDS fulcrum at levity null and (b) EDS fulcrum at gravity null.

Thus, twistors and untwistors are opposite executions of the same functions originating deep within the paper strip. The untwistor produces "shaft inversion" and the twistor produces gauge diffusion (Fig. 19). GDS primarily operates on Im entities. Here, shaft inversion occurs along untwisting at $-\sqrt{-1}$ in the sensory wing and gauge diffusion occurs along twisting of $\sqrt{-1}$ in the motor wing. EDS primarily operates on Re entities. Here, shaft inversion occurs along untwisting at -1 in the sensory wing and gauge diffusion along twisting of +1 in the motor wing (Fig. 12c).

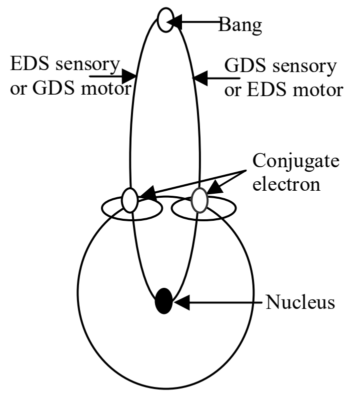


Fig. 20. Sensory and motor GPS in symmetric pairs in both systems.

Sensory and motor GPs are in a symmetric pair in both systems (Fig. 20). In the motor GP, the Lt wing (from top) is the gravity wing and the Rt wing (from the bottom) is the energy wing. They are executive arms of the respective systems. In finite journeys, the memory system can only function if and only if the support is on its hierarchy. The stretching of a journey is extended in EDS and GDS along the entropy and negentropy, respectively. Therefore, the motor wings in both systems hold longer tracks along the journey than the sensory wings. For deterministic functioning of the memory system, this is supported on an electron couple in associative phase space along the nucleated series at birth (Sec. 5.1.5). Although this behavior rarely occurs in reality, for simple illustration, two electrons are shown in the same orbit of the same atom (Fig. 20). One may note *that two types of Cl-q measurements are possible: one within the same wing of the same electron (ED phase) (Sec. 5.1.4), and the other located across the sensory and motor wings belonging to the conjugate electrons (combined FD and ED phase).* Although both almost coincide, the first more clearly holds its position in the memory string and the second is more important in tracking and registering if is contextually finalized important. The electron is the basic element that has equal play in both the classical and quantum worlds. Therefore, its position satisfies the orthogonal union of the Grand Unified Theory (GUT) expressed by multiplicative group action of the BNs at the horizon, and also the energy and gravity expressed by the additive group action at the singularity of microtubular electrons or atomic nucleus in phase space along its lower hierarchy.

3.2 Electromagnetism and energy-gravity system

Twistors may now be considered as a screw system on a gauge potential. Along the time convention, one may verify that electricity travels forward in time ($S \rightarrow N$) whereas magnetism travels backward in time ($N \rightarrow S$), as shown in Fig. 21.

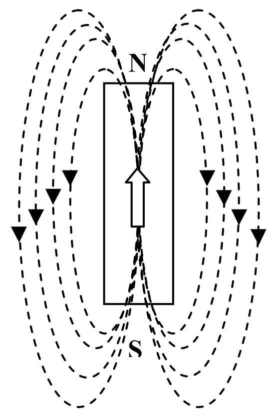


Fig. 21. Electricity (white arrow) and magnetism (black arrows) directions in time.

Maxwell's field laws provide no mathematical relation between magnetism and electricity with time convention. However, nature constitutes a laboratory for absolute experimentation and verification. Here, an exact incidence of lightening is electricity in forward time along a position vector, which is matched with the antisymmetric magnetic field flux of the cloud particles in backward time along the momentum vector, conserving proper time or zero-symmetry. The spin at a BN relates the orbital clockwise or anticlockwise movement with a forward or backward journey simultaneously on the same gauge potential.

Both the gravity-energy system and electromagnetism are absolute systems. The former is comprised of first-order fields at FN/ON and the second contains second-order fields at BNs. However, multiplicative association promotes not only first-order fields to second order, but also higher-order fields to second-order conjugates across symmetric BNs ($+^{C}\mathbf{+-}^{Q}$, $+^{C}\mathbf{--}^{Q}$). Both electromagnetism (multiplicatively commutating) and gravity-energy (additively commutating) represent Euclidean fields at BN and FN, respectively.

Self-design unfolds in two flavors: duality and dimensionality[12], which always coexist. These concepts are discussed in Secs. 4 and 5 respectively.

(*Continued on Part II*)