FROM ALGORITHM TO IMAGINATION INTRODUCTION TO ZETA-MANAGEMENT

Alain le MÉHAUTÉ*, Dmitrii TAYURSKII**

Abstract. *The authors hypothesize that many issues of our societies are caused by the lack of understanding of the role of Space-Time in post modern way of life. They show how the angst is due to inadequate insights of what means the concept of identity. They suggest a revision to the intuitive approach of Projective Spaces which defines it. Zeta approaches should allow to find again a kind of serenity when facing the dangers created by a kind of mental chaos; Their approaches can help to understand it and to manage it by means of techniques they describe in the framework of what they call Zeta Management. This note is just a short introduction of a academic text book to be published.*

Keywords: *Social, Political, Model, Category, Fractal, Self-Similarity, Dynamics, Zeta Function, Duality Management.*

1. Introduction

Experience shows that in open and fully capitalistic libertarian world, individualism, fake news, conspiracy, collective psychosis and verbal abuse, state the desperation of some of the men and women who, in their practices, inhabit a foreign planet. The death instinct that animates these individuals is due as much to a lack of symbolic tales as to a defection of our truths. Strangled by a delirious pseudo managerial efficiency and by technosciences trapping the human being in digital cages, the ideal of the Philosophy of Lights, betting on the power of reason, seems paradoxically poisoned by the hubris of very reason. Individualism and totalitarianism, cynicism and greed, assert the desire for order without offering nothing other than the tyranny of the pre-established reading grid of our environment. The intellectual has the duty to answer the expression of

* Materials Design, 42 rue Verdier, 92120 Montrouge France (alm@materials design.com)

** Kazan Federal university, Kremlyovskaya Street 48 0008 Kazan, Russian Federation (Dmitry.Tayurkii@kpfu.ru)

these sad passions before judging morally them. Fighting the violence caused by this agony of reason requests to weave again of a causality able to set a new representation of a world led by immanent algorithms as well as "quality strategies" controlling any of our action. That control reduces the human being to a simple well packaged commodity. How to tell the human being when society becomes a machine? Is he nothingness jailed in the multiple devices that activate it? Is the human being a mere singular force expressing a motion without direction? Is he the uncertain thread of a stuff made of knots and no more able to be wear? Is he the son to whom an incestuous genealogy imposes Mongolian bastards?

Thinking again a desire for life requires rebuilding a demonetized universality and a resocialized links. Looking for upbringing, the thought has to rebuild a serene cohabitation between the finite topoï of all the human relationships and the transcendental momentum of all collective dynamics. For lacking of universality, this cohabitation is today a painful object of mistrust. By using new universal references, the desire for life should be able to overcome the anguish settled by an open world, furthermore marked by uncountable temporalities; a world only bounded by our instrumental prospects. Far from the dreamed of unity should henceforth human being be only defined as master and possessor of a technology (now part of his identity as subject); context merging in an unique item, the object and the subject of a now unhuman world ?

For thinking again the causality, the representation of the world will have to be conceived in a moving frame. Like the pilot of a ship sailing at night on a heavy sea, any intellectual elite living in an unsettle society must, like the pilot of ship, "triangulates" its position and in the same time anticipate the rogue wave. On the moving deck, both of the required landmarks to avoid to strike on the rocks of dangerous neighboring islands, must be adjusted upon two points at infinity (transcendental points). These points are obviously universally correlated. Despite the uncertain axis of a shaky deck, in order to merge both infinites, the pilot, whose human reason remains the only saving reference, will have to square the sextant to his eye. Due to the motion of the deck, both landmarks will henceforth no longer be able to be thought transcendent, – image of an invariant universe –, but only like experimental mathematical data, new fragile base of a redesigned logic; but new logic suitable to what and how to use it? Thus would, the subject-creator not only be the poor object of a chaotic brain? Might he be the architect of a new immanence, able to play the role of an universal externality? How to solve these theoretical apories?

The new appropriation of universal shackedby self-centered and chaotic winds, can only be based on the absolute duality (symmetrization) of the motion of both infinite landmarks. The reason becomes the third term of a unsteady state from where the thought can no longer flee; nevertheless a new kind of dual universality emerges. We then understand the following: the universal Borromean knot resulting from this paradoxical symmetrization, written $c < a < b < c$, can frighten logic too trivial to be relevant in this complex context. If it is not overpowered, the use of self-reference violates the natural order of things and forces ambiguity, mistrust, fear, and finally death wish; not only politically but mainly intellectually. The Borromean knot is usually thought by the means of circles, but it must here be thought as weaved by the means of the triangles inscribed in them. Intuition will confirm that the object of correlations between these triangles is the mathematical tool that allows to think a complexity based, at a time, on splitting and weaving. The rebuilding of both concepts, distance and associated temporal value (like for a note in music) embodies the paradoxical cyclic order; exactly as required by the engineering of this strange plait. Universality which then emerges may be expressed by a means of curvatures of hyperbolic surface able to model a collective identity based on dual correlations. On the way, the model recreates the fundamental concept of order required to overcome the chaos. The universal desired landmarks, no longer appear through some significant asymptotic directions of a projective universe, but through categorical limits and colimits that take historical meaning based on actions, interactions and correlations themselves. The intuition of the human being somewhere at world, turns out into the insurance of being anywhere, but granted with a sextant. Through the Borromean plait, object and subject can merge with confidence in a same item. This kind of dual merging can finally master a redesigned universality through an education of the complexity that must expand the Philosophy of Lights, henceforth without any external immutable nature for settling our thinking. Let us analyze how!

2. The unit and the infinite as being there

Any object, as unity, requires imagining an invariant expression for representing it. This can be done even at schoolboys' level, by identifying the five fingers as one hand. Even a still young intuition may accept, for any finite trivial set, the following elementary relation: $\eta x m = 1$ with η any type of scale and m an integer value. More subtly when the child turned to a student able to think complex numbers field ($i^2 = -1$) the young guy becomes able to understand that any of such kind of relation can institutes an unity notion; for instance through ηx(im)=1. Using the duality between experimental test and natural constraint, as physicists do, but also as the fundamental law of arithmetic authorizes, any integer may be splitted: namely m=$\omega\tau$. Therefore above approach (let us say thermodynamic approach), frees our thought from using the standard clock-time. Standard time vanishes as it should if we follow Carlo Rovelli's analysis of this concept in physics. But then, more essentially, the local notion of Velocity as derivative fades and switches to discretization. Then the quadratic global invariant named Energy must be questioned and revisited. The variable τ becomes locally constitutive of a partition of the unit and taking a thickness and a density gives rise to duration and tempo like in Fourier Space, when velocity is given by the operator (xiw) and measurability is given by (x1/iw). According to above approach, the inverse Fourier transformation does not always make asymptotic sense but it does not matter. Tempo-Space relationship that emerges from the discrete approach can obviously be turned into a standard space-time relationship by switching to continuous and by going back to physical time expression, but it is not necessary. Above approach operates directly in Fourier Space without any constraint about Inverse transform. Nevertheless at this stage, the presence of physical irreversibility does not involve intrinsic time irreversibility (specific geometric dissipation) if inverse transform exists. There would indeed be an art efactual deal of simplicity in constraining above analysis to a standard time reduction. We shall prove it from analyzing the consequences of an involvement of fractal geometry in previous elementary relations.

It has already shown that Fractal Geometry, –the first characteristic of which is the self-similarity of basis patterns, generates a chaos by the means of predefined, thus deterministic construction rules –, is much more than a mere illustration of outstanding nature of the multiplication/division algebraic concept (product), compared to addition (coproduct). The multiplication in fractal geometry involves explicitly the change of scale usually ignored in standard explanation of elementary arithmetic laws. This scaling states truly the deep meaning of the multiplication/division and it is not indifferent that we find this scaling as the root of any logarithmic function (both in its definition and in its numerical basis). As shown for example by the Koch flake, this geometry leads to finite objects in spite of the infinity of the steps of its process of construction. This infinite appears through a chaos at edges. The infinite tempi of process appear at the boundary, and while the mass of the flake remains finite; its edge then takes an infinite length. This seemingly paradoxical duality is clearly generic for such objects. The fractality merges the infinity of the detail and the unity of a dynamic; that why it can serve as a model for complexity. In addition the usual incompatibilities between the open and the closed vanish herein in subtle and multiple ways through self-consistent morphisms infinitely folded over scaling axis. Hierarchies or ordering are not left over but transcended by the folding of these morphisms. Their algebras support universally observed power laws (that is to say, exponentiation extensions), laws which naturally are based on the inversion, namely the mathematical expression of sharing/division. These partitions and the morphisms that constrain them, are the anchor point of the new thought of the complexity that becomes uncomplete, discrete and combinatorial. The normative function associated with this anchoring is asymptotically the logarithmic function which opens to tropical algebras.

Unlike many models of differential structure, approach using the fractality excludes mechanical point of view. Mechanics assumes the preeminence of the notion of time parametrized function as well as local continuous hypotheses (for example the relevance of the concept of velocity) on which the global invariants (for example energy) are founded. Tacitly, the use of physical time gives rise to scaling operators but the linearity hides some of its involvements. Let us remind that, according to Emmy Noether theorems, the time parametrization supposes independence of the physical laws with respect to any time-shift. Obviously, applying the same concepts to a fractality that requires memory and long range references, presumes a twist of our representations and a loss of contact with a non-additive reality, when this one is complex so as defined above. The modality of approach of fractal complexity can only be thermodynamically, if thermodynamics is considered as the meta-science of the experiment of non-additive exchanges. Overcoming the standard computations approach, without any additional hypothesis, thermodynamics helps us to deal only categories weaved by the rules of composition of the arrows and morphisms that characterize dedicated issues. Far from the physical time the function becomes "functorial" and the objects are reduced to an account or measure only associated to the relations through the geometry created by these very relations. Let us points out at this step the outstanding role of the self-references in complex environments. Our approach focuses on the relationships between n (extensities) number fields and measurement gauges η (intensities) when any process, including our mere observation, creates an explicit or implicit link between these two items.

The "Space-Tempi" relationships at play in complexity fractal approach are somewhat more complicated than the mere approaches of schoolboy or student mentioned above. Indeed, the set of fractal details whose quantities tend to infinity can only be considered in the dynamical context of cohomologic chains whose limits are not obvious. Fortunately, for categorical reasons, the geometries created by the self -morphisms are assumed to be characterized by non-integer metrics $1 < d < 2$, therefore asymptotically characterized by a global unity. Practically one can use Hausdorff-Mandelbrot HM relation between Space and Tempo. The multiplication of Tempi will occur in a second step. HM relation $\eta^d xn=1$ must be here extended in the complex plane, like $\eta x(\iota\omega\tau)^\alpha=1$ with $\alpha=1/d$ and $\iota^2=-1$. This relation takes the place of the trivial linear relation previously mentioned, namely $\eta xn=1$. This new equation, irreducible to a standard "Space-Time" relation, involves that the dynamics never reaches any asymptotical structure while scale approaches zero. The related series is divergent. It is then proved that the energy, which is no longer a universal source of unity, is changed into a strange variable whose dimension is Ldt. It will be noticed that, besides the notion of velocity obtained if d = 1, we know at least one traditional physical coefficient which comes under this expression, namely the diffusion coefficient or physical Action: d = 2 and the dimension is L^2t. In this last case the dynamics is archetypal of a Markovian process which only depends on vicinal sites. In this case the fractal geometry created by the set of exchanges (morphisms) is based on Péano like curves. Since it has the dimension of a local projection plane, the self-morphisms meshing this geometry has neither exteriority nor global anomalous extension. In the more general case, the externality required by thermodynamics to distinguish the entropic properties of any experimental object, reduced to its partition leads to a d / d–1, dimension namely the ratio dimension/codimension. This result confirms that the stochastic dynamic possesses its own exteriority pictured by the Péano fractal itself. In the case where d = 1, externality is the line of infinity (projective geometry).

3. Space and Tempi

The interest of the fractal object and thermodynamical of "tempi space" is due to a direct modeling in the Fourier space. This approach squeezes the representation of the world in the field of integer numbers. In this field, the tempo replaces the clock time. Tempi treat implicitly the partition (spatial zooming) of any object of experiments (to be defined). Tempi resume, in a set of separate countable variables, the infinite lattice categorical limits of internal dynamic morphisms. The spatial gauge is only determined by the dynamic nature of the object as structural unit. This unit is itself a morphism and Aczel and Lambek dual theorems must be understood in the context of an absence of completeness of our experiments. This incompleteness is formalized through the splitting of any integer into two parts (test part versus physics of the object). One could think that such dual structures are not able to be depicted but it is not the case and we have to thank the computers sciences for giving many very popular images of self-similar objects and for having pictorial what means a fractal absence of completeness. In addition, let us notice that many of ingenious devices driving our social life and even post-modern plastic arts are based on these new representations.

The geometry that underlies such objects is termed hyperbolic. If it differs from the Euclidean geometry learned in elementary mathematics courses, its intuitive approach is obviously a simple question of practice; just like the perspective designed by the Italian renaissance for any of us. This hyperbolic geometry is the result of conjonction of a projective geometry (that is to say a non-Euclidean geometry that is expressed in homogeneous coordinates giving a status to infinity) and of a complex plane using a circle as exponential operator. This last tunes the tempo (duration) through a parametrization of the phase angles. The construction of this geometry is based on the concept of a pseudo sphere, namely a sphere with negative curvature (the reference of curvature being $\gamma = -1$) whose generator is the hyperbolic function 1 / x. This function is also the primitive of the transcendental logarithmic function. The scaling of this function is similar to a change of unit of measure, thence its importance for the dynamic treatment of fractal geometries. This pseudo-sphere is isometric to the Beltrami-Poincaré disk. This last is a representation in the Euclidean plane of this geometry, for many still very little intuitive. Just as the properties of the circle can be expressed by means of the sinus (sin) and cosine (cos) functions which relate to angles, the hyperbolic properties can be expressed by means of sinh and cosh functions which relate to distances δ characterizing the hyperbolicity. If angles may be associated to tempi, hyperbolic geometry must be associated to spatial scaling through fractal geometry engaged with the structure of morphisms.

Beltrami-Poincaré model of hyperbolic geometry, like fractal dynamics, is based on self-morphisms with scaling. The pavement of Poincaré's disc is thus based on a tile defining the "fundamental group" to iterate for covering the hyperbolic surface. If hexagon is required to cover the Euclidean plan, hyperbolic surface may be covered by any n-gone tile, the edges of which have the form of arcs of circles (namely fragment of geodesics). Through self-morphisms respecting hyperbolic distances – view from a Euclidean exterior distances seem to decrease when approaching the edge while for the internal being everything seems normal since the distances retract in proportion to the contraction of the observer –, the disc can be covered without restriction (concerning the shape of the tile). However, according to an analogy with our knowledge concerning the fractal dynamics, such arcs can be likened to the transfer function $Z_\alpha(\omega\tau)$ concerning an exchange of extensities (under the control of a simple first order differential equation) operating across a fractal interface. These arcs are characterized in the complex plane by a phase angle associated with the angle of parallelism φ, related to the complex number $(i)^{\alpha}$, while in hyperbolic geometry they are characterized by means of a distance (hyperbolic) appointed $\delta(\varphi)$. This distance is characteristic of the curvature induced by the pavement (in practice by the difference at π with respect to the sum of the angles used during the triangulation which is at the base of the fundamental group). It will be observed that in the case where this group is of type 2n-gone then the topology associated with the connectivity of the links is all the same than a n-hole pretzel.

4. Fractal and divisions

Unfortunately, much of what matters in this postmodern world must be object of computation. The simplest count exploits the characteristics of the set of integers N. This countable set is incidentally characterized by an internal self-morphism given by the relation NxN = N. At this point, the fundamental rule of arithmetic, which states that any integer may be screened through a unique product of prime numbers, is crucial. This implies that in tempi-space relation $\eta x(\iota\omega\tau)^{\alpha} = 1$ the variable $m=\omega\tau$ to which we can associate a generic fractal pattern, will be able to take – during the progression in the order of the scales η in the set of rational numbers Q –, several expressions, in the spirit of Lambek-Moser, Beatty or Strum theorem, on the one hand, associated to the same metric α and on the other hand to a finite set of division of m in N: (ω,τ). These motives will be infinitely multiplied and entangled as the dynamics progress in the definition of details. The pattern will be unique if and only if n is a prime number. In the context where the generic motive gives rise to a tree of multiplicity, the dynamics will be associated with the functor $\mathrm{Hom}(\{\tau\},m)$ as well as the dual self-morphism $\mathrm{Hom}(\{m\},\tau)$. These functors will stratify at least twice the Topos of the dynamics by creating a functorial square whose structure opens the question of commutativity. Thus appears through a mere issue of partition – whose mathematical and physical meaning is trivial (any unique structure may be shared into two parts an extension or number of bricks and an intensity or size of the brick are contravariant variables opening on tensorial algebra of this sharing) –, a link between the local characteristics of the dynamics and its global features. This link subsumes the usual connections carried by Legendre's transformation for traditional functions; however they are not foreign to him, as is shown by the categorical theory of sheaves which underlies the elementary explanation here formulated.

The most important property which must be emphasized in this approach is as follows: the infinite multiplicity of patterns that arise within the dynamics as n is unfold in the order of scales η and Q is then related to the properties of zeta Riemann function ξ(s) one of the most famous of L fonctions. These function may be formulated equally either in the form of an infinite sum on N or in the form of an infinite product on the set of prime numbers P. As it is easy to notice when reading the sum – if one knows the properties of fractal transfer functions –, these universal functions can naturally be associated with hyperbolic dynamics whose partial arcs of circle depict the dynamics $Z_\alpha(\omega\tau)$, subject to the fibering this sum – by the means of an additional variable θ hidden in the expression of the unity. The parametric formulation of the total order is expressed through the Tempi-Space relation $\eta x(\iota m)^\alpha=1$ with $1=e^{\iota\theta \log m}$ x $e^{-\iota\theta \log m}$. Fibered along θ, $Z_\alpha(\omega\tau)$ becomes the basis of a variety termed $MZ_s(\omega\tau)$. In Riot-Space defined as an infinite vector space whose basic vectors are written αlog(pi), the fundamental arithmetic relation $m = \Pi p^{ri}i$ bases the trace of the exponentiation operator on the set of integer: N. In this framework and through the set of overall possible bipartitions of this trace (extension here of Lambek-Moser's Theorem), m = ωτ causes the fibering of the dynamics via the experimental factor ω. Above approach is obvious. On the contrary, proving that partial order (i) gives also birth to another manifold $MZ_{1-s}(\tau)$ characterized by a metric α=1–s is much more difficult. This new item is based on an anti-entropic dynamic termed $Z_{1-s}(\tau)$, namely a virtual dynamics characterized by a restoration of a total order. This is proved by studying Kan's extension in the commutative categorical square parametrized via θ,α and ω,1–α. Therefore, likewise functional relations relates both symmetric zeta functions: ξ(s) and ξ(1–s), the couple of experimental dynamics $Z_\alpha(\omega\tau)$ and of virtual dynamics $Z_{1-s}(\tau)$, but also both varieties $MZ_\alpha(\omega\tau)$ and $MZ_{1-s}(\tau)$ are in arithmetic functional relation via the dual functors Hom already mentioned.

5. Coupling of dual clocks characterized by a difference of phases

In the framework of previous categorical approach, the link between both above varieties is the main issue involved by the coupling of both parameters of fibration. The coupling of the two clocks pulsating with the variables ω and θ tunes the link between both chains of homologies carried by the dynamics. This coupling is constrained by the factor α=1/d namely, in non-Euclidean geometry, through a phase similar to that of a mathematical parallel transport

(Berry's angle). The understanding the role of the phase-gap requires to itemize accurately the Kan extension by thinking the fibrations using θ and ω as functors applied on the dynamic base $Z_\alpha(\omega\tau)$ by taking into account the arithmetic constraints along the scaling. Then the overall couplings must be consider by using well-chosen Kan extensions. To do so it is necessary to go through an intermediate step by considering the same extension in Riot's space, the exponential operator in $E_{PR}(s)$ being referred in $E_{PR}(1)$ being enlarged from the operator in $E_{PR}(1)$ to the same exponential operator in $E_{PR}(1–s)$. In this context, the Kan extension at left (Lan with limit self-similarity) is different from the extension at right (Ran with co-limit self-similarity) in all cases given by αdifference of ½. This difference is the analog of the difference between a sum of mean values and the mean value of a sum of arbitrary variables. In above approach there must be a group (cohomology) between the dynamic bases. This switching group must justify the difference between the two functors Lan and Ran. This group should have to be expressed in particular through the functional relationship between both dual zeta functions $\xi(s)$ and $\xi(1–s)$. This difference being understood via the dynamics, the analogies based on the physical and mathematical meaning of the Fourier transformations rules, suggest to relate the coupling of the two clocks, namely the phase-gap, to the set derivation the functor of partition $m = \omega\tau$. This functor makes it possible to understand that the co-limit of totally ordered set is determined by a variable of duration, variable very different of the inverse Fourier Transform of ω. $Z_\alpha(\alpha\tau)$ is then none other than the partially ordered auxiliary dynamics virtually expressed by $Z_{1-\alpha}(\tau)$. This extension expresses the geometric prolongation of the geodesic arc as a fragment of circle with respect to the complete semi-circle considered dynamic of reference with α= ½ circle, circle indirectly associated to the symmetries of geodesics in the disc of Beltrami-Poincaré. This geometric extension gives rise to a full geodesic perspective (virtual plus real) as the Fourier Transform of a dual exponential operator limit.

6. Zeta management and the set of zeros of zeta function

The specificity of zeta management consists in taking into account and implementing the auxiliary virtual-dynamics $Z_{1-\alpha}(\tau)$ by revisiting – despite the curvature and chaos that results from the phase difference of the two clocks – the temporal status of the causality. A new causality should take into account the multiplicity of all possible arithmetic couplings between both clocks. The phase of the auxiliary clock θ can indeed be tuned on the angular offset imposed by the main dynamics $Z_\alpha(\omega\tau)$ in accordance to the tempo ω of the clock traditionally associated to the physical time. This time must take into account the constraints imposed by the two functors Hom. It is in this context that the problem of the zeros of the Riemann zeta function $\xi(s)$ takes place. Indeed, all traditional management is based on the hypothetical existence of an analytic function whose zeros constitute the fixed points and whose invariants are given by equivalence relations between these points when the manager has to choose a given strategy (the symmetries determine the equivalences: equivocal, ambiguous situation).

We remind that the universal function $\xi(s)$ is, via the Voronin theorem, an infinite approximation of any polynomial complex function (f(s) analytic as ~ $f(s^n)$) expression able to express the coherence and uniqueness of any observed or modeled process. This assertion is ensured by the Voronin theorem which, considering implicitly NxN = N, is only valid outside the set of the zeros of the function considered. We can assert after Bagchi that this critical condition can be lifted if the zeta function is self-similar. Such is the case since $Z_\alpha(\omega\tau)$ is self-similar. The basis of a fibration in θ is the natural medium of this self-similarity, via α. Beyond, the expression of the Galois group of f(s) = 0 is always based upon an auxiliary equation able to be determined, through a field extension, by taking into account the symmetries (or ambiguity) constraining the solutions. Postponing the issues on zeta function which is the universal best approximation of f(s), the Galois group associated with the non-trivial zeros of zeta $\xi(s) = 0$ is necessarily infinitely large and countable as is the space $E_{PR}(s)$ the exponential measure $\xi(s)$. According to Chebotarev's theorem, – the probability (on the set of prime numbers) for being able to define an useful auxiliary equation modulo a prime number pi is the inverse of the order of its Galois group –, it follows that the probability of finding a suitable auxiliary equation is almost surely nil (this is also implicitly the Voronin theorem involvement). One understands here among others why the analytical approach failed to solve the Riemann conjecture as currently expressed. Due to the duality pointed out above It is indeed necessary to overcome the classical approach, based on the assumption of independent auxiliary equation, by taking into account at first the duality. Among the approaches able to be considered, let us notice the use of physics in fractal geometry. However, even this approach will fail if it presupposes a priori the existence of the usual physical laws which are either in contradiction with the tempo in fractality () or fulfill a priori the critical condition of Riemann by using the usual physical time: $s=1/2+i\theta$. The physical approach suggested by the authors seeks to create a Grothendieck's Topos by constructing physical laws (morphisms) which, using duration in fractality, namely a tempo, are able to express the fact that the zeta function, ensures on the one hand an exponential measure for scaling in spaces (s=1) and on the other hand a scaling in tempo by taking into account the universal but folded dynamic base for fibration $Z_{\alpha}(\omega\tau)$ approach supporting the categorical status of $\xi(s)$.

In accordance with the orders respectively total (main dynamic) and partial (virtual auxiliary dynamic), this original approach makes possible to understand that the Galois group of ambiguities concerns, – before the issues of zeros of Zeta function-, the crossed morphisms induced by Hom ({τ},n) and Hom({n},τ) basing the coupling between $\xi(s)$ and $\xi(1-s)$. It can be shown that there can be no others because of the infinite multiplication of fractal patterns, along the scaling. Both critical classes of morphisms are associated with two distinct constraints denoted Lan (limit of the derivation functor of $Z_{1-\alpha}(m)$ with respect to the fibration θ) and Ran (which is its colimit). The appearance of the zeros of the zeta function can only result from the loss of a degree of freedom, namely the identification of the both morphisms, hence Lan (Lim) = Ran (colim). that is identity of $Z_{\alpha}(m)$ and $Z_{1-\alpha}(m)$ namely whatever θ, α=1/2. This result is none other than Riemann's conjecture. We see that we have been able to obtain this result because the base $Z_{\alpha}(m)$ authorizes the overcoming of the role of θ. The critical value is the expression of a random self-similarity but this one is particular for the zeros because it is strongly related to a Peano metric d = 2 which assures a completion of zeta description based upon the set of zeros. We give here a precise physical meaning to this result by connecting it to the fact that the existence of non-trivial zeros, that is, of proper solutions (regular singularities) in infinite number, suggests the absence of any geometric externality, situation never observed in management. In the associated physical model the "surface" of interaction is none other than the object itself and any final functor is also an initial functor. Quantum mechanics is only the stochastic expression of this self-coherence when the subject is outside the object of the experiment. The same is true of the determinism of Maxwell's equations, for example.

While an account manager is only concerned with zeros (by lacking creativity), creative manager inscribes his action in the general case, taking into account the fact that the non-additivity of the rules involves that the subject that moves the dynamics cannot be dissociated neither of its object nor of its own motives. Music is probably a good practical example duality between composition patterns and motivations and talents required for performing them with an orchestra.

7. Conclusion

Anthropology and history of societies are naturally registered in the dual context of structural complexity described above. Social motives are weaved within a folded multiplicity. The meaning of history versus its unity is an open issues. However, beyond the usual Time -Space structure, the role of the set of durations as weaving the social matter (but also as architect of its geometry) can henceforth mathematically be stated. In spite of their intrinsic uncertainties, the Tempi-Spaces (as design the hyperbolic complexity), can steady some truths as landmarks in chaos. In this frame standard Space-Time, rebuilt to be self-similar, must be discretized. This option leads divergent series which only be managed through the use of the duality. The determinism of the natural sciences thought by the Philosophy of Lights to represent, an immutable environment of physical laws, is here questioned. Particularly the notion of parametrized function cannot answer the need of a renew determinism aiming the representation of a complexity whose subject (even the simple observer) can no longer be extracted. Initiator or target of arrows as actions, the subject is henceforth a part of a categorical and historical dynamics that requires the definition of their Tempi. These Tempi are related to global behavior, memory of the subject and future as perspective of action. The momenta carried by the arrows (morphism) define locally the subject in society (at world) as the engine of his action. Such is the meaning of the sheaves theory. Cupid's representation in the mythologies anticipated this categorical approach of the complexity.

We shall call Euclidean determinism, the one imposed by the parameter $\alpha=1$ and hyperbolic if not. and hyperbolic if not. Any way, despite the complexity, the environment remains locally assimilable to a plan even if these local plan generate a manifold. In Euclidean environment causality is thought linearly with very short-term perspectives (feeding, reproducing, ensuring the next day). Correlations in play are local. The central power or dictatorship, structures the fundamental group around a single singularity (the central power) and its duty: to guarantee a minimum of security and permanence of the collective. Public opinion is controlled by the power seen as an irreducible limit functor implemented by everyone in a daily action. Instant history is the unfolding of the only power in an imaginary order subject to dictates.

Chance refers to an increased complexity. It is backed on a determinism defined at a second order. Local determinism is dispersed by a closed geometry of exchanges, characterized by an absence of exteriority (Peano curve). The imaginary is just reduced to close vicinity. The hyperbolic control parameter is $\alpha=1/2$. The afferent power is said to be tyrannical as are the laws of nature. He seizes to himself not the control of some imaginary dedicated but all imagination in the context of the only partial order that creates the situation of the moment. Any local morphism becomes a source of global determination and the causal thought is only locally fixed situation leading that the overall environment to become a bubbling, unpredictable stormy sea (like a big bang). In physics the global structure is finally determined by the random morphisms between prime numbers (namely as a combinatorial projection of the countable set of integers causing finally the birth of Mendeleyev's table of elements). Examples of structures operating at random are war, the market when it is completely "free" (libertarian), many violent human relations, and so on.

Henceforth, we can consider for physical applications, the use of median categories between pure determinism and chance. These categories proceed by couple. Their Topos defines a dia-logic (dual logic). In spite of its intrinsic chaos, chance remains a deterministic process at second level. Indeed, its foundation is a convolution between a deterministic process and collective unit represented by Peano curve (introducing a pure chaos). The best of all possible worlds (Leibniz), the Fable of the Bees (Mandeville), the role of concupiscence in social self-organization (Pascal), the invisible hand of the market (Adam Smith) and so many other important works, exemplify our archetypal opinions, all based on Cartesian additive sharing. But the fractal geodesics open the geometry toward an outside. Hyperbolicity involves dynamics paths but without ending (and vice versa). Morphisms between geodesics which explains their open sets, build the median dual categories that bridge dictatorship of pure Cartesian determinism and the tyranny of A. Smith's chance (second level Cartesian). Even without mathematical formalization these median categories are well known. Thus, even using mental control, the dictatorship cannot limit totally the imagination of every citizen; it always has to face the human desire and of the size of none countable possible brain structures. For tyranny it is just a question of time. Chance has not enough time at disposal to control over all possible imaginaries leaving the free the field for dreams.

Both extreme models rely on the control of the clock, that tunes the rhythm of the social over an common tempo. The theoretical difficulty they face is due to the gap between clock official time and local tempi associated to the individual space-time; space-time always shacked by the random ventures of life. These events, always singular, lead individuals to disturb the official tempo by building unexpected long range correlations; out of phase. These ones cause a drift to a fractal metric of individual paths. It is this irreducible drift that democracy tries to take into account. But the democracy is currently in danger. Above theoretical approach is a model of the control operators of this danger. It should be able for helping to restore the trust in the future even if this future stay open. We name "zeta management" the use the theoretical model given above for thinking a median policy. The traditional management is not only unable to do the same but, more risky, its way of thinking may justify both (i) believing in conspiracies, as upmost determinism and (ii) libertarian way of life as limit form of individualism. All these issues will be theoretically itemize in the near future in the frame of a university text book.

REFERENCES

1. Le Méhauté Alain (1991), *Fractal Geometry and applications,* Penton Press, London.
2. Leinster T. (2014), *Basic category theory*, Cambridge Studies in Advanced Mathematics, Cambridge.
3. Hines P. (1999), *A categorical theory of self-similarity*, Theoretical and applied categories 6, 33-46.
4. Badiou A. (2014), *Mathematics of transcendental*, Bloomsbury Academics, London.
5. Chatelet G. (2010), *L'enchantement du virtuel*, ED. Rue d'Ulm.
6. Jonscher A. K. (1996) *Universal relaxation law,* Chelsea D**ielect**ricPress, London.
7. Ivic, A. (2003), *The Riemann Zeta function. Theory and applications*, Dover New York.
8. H. M. Edwards, H. M. (1974), *Riemann Zeta function*, Academic Press, London.
9. Rovelli Carlo (2004), *What is time? What is space?* Google books.
10. Le Méhauté A. and Riot P. (2016), *A Trail between Riemann Hypothesis and the Founts of Currency* Hyperion International Journal of Econophysics **9**(1).
11. Le Méhauté A., Riot P. and Tayurskii D. (2015), *From Riemann Hypothesis via the theory of category to modern monetary theory,* Hyperion International Journal of Econophysics& New Economy. 8(1) 263-292.
12. Le Méhauté A. and Riot P. (2016), *A Trail between Riemann Hypothesis and the Founts of Currency,* Hyperion International Journal of Econophysics **9**(1)
13. Le Méhauté A., Tayurskii D., Riot P. and Raynal S. (2017), *Grothendieck Topos, Zeta Complexity and arrow of Time: new concept in project management,* Hyperion International Journal of Econophysics & New Economy, 10(1) 7-47.

Acknowledgment: Philippe Riot (Zeta Innovation) and Frederic Héliodore (GE) for scientific exchanges.