Quantum Chaotic aspects of Biophysical Semeiotics

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ABSTRACT

'Quantum Biophysical Semeiotics' – QBS - is an extension of classical semeiotics, an original medical science, which allows to interpret the body signals for diagnostic purposes. The key of this new discipline is the awareness that human bodies is a continuum of biological systems whose dynamics follow the laws of deterministic chaos, able to be measured by mean of nonlinear statistical invariants. Furthermore, in a recent discovery energy, information and communication between DNA and bio-systems are strictly connected with quantum behavior. An integrated quantum-chaotic approach is evidenced as epistemological base for a new approach to modern sciences.

INTRODUCTION

The 'Quantum Biophysical Semeiotics' - QBS, is an extension of the classical semiotics with the support of quantum and complexity theories, a scientific approach first described by Stagnaro (Manzelli et al., 2007a) based on the 'Congenital Acidosic Enzymo-Metabolic Histangiopathy' – CAEMH (Stagnaro, 1985), a unique mitochondrial cytopathy, present at birth and subject to medical therapy.

We will see how chaos theory, quantum theory, and concepts such as synchronicity, entanglement, strange attractors, non-local reality, energy-information and DNA "antenna" defined by Manzelli (2007b), are crucial for understanding the diagnosis, prevention and therapy of pathologies, such as cancer, type 2 diabetes mellitus and heart diseases (Stagnaro et al., 2004a).

According to the research of Stagnaro, today the doctors should be able to evaluate, at the bedside of their patients, simply using the stethoscope (Stagnaro, 1978), mitochondria functionality, as well as the functionality of all biological systems. It is now possible, from the moment of birth, to make a diagnosis in order to detect, i.e., the presence of 'Oncological

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Terrain' linked, whether or not, with 'Oncological Congenital Real Risk' (Stagnaro, 2009a), so that an intelligent prevention strategy can be implemented only on those subjects with 'Inherited Real Risk', without incurring additional costs for the NHS[i]. The diagnosis done on the basis of 'QBS Constitutions', i.e., Coronary Artery Disease – CAD (Caramel, 2010a), 'Oncological Terrain', 'Diabetics Constitution' (Stagnaro, 2004c), etc. - will prevent the onset of the more serious diseases that humans suffer from today by means of an effective and efficient primary prevention.

In chapter 1 are evidenced the main theoretical bases of QBS, such as 'CAEMH' (Stagnaro, 1985), 'QBS Constitutions' (Stagnaro, 2004c) and respectively 'Inherited Real Risks' (Stagnaro, 2009a), and one of the practical tools for physician investigation such as the auscultatory percussion of the stomach.

In chapter 2 there is an overview of some basic concepts of chaos theory and its invariant statistics, such as LCE, entropy and especially fractal dimension, which is the qualitative and quantitative measure adopted by QBS to discern between health and pathological states, even potential.

The causal interpretation of quantum theory introduces the chapter 3. Alan Aspect et al. (1982) provided strong evidence for a nonlocal form of interaction in quantum physics, and Lory's experiment (Stagnaro, 2008b) opens new perspectives about the presence of non-local reality in biological systems. The idea of 'Quantum Potential' (Bohm, 1980) as thin energy but dense of information guiding much greater energies is similar to the concept of 'Energy Information' – EI - given by Manzelli (2007b), and used to explain quantum behavior in bio-systems.

Finally, in chapter 4, is proposed an integrated approach of the scientific aspects presented in this paper, suggesting the new philosophical idea of 'Quantum Chaotic Determinism' (Caramel, 2010c) as epistemological base for 'Quantum Biophysical Semeiotics' and for modern sciences in general.

1. STATE OF ART

Quantum Biophysical Semeiotics: basic concepts

'Quantum Biophysics Semeiotics' - QBS, is a new discipline in medical field, extension of the classical semeiotics with the support of quantum and complexity theories, a scientific approach first described by Stagnaro (2008b) based on the 'Congenital Acidosic Enzymo-Metabolic Histangiopathy' – CAEMH (Stagnaro, 1985), a unique mitochondrial cytopathy, present at birth and subject to medical therapy.

According to the research of Stagnaro, today doctors should be able to evaluate, at the bedside of their patients, simply using the stethoscope and auscultatory percussion of the

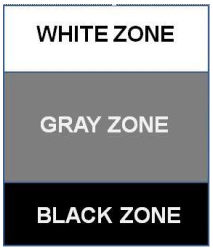
stomach (Stagnaro, 1978; Stagnaro, 2004a), mitochondria functionality, as well as the functionality of all biological systems. It is now possible, since the moment of birth, to make a diagnosis in order to detect the presence of the 'Inherited Real Risk' of many diseases linked with 'QBS Constitutions' (Stagnaro, 2004c), so that an intelligent prevention strategy can be implemented only on those subjects with 'Real Risk' (Scheme 3).

According to Stagnaro (2004a), genome's information are transmitted simultaneously both to parenchyma and related micro-vessels, so that mutations in parenchymal cell n-DNA and mit-DNA are the *conditio sine qua non* of the most common human disorders, like diabetes, CAD, and cancer, today's epidemics.

In fact, all these diseases are based on a particular congenital, functional, mitochondrial cytopathy, mostly transmitted through mother, and defined 'Congenital Acidosic Enzyme-Metabolic Histangiopathy' - CAEMH (Caramel et al., 2010d).

The contribution of these modifications to the relative pattern of pre-clinical syndrome, based always on genetic or inborn errors – CAEMH - is different from patient to patient and changes in the course of the disorder evolution. For instance, in case of diabetic syndrome, insulin-secretion increases silently for years or decades, before appearing as 'Type 2 Diabetes Mellitus' - T2DM, at the fifth and final stage of its natural history (Stagnaro, 2010a).

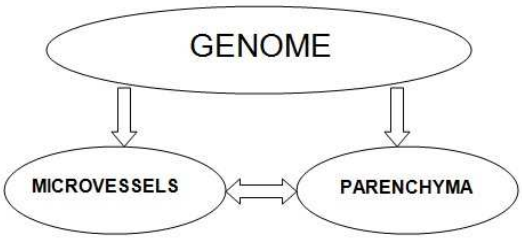
This pre-clinical stage is not detectable through usual clinical tests, so it is necessary to explore new approaches, such as that introduced by 'Quantum Biophysical Semeiotics' – QBS – (Stagnaro, 2007b), which through bed-side evaluation, can assess the existence of pre-metabolic syndrome[ii], that can last for years or decades, pre-clinical stage of the disease, still potential or on training - evolution to pathology, pre- morbid state or gray area (Stagnaro et al., 1998), so allowing an effective prevention (Scheme 1, Scheme 4).



Scheme 1

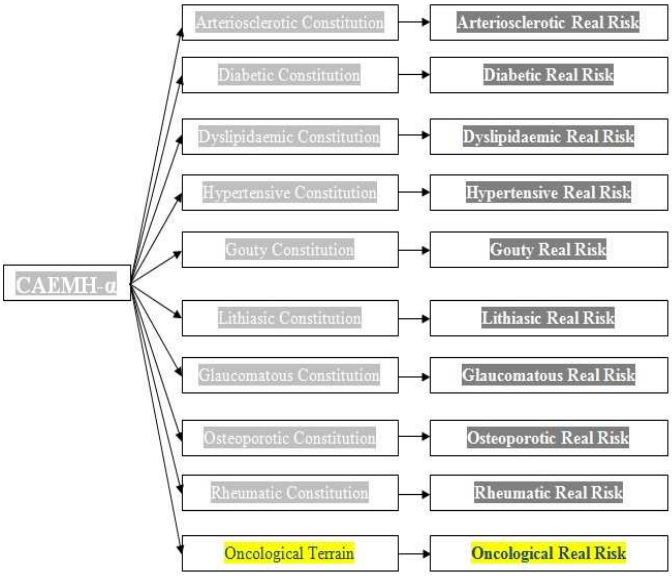
In addition, parenchymal gene mutations cause local microcirculatory remodeling, so doctor can evaluate it at the bedside in a reliable manner, gathering indirect information on inherited modifications of relative parenchymal cell, since biological system functional modifications is parallel to the mutations of genes, according to Angiobiopathy theory (Stagnaro, 2008l).

The presence of 'intense' CAEMH – termed CAEMH-'alfa' - in a well-defined area, i.e., myocardium, involved by gene mutations in both n-DNA and mit-DNA, is the ground for one or more biophysical semeiotics constitutions[iii] (Stagnaro, 2004c) which could brings about their respective congenital Real Risks - RR (Scheme 4) characterized by microcirculatory remodeling from QBS viewpoint, especially intense under environmental risk factors.

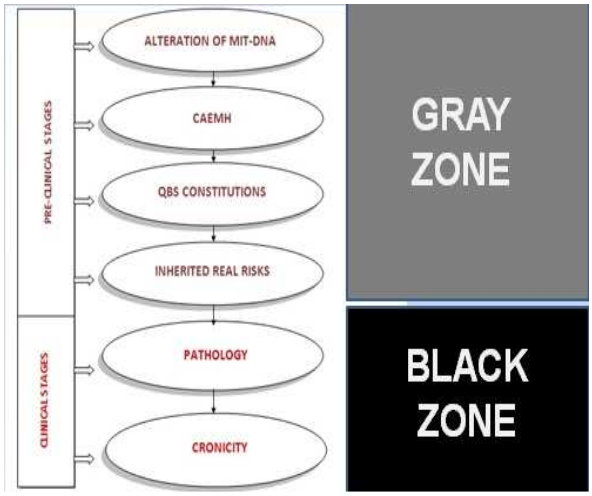


Scheme 2. Genome affects both micro-vessels and parenchyma

In Scheme 2 it is shown that genome affects both micro-vessels and parenchyma, according to Stagnaro's Angiobiopathy theory (Stagnaro, 2009a).



Scheme 3



Scheme 4

Investigating the microvessels, whose behavior is typical of dissipative systems far from equilibrium, this is a way to get indirect information from the state of health of their respective parenchyma.

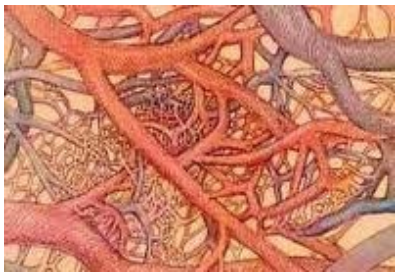


Figure 1

The chaotic dynamics of microvessels (Figure 1) are well known, but it is not so evident how to measure their oscillations and to get consistent qualitative information from their

behavior for diagnostic purposes. For this aim is useful to know a very original method provided by QBS which is called 'auscultatory percussion of the stomach'.

Quantum Biophysical Semeiotics: Basics practical tools

Auscultatory Percussion of the Stomach

The *auscultatory percussion of stomach* plays a primary role in 'Quantum Biophysical Semeiotics' - QBS. Doctor who knows this method and can apply it properly and safely, can observe, in an easy and rapid manner at the bed-side, a very large number of both signs and reflexes, which allow him to recognize several pathologies, even potential or in their pre-clinical stages. Notoriously, the stomach is innervated by two gastric nervous plexuses, linked to *celiac plexus*, where a large number of reflexes, originating from almost every tissue and organs, ends. Interestingly, if we stimulate by digital nail pressure or otherwise by pinching skin trigger-points, in the stomach occurs, as already known, volume and form modifications, termed as *gastric aspecific reflex*, vagal and sympathetic, and *tonic gastric contraction,* as in case of appendicitis and cancer, starting from its initial stage of 'Inherited Real Risk', rheumatic and autoimmune disorders (Figure 2 and Figure 3).

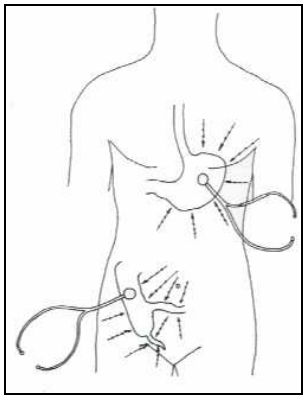


Figure 2

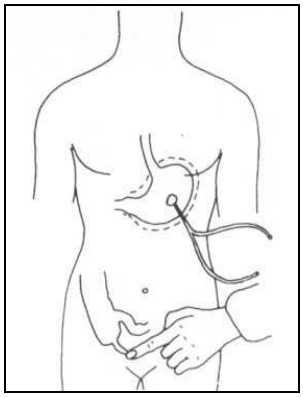


Figure 3

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Position of the patient

The patient is lying down in supine position, psycho-physically relaxed, with open eyes to lower melatonin secretion (Figure 4).

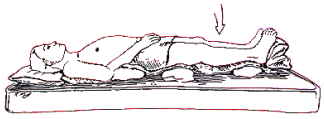


Figure 4

Demarcation of the greater curvature of stomach

A short piece of great gastric curvature in its inferior segment has to be ascertained, seen that the stomach can be in different position depending of the patient physical structure (Figure 5, Figure 6, Figure 7).

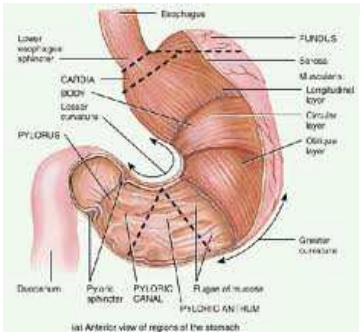


Figure 5

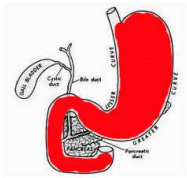


Figure 6

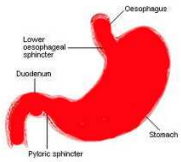


Figure 7

Stethoscope positioning

The patient helps the physician by fixing the bell-piece of stethoscope on skin projection of the interested parenchyma (i.e., stomach, urethra) with a finger-pulp (Figure 8). In the case of 'Gastric Aspecific Reflex', the bell-piece of the stethoscope is fixed upon any point of skin projection of the stomach.

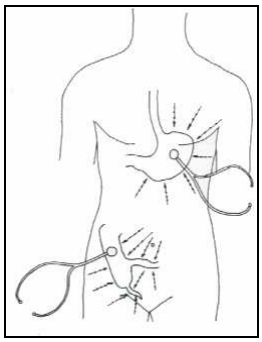


Figure 8

Percussion of trigger points

The doctor performs the percussion with middle finger, bent, like a little hammer, *directly, very softly,* and *gently*, on the skin (trigger points, green dots in the Figure 10), two times subsequently on the same point before moving on, towards (green arrows, Figure 9) the bell-piece of sthetoscope (1 cm away), along centripetal and radial lines, as quickly as possible (green dots, Figure 10).

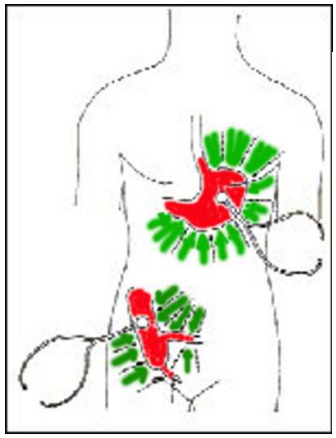


Figure 9

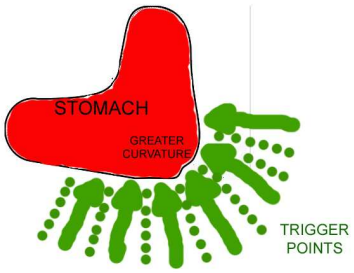


Figure 10

Pay attention! When digital percussion beats "directly" the stomach projection (or the skin projection area of whatever viscera, of course, red areas) precursory sound is perceived clearly modified, more loud, and it appears as "originating near doctor's ears". At this point, it is advisable to perform the auscultatory percussion for the second time, at least in initial stages, when there is no great experience, in order to avoid some mistakes, for instance, due to peristaltic wave. Digital percussion must be just on green dots (trigger points), and never on parenchyma (red areas of Figure 9 and Figure 10).

Digital pressure applied on epiphysis (simultaneous to trigger points' percussion)

'Intense' digital pressure applied upon skin projection of epiphysis (Figure 11) or of SST-RH (more practical and easy to find, located above the external auditory meatus), brings about 'Epiphysial - Gastric Aspecific Reflex' (Ep. G. A. R.), called the Rinaldi's Sign.

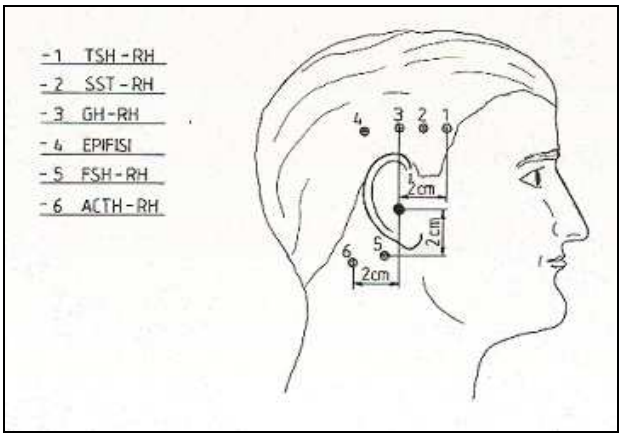


Figure 11- Epiphysis and SST-RH

Auscultation of Ep. G. A. R.

The Ep. G. A. R. is characterized by 3 key measures: Latency time, Intensity and Duration of the Reflex. The time that passes since the beginning of percussion till the initial auscultation of

the reflex is called Latency Time (Lt), and is expressed in seconds. The time that passes from when you start listening to the first reflex until its death is called reflex Duration (Du), which is also expressed in seconds. The Intensity (In) of the reflex refers to the observed gastric dilation and/or contraction, and it is expressed in cm.

Microcircular Functional Reserve

Alterations of mit-DNA and n-DNA cause CAEMH, a parenchymal gene mutation that induces, in case of intense CAEMH, a 'Local Microcirculatory Remodeling' (LMR), a 'congenital microvascular remodeling' possible to evaluate and investigate, getting information about, for instance, heart parenchymal cells through several QBS signs and behavior, according to Angiobiopathy theory (Stagnaro, 2009b). Through the observation of EBD – 'Endoarteriolar Blocking Devices' (Stagnaro, 2007b) and their structure and functioning on parenchymal microvessels we can study the LMR and investigate if there is OT (Oncological Terrain) or 'Inherited Real Risk' of cancer and endothelial dysfunctions. A lowering microcirculatory blood flow is brought about by LMR due to newborn-pathological, type 1 subtype a) tumoral, EBD synonymous of reduced tissue oxygenation. Through quantum biophysical semeiotics we can measure and evaluate the 'Microcirculatory Functional Reserve' (MFR) activity of related parenchymal microvessels. MFR is correlated with microcirculatory bed or 'Tissue Microvascular Unit' (T.M.U.) and it is possible to evaluate it through the observation of tissue oxygenation, tissue pH, T.M.U. structure and function, local metabolic situation, myocardial preconditioning and EBD investigation.

Tissue Oxygenation and Rinaldi's Sign

The tissue oxygen supply can be assessed clinically in a precise way. In health, an intense digital pressure applied upon skin projection area of the epiphysis, brings about 'Epiphysial and SST-RH - Gastric Aspecific Reflex' (Ep.G.A.R.) after a 'Latency time' (Lt) of 16 seconds (Table 1), informing on tissue oxygenation at rest: negative Rinaldi's Sign.

Under the above mentioned conditions, if Ep.G.A.R. appears immediately, simultaneously with an intense pressure of epiphysis trigger points, so that Latency time is equal to zero (Lt = 0), the *Rinaldi's sign* is positive revealing the 'Oncological Terrain' of the patient. In this last case Ep.G.A.R. is in fact simultaneous and its intensity is correlated with the numbers of EBD type 1, subtype a) tumoral, pathological neo-formed, whose quantity is possible of accurate assessment on the basis of the parametric values of middle urethral reflexes (Table 1).

Oncological Terrain

Epiphysis- Gastric Aspecific Reflex (Ep. G. A. R.) "intense" digital pressure on cutaneous projection of epiphysis

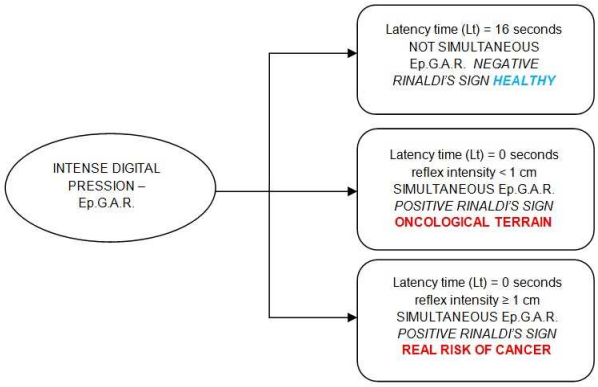
Latency time (Lt) in seconds	MFR in seconds	fD & equilibria	EBD	Preconditioning	tCG	Diagnosis
Lt = 16 Negative Rinald's Sign	3< MFR <4 normal MFR, associated activation, outcome +	fD ≥ 3 (ideal value fD=3.81) stange attractor	Normal EBD phsiological function	Type I Physological tissue microvascular unit	**Absent**	Health
Lt = 0 positive Rinald's Sign	MFR = 4 compromised MFR, dissociated activation, outcome ±	2<fD<3 limit cycle	Normal, slightly modified EBD function, small number of pathological EBD	Type II A Intermediate tissue microvascular unit	**tonic Gastric Contraction - tGC** - local autoimmune syndrome - accompanied by gallbladder - and splenic contraction - decongestion: **positive tCG**	Oncological Terrain (see tables about different types of cancer to refine the diagnosis)
Lt = 0 positive Rinald's Sign	4< MFR≤ 5 growing compromised MFR, dissociated activation, outcome ±	1<fD≤2 limit cycle	Modified EBD function, increasing number of pathological EBD	Type II B Intermediate tissue microvascular unit	**tonic Gastric Contraction - tGC** - local autoimmune syndrome - accompanied by gallbladder - and splenic contraction - decongestion: **positive tCG**	Inherited Real Risk of Cancer (see tables about different types of cancer to refine the diagnosis)
Lt = 0 positive Rinald's Sign	MFR>5 absent MFR, dissociated activation, outcome –	fD=1 fix point	Normal EBD function pathological, large number of pathological EBD	Type III Pathological tissue microvascular unit	**tonic Gastric Contraction - tGC** - local autoimmune syndrome - accompanied by gallbladder - and splenic contraction - decongestion: **positive tCG**	Overt Cancer (see tables about different types of cancer to refine the diagnosis)

Table 1. Legend: MFR (Microcirculatory Functional Reserve); EBD (Endoarteriolar Blocking Device); CAD (Coronary Artery Disease; fD (fractal Dimension); Lt (Latency time)

Table 1

In Table 1, the main parameters for the diagnosis of 'Oncological Terrain' - OT, under intense digital pressure upon the skin projection of epiphysis, are resumed. If the reflex appears simultaneously with the stimulus, there is positive Rinaldi's Sign (Scheme 5), while if it appears after 16 seconds, the Rinaldi's Sign is absent, there is not OT. 'Tonic Gastric Contraction' – tGC - appears after the dilatation of the stomach just in the cases of 'Oncological Terrain', 'Inherited Real Risk' of tumor and overt cancer, while in health we do not observe tGC.

Epiphysial and SST-RH Aspecific Gastric Reflex (Ep.G.A.R.)
Intense digital pressure on skin projection of epiphysis – Rinaldi's Sign



Scheme 5. Legend. Ep.G.A.R. (Epiphysis Gastric Aspecific Reflex); Lt (Latency time)

Intensity of Gastric Aspecific Reflex

The intensity of the reflection is measured in centimeters. Both the gastric aspecific reflex (dilatation of the stomach) and the 'tonic Gastric Contraction' – tGC - can be measured in cm. There is a distinction between physiological expansion and contraction of gastric tonic: the last one happens only in case of disease. G.A.R. is "physiological" if the Latency time (Lt) of the reflex, duration (Du) of the reflex, and duration of its disappearance (fractal Dimension - fD) are physiological. G.A.R. is "pathological" if the three parameter values (Lt, Du, fD) are abnormal.

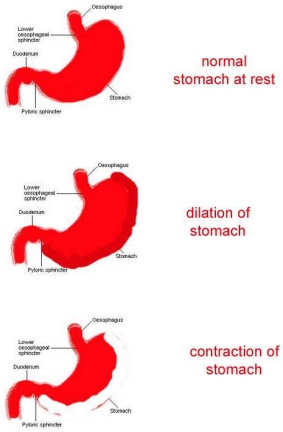


Figure 12

In Figure 12, there are three cases: *stomach at rest* in its normal shape, *dilated stomach* (in full, with the exception of part-pyloric antrum, duodenum closed to the contractions after auscultatory percussion, and *contracted stomach*. In the case of dilated stomach, the stomach collapses, decreases in thickness, and thus the reduced thickness provokes the stomach expansion, occupying more space than upon an imaginary plane, and given that stimulating the bottom of the big bend in the stomach, it goes down, inter alia, transshipping the start line of

the stomach at rest (the central one, in Figure 12, is highlighted in this expansion, for example, 1 cm down, with a different red color). In the case of '*tonic Gastric Contraction*', which always occurs after the dilation or expansion, but the stomach thickens, and so physically appears to be a contraction, or it goes up, compared to the initial line of the lower part of the great gastric curve at rest (figure 12 below): this contraction is marked with a white line (i.e., 1 cm) in the figure 12 below. The contraction appears at the end of the duration of the first reflex, which may persist for three or more seconds. The expansion is always observed, however, and it always appears after the latency time, while the contraction, if there was, appears a few seconds after gastric aspecific reflex (expansion or dilation). The measure is taken comparing the baseline of the greater curvature of the stomach - stomach at rest (Figure 12), with the new position of the borderline of the stomach (if upwards in case of contraction, or down, in case of dilation). The tGC is not always, but depends on the case: i.e., there is tCG in 'Oncological Terrain', 'Inherited Real Risk' of cancer, appendicitis, rheumatic diseases; there is tCG in Overt CAD but not in the real risk of CAD. The stomach contracts in some cases of 'Inherited Real Risk' - IRR, and not in others: for instance, only in the 'Inherited Real Risk' of malignant tumor is observed tGC, but not in other inherited real risks because the EBD (Endoarteriolar Blocking Devices) are different, depending on different pathological conditions. We can observe different kind of structural obstacles (technically, different type of EBD, i.e., different structures) to the supply of energy - matter - information towards the relative parenchyma. The stomach contracts because it does increase in vagal or sympathetic tone respectively, growing slowly. In confirmation of this fact here it is suggested a simple experimental test: even in a state of health, three seconds after the start of the apnea test, the stomach shows Gastric Aspecific Reflex, followed immediately (adrenaline acid histangic has reached the critical level) by tGC. The expansion however, is physiological, and always appears after the 'Latency time' of reflex (followed then by the contraction, if there is, depending on whether the subject is indeed in good health, and on the specific real risk or pathology).

"Interestingly, if one stimulates by digital nail pressure or otherwise by pinching skin trigger-points, in the stomach obviously it occurs volume and form modifications, termed as Gastric Aspecific Reflex – G.A.R., vagal and sympathetic, and tonic Gastric Contraction - tGC, as in case of appendicitis. Aiming to corroborate proper applications of the method, the doctor can use the 'Apnoea test' (healthy subject does not breath) or boxer's test (healthy individual clenches fists) or the Restano's manoeuvre (simultaneous performance of both tests); these tests bring about sympathetic hyper tone, that induces gastric aspecific reflex, before of "sympathetic" and then (only apparently) of "vagal" type, in any case short lasting: in later one, in the stomach, fundus and body are dilated, whereas antral-pyloric region contracts. In facts, in health, there is a perfect balance also in nervous system. On the contrary, during sympathetic hyper-tone antral-pyloric region is dilated, too. In case of infiltrative disorder, the site involved by cancer, obviously, does not dilate, whereas all parts dilate intensively in acute diffuse gastritis, e.g., related to the seriousness of disorder."

The doctor only has to calculate the distance between the baseline of the stomach (greater gastric curvature borderline at rest) and the new line, achieved, measured in cm, and observing

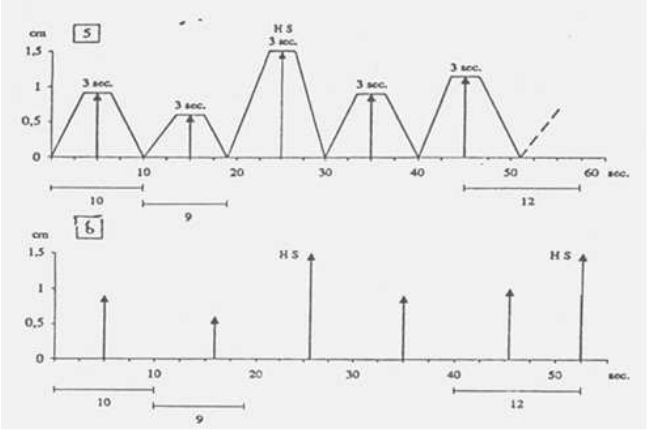
the distance travelled by the greater gastric curvature in its gastric dilatation and, if there is, the next contraction.

2. CHAOTIC ASPECTS

As mentioned above, the chaotic behavior of microvessels' fluctuations (Cavalcanti et al., 1995) and the fractal correspondences of genome (Pellionisz 2008, Dekker 2009) are well known, but there is the open question about how to get qualitative information from their behavior, and to do it we should take some statistic measures of chaos theory. Deterministic chaos has been defined[iv] as the 'stochastic or probabilistic behavior occurring in a deterministic system' and its main characteristics are the uncertainty and unpredictability, but it is possible to detect and investigate it and to get qualitative information through invariant statistic measures such as LCE, fractal dimension and entropy (Medio, 1992).

Lyapunov Characteristic Exponents – LCE – is a statistic measure to test the presence of 'sensitive dependence on initial conditions' – SDIC – in a system. SDIC is at the root of the 'disorderly' behavior of deterministic dynamical systems and is responsible for their random appearance and unpredictability. Entropy is a measure of the uncertainty in deterministic dynamical systems, or equivalently it is the amount of information we get on the average by making an observation. In particular, the presence of positive entropy indicates that the observation of the system continues to generate information for an arbitrary long interval of time. Consequently, unless the position of the system can be observed with absolute precision, its future course will remain uncertain forever, even when the dynamical rule governing the system is known with precision. Zero entropy is interpreted as absence of chaotic or complex behavior, typical of linear or periodic systems with fixed point or limit cycle equilibrium, so that they are fully and exactly predictable: no new information of quality emerges for an arbitrary long interval of time. Fractal dimension is a measure of the way orbits fill in the 'phase space' under the action of a flow or a map, suitable for fractal objects, characterized by a non-integer dimension.

While LCE and entropy are very difficult to detect in biological systems, it is possible to determine the fractal dimension of microvessel dynamics, i.e., of the microcircle, through well defined and refined QBS techniques, such as, i.e., considering the vasomotility and vasomotion diagram, and particularly taking the ratio between the highest spikes – HS (maximum points of the oscillation) and the minimal points of microvessels' fluctuation (Scheme 6).



Scheme 6

In fractal geometry, the fractal dimension, *D*, is a statistical quantity that gives an indication of how completely a fractal appears to fill space, as one zooms down to finer and finer scales. There are many specific definitions of fractal dimension. In this paper we are considering the Hausdorff (1919) dimension defined as follow:

$$D = \lim_{\epsilon \to 0} \frac{\log N(\epsilon)}{\log \frac{1}{\epsilon}} \qquad (0)$$

where *N(ε)* is the number of self-similar structures of linear size ε needed to cover the whole structure.

At this point the reader should know that it is possible to calculate, in several different ways of style and difficulty, the QBS fractal dimension (fD) of a deterministic chaotic biological system, such as microvascular one, of any organ, tissue or viscera. Among the many procedures at the bedside easily achievable, the following is truly original: four High Spikes are emerging in a time interval of 120 seconds, dividing the space into four segments; each segment in turn, is further divided into 3 sections by two more "normal" fluctuations. Therefore, it is easy to calculate the fD of the oscillation in Scheme 6,, i.e., the degree of chaos, entropy, or complexity of the figure, which roughly indicates the space occupied by the fluctuation and it is a measure of its complexity:

$$(1) \qquad fD = [Ln(4) / Ln(3)] \text{“f"}$$

where "f", fractal factor, is the ratio maximal oscillation (HS) / minimal oscillation.
In health "f" = 3, as previously reported, because the maximal oscillation corresponds to an intensity of the reflex of cm 1.5, while the minimal oscillation corresponds to an intensity of cm 0.5, so:

(2) "f" = HS/minimal oscillation = 1.5/0.5 = 3

It follows that, physiologically, the fractal dimension is $3 < fD < 4$:

(3) $fD = 3\,[1.27] = 3.81$

In patients where a biological system evolves towards any chronic disease there is a lower fractal dimension, i.e., $1 < fD < 3$, and, finally, in the chronic situations, i.e., the endocrine pancreas in diabetes, fD is equal to 1, topological dimension.
QBS is able to provide, through the auscultatory percussion of the stomach and by means of chaos theory tools, very useful study cases about several diseases or potential pathologies as, i.e. in the following example about Oncological Terrain and inherited real risk of cancer.

Fractal Dimension	Equilibrium	State of health
fD = 1	fix point	chronicity – chronic and acute pathology
1 < fD < 1.9	limit cycle tending to fix point	pathology – tendency to chronicity - State of variable severity of disease evolution
1.9 ≤ fD < 3	limit cycle	initial implementation of the tendency to disease /potential pathology- i.e. Oncological Terrain (TO) – initial evolution to disease
3 ≤ fD < 3.81	limit cycle tending to strange attractor	tendency to physiologic condition (only potential phase)
fD ≥ 3.81	strange or chaotic attractor	Physiologic condition – healthy state

Table 2

Legend: the fractal dimension (fD) is simply calculated as the time of the disappearance of gastric aspecific reflex, before the appearance of the next. Important is that the fD is directly related to (d) or inversely (INV) related with:

A) (d) the local microcirculatory functional reserve - (vasomotility and vasomotion) and then

B) (d) with the presence, or not, of the local congenital Real Risk;

C) (d) with the latency time of gastric aspecific reflex and then with tissue pH;

D) (INV) with the duration of the gastric aspecific reflex

The fractal dimension (Table 2) is an universal measure, independent of the investigated parenchyma, informing the physician about the health condition of the visited patient.

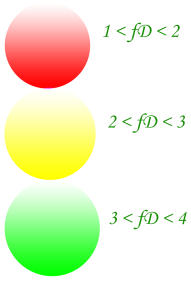


Figure 13

The traffic light (Figure 13) shows in an easy and practical way how to interpret this statistical measure: if fD is more than 3, this is a signal of health (green light), while a fD less than 3 and more than 2 denotes a potential risk of a pathology (yellow light), and the red light evidences the overt disease.

The deterministic chaos is a complex order typical of dissipative systems (Prigogine, 1967) which is denoted by several qualitative characteristics such as non-linearity, sensitive dependence on initial conditions, unpredictability and uncertainty.

While the equilibrium in linear and periodic systems is respectively the fixed point and the limit cycle, in chaotic systems we found a new equilibrium called strange attractor.

Figure 14

The strange or chaotic attractor (Figure 14) has got very interesting properties which are fundamental for living biological systems such as flexibility, adaptive, feedback and learning dynamics.

"In the human and animal body there is deterministic chaos that is not disorder, but a higher order type in physiology. Only in the pathology there is a lower order: the measure of the first order is an equilibria called strange attractor, while the measure of the second one is called fixed point. In case of fixed point equilibria the biological systems are linear, but when sufficient energy is introduced in them and they are properly stimulated, they show the characteristic behavior of non-linear dynamical systems far from equilibrium (dissipative). Chaos requires enough energy to activate dissipative mechanisms, and life is the trajectory of an attractor: from strange attractor to fixed point, passing through the limit cycle. The main task of the doctor is to recognize promptly the various moments of the trajectory of the patient's life (in all

and each of its biological systems), to intervene rapidly with appropriate therapy, useful and effective to reverse the dangerous direction of the trajectory toward irreversibility." Sergio Stagnaro

While fractal dimension is a geometrical measure of chaotic complexity, entropy is a measure of the rate of uncertainty of chaotic dynamics, or similarly, it is the rate of quality information variation. As entropy is bigger than zero, this is a signal of deterministic chaos, while zero entropy denotes a system whose dynamics are not able to give additional qualitative information in time spending, such as fixed point and limit cycle equilibrium, typical of potential pathologies and diseases.

3. QUANTUM ASPECTS

The causal interpretation of quantum theory

We have seen in the previous chapter that entropy represents the rate of uncertainty, or equivalently, the rate of variation of qualitative information of dynamical systems. The importance of the quality of information in deterministic dynamical systems is evident in the causal interpretation of quantum theory (Bohm, 1980), which supposed the electron, or any other elementary particle, to be a certain kind of particle which follows a causally determined trajectory[v]. In addition to the Newtonian classical potential, the particle[vi] moves according to a new potential, called Quantum Potential – QP – which is determined by the quantum wave field[vii], or wave function.

The particle paths fluctuate chaotically, so that causal interpretation is not strictly deterministic as in Newton physics: unpredictability and uncertainty are intrinsic property of the deterministic dynamical systems observed, as in chaos theory, and not random or casual like in classical interpretation of N. Bohr.

This electron turns out not to be a simple structureless particle but a highly complex entity that is effected by the quantum potential – QP - in an extremely subtle way. Indeed QP is responsible for some novel and highly striking features which imply qualitative new properties of matter that are not contained within the conventional quantum theory.

QP is independent of the strength, or intensity, of the quantum field but depends only on its form, so that the information in the form[viii] of the quantum wave directs the energy of the electron, an energy form that informs. Unlike the particles of Newtonian physics, the electron is never separated from a certain quantum field which fundamentally affects it, and exhibits certain novel features. This quantum field satisfies Schrödinger's equation, it is therefore causally determined.

The form of QP can dominate behavior: information contained within QP will determine the outcome of a quantum process. There is an active information, a form having very little energy enters into and directs a much greater energy. There is an energy form acting to inform.

There is an active information in the form having very little energy which enters into and directs a much greater energy: there is an energy form acting to inform, and even distant features of the environment can effect this movement in a deep way.

By way of an illustration, think of a ship that sails on automatic pilot, guided by radio waves. The overall effect of the radio waves is independent of their strength and depends only on their form. The essential point is that the ship moves with its own energy but that the information within the radio waves is taken up and used to direct the much greater energy of the ship. If the ship had a pilot, but moving in the fog, it could never reach the port without the help of the radar signals, a small energy but full of information, which drives the largest one of its engines (Figure 15).

Figure 15

The feature, in which very distant events can have a strong influence, is what is meant by a nonlocal interaction. Non-locality implies an instantaneous connection between distant events and does operate in nature, as proved by Aspect et al. (1982), who provides strong evidence for a nonlocal form of interaction. This result follows in a natural way, within the causal interpretation, as a result of the nonlocal QP that directly connects distant particles.

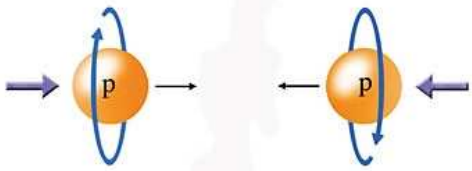


Figure 16

The experiment provides strong evidence that a quantum event at one location can affect an event at another location without any obvious mechanism for communication between the two locations (Figure 16). This has been called "spooky action at a distance" by Einstein. However, this experiment does not allow faster-than-light communication. In classical physics, 'non locality' (action at a distance) is a direct influence of one object on another distant object, in violation of the principle of locality. The 'locality' refers to Energy consumption in space and time, while the 'non-locality' implies simultaneity, synchronicity and instant connection between distant event without any waste of energy.

Non-locality: sense and meaning

Bohm (1980) introduced the idea of implicate and explicate order. The implicate order is a process of enfoldment and unfoldment taking place in the ordinary three-dimensional space. However, the quantum theory has a fundamentally new kind of non-local relationship, which may be described as a non-causal connection of elements that are distant from each other, which is brought out in the experiment EPR (Einstein, Podolsky and Rosen). One finds, through a study of the implications of the quantum theory, that the analysis of a total system into a set of independently existent but interacting particles breaks down in a radically new way. One discover, instead, both from consideration of the meaning of the mathematical equations and from the results of the actual experiments, that the various particles have to be taken literally as projections of a higher-dimensional reality which cannot be accounted for in terms of any force of interaction between them. We can obtain a helpful intuitive sense of what is meant by the projection here, through the consideration of the following device. Let us begin with a rectangular tank full of water, with transparent walls. Suppose further that there are two television cameras, A and B, directed at what is going on in the water (e.g., fish swimming around) as seen through the two walls at right angles to each other. Now let the corresponding television images be made visible on screens A and B in another room. What we will see there is a certain relationship between the images appearing on the two screens. For example, on screen A we may see an image of a fish, and on screen B we will see another such image. At any given moment each image will generally look different from the other. Nevertheless the differences will be related, in the sense that when one image is seen to execute certain movements, the other will be seen to execute corresponding movements. Moreover, content that is mainly on one screen will pass into the other, and vice versa (e.g., when a fish initially facing camera A turns through a right angle, the image that was on A is now to be found on B). Thus at all times the image content on the other screen will correlate with and reflect that of the other (Figure 17).

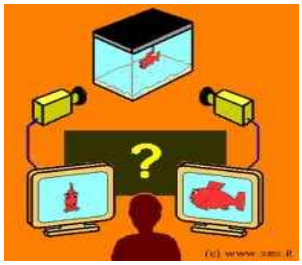


Figure 17

Of course, we know that the two images do not refer to independently existent though interacting actualities (in which, for example, one image could be said to 'cause' related changes in the other). Rather, they refer to a single actuality, which is the common ground of both (and this explains the correlation of images without the assumption that they causally affect each other). This actuality is of higher dimensionality than are the separate images on the

screens; or, to put it differently, the images on the screens are two-dimensional projections (or facets) of a three-dimensional reality. In some sense, this three-dimensional reality hold these two-dimensional projections within it. Yet, since these projections exist only as abstractions, the three-dimensional reality is neither of these, but rather it is something else, something of a nature beyond both. The quantum property of a non-local, non-causal relationship of distant elements may be understood through an extension of the notion described above. We may regard each of the 'particles' (as in Aspect experiment in quantum systems) or of the twins (as in Lory's experiment in biological systems) constituting a system as a projection of a 'higher dimensional' reality, rather than as a separate particle (or twin) existing together with all the others in a common three-dimensional space. The universe is like an iceberg (Figure 18) that is moving over the ocean. The visible (explicate order) is all that has emerged, which seems to be fragmented, separated, distant from each other, and independent. In turn they are connected to one submerged part, they belong to a single invisible block (implicate order), which is driving the shift in the sea of the emerged peaks. The submerged part is both guide and consciousness. This is why seemingly separated parts move simultaneously, synchronously, in obedience to an hidden order, a draft underlying: that is why in this sense, the separated reality is an illusion.

Figure 18

Non locality in bio-systems: Lory's experiment

Sub-quantum behaviors and biological systems dynamics are usually considered as separated and different worlds, but there are some interesting works as recent findings of large scale quantum coherent effects associated with photosynthesis (Collini et al., 2010), and 'Lory's Experiment' (Stagnaro, 2008) that open new perspectives about the presence of non-local reality in biological systems.

Lory's experiment is based on the fact that "all" subatomic components, both atomic and molecular, structured to form a cell and the whole cell or parenchyma, are correlated between themselves and with "all" the other branches of the same embryo in the non-local reality in a higher-dimensional space (i.e., four dimensional space), as well as are just "plotted" (entangled) two electrons observed by Aspect in his experiment. The effect of' entanglement[ix] means that the information takes on a "non-local" dimension.

Lory's experiment is as follows: if it is done a digital pressure applied over a parotid gland, or a salivary gland sublingual, of a "single ovular" twin sisters, simultaneously it is observed microcirculatory activation, type I, associated, in the pancreas of the other twin sisters (Figure 19), regardless of the distance that separates them: meters or kilometers (Stagnaro et al., 2007d).

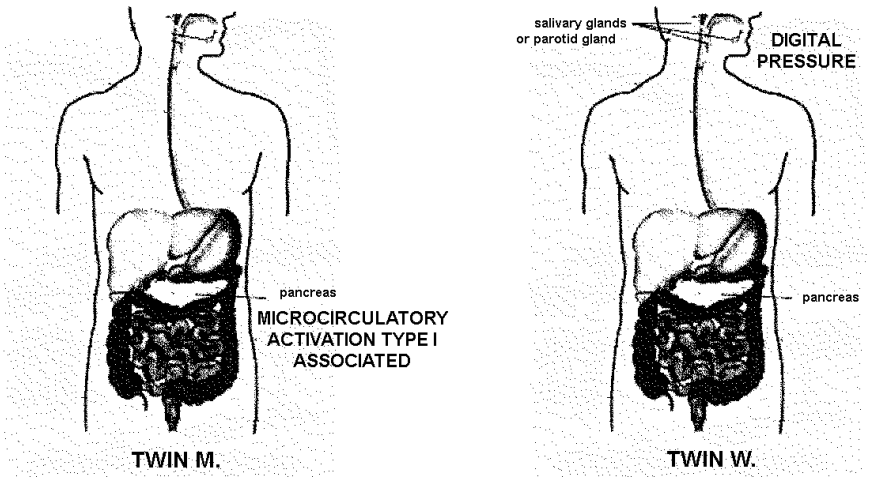


Figure 19

Lory's experiment: biological and quantum-chaotic aspects

To understand in deep the Lory's experiment from a biological point of view we firstly need to investigate the meaning of 'microcirculatory activation'.

The normal microcirculation at rest can become physiologically *active* when the parenchyma starts to work, i.e., if we stimulate pancreas trigger points (salivary gland or parotid gland) of one of the twins like in the experiment we are considering. The important set of microvascular dynamic events, related to *microcirculatory activation - M.A.*, can be subdivided in three types:

- type I or "associated", "physiological", in which both the *vasomotility* and *vasomotion* result increased and consequently blood-flow in nutritional capillaries and post-capillary-venules is augmented (Figure 20), due also to right AVA reaction; (i.e., during parenchymal work);
- type II or "dissociated", "pathological", in which the *vasomotility* shows increasing of both intensity and oscillation duration, while the *vasomotion* shows a highly differentiated behaviour, in relation to the presence of microcirculatory "compensation" or "decompensation" (failure), as we will say later on. (i.e., during pathological conditions);
- type III or "intermediate", when vasomotility is activated, while vasomotion shows basal activity, and hemoderivative structures are not activated. The transition from type I to type II goes through numerous intermediate stages, which from the compensation reach

the total irreversible decompensation of microcirculation, showing a large variety of different and significant forms.

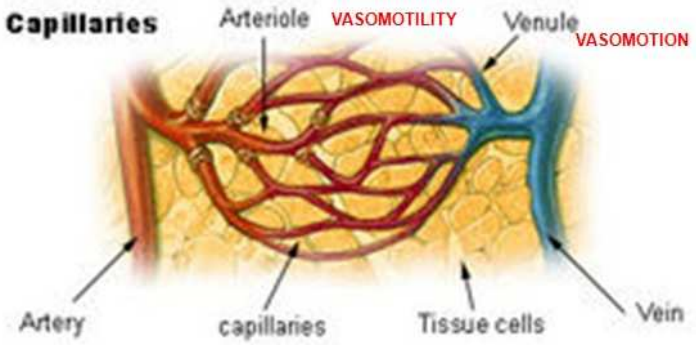
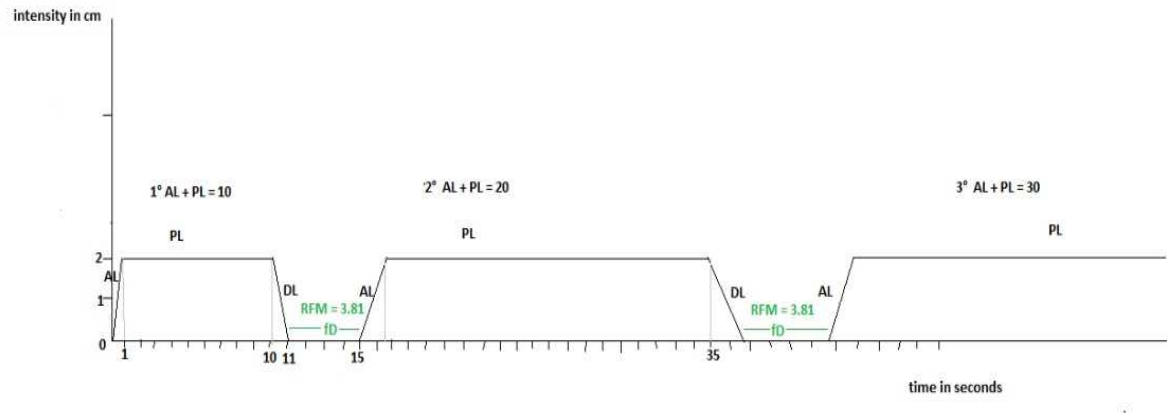


Figure 20

In practice, if it is done a digital pressure applied over a parotid gland, or a salivary gland sublingual, of a "single ovular" twin sister, simultaneously it is observed microcirculatory activation, type I, associated, in the pancreas of the other twin sister, which means that her pancreas physiologically dilates. Similarly to auscultation of the stomach, the physician through auscultatory percussion of the pancreas of twin M., in this specific case, and the simultaneous 'intense' stimulation of the trigger point, i.e., the parotid gland of twin W., has got 3 main signs to analyze: the latency time of the reflex, the intensity of the reflex (in seconds), and the duration of the reflex (in seconds). In this special 'quantum' case, there is not latency time, so the reflex is perceived immediately, therefore we concentrate our analysis just on intensity and duration of the pancreatic reflex.

In Lory's Experiment the pancreatic volume change is due to the intense pressure above the parotid gland (Stagnaro, 2008i). In health, simultaneously to parotid stimulation, there is the pancreas dilatation as it follows: the volume of the pancreas increases for one second – ascending line - AL - and then lasts for 9 seconds – plateau line - PL – before decreasing very quickly – one second – descending line - DL – marking the return of the basic volume. The intensity of the reflex is measured in cm, and the maximum intensity – 2 cm - lasts for exactly 10 seconds (AL + PL = 1 + 9 = 10).

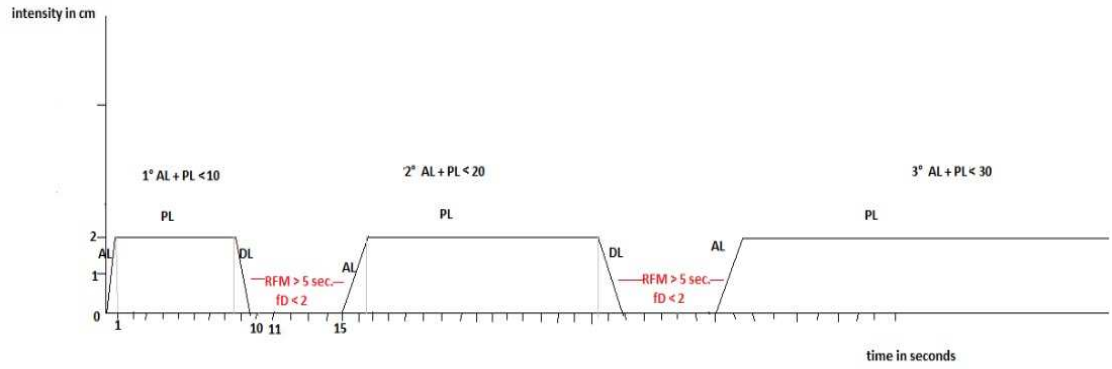
From the end of the first reflex until the start of the second reflex (from the end of the first DL to the beginning of the second AL) there is a pause of 3.81 seconds - MFR – Microcirculatory Functional Reserve – which coincides with the value of fractal Dimension (Scheme 7). In fact, under the above mentioned stimulus, pancreas' rest (decongestion) lasts very few seconds, in presence of physiological MFR. In the second reflex we observe a double value of the duration of the reflex – AL + PL – which lasts for 20 seconds, while in the third reflex the duration is triple – 30 seconds (physiological endocrine pancreas).



Scheme 7 - Lory's experiment – pancreatic diagram in health

In turn, in case of Type 2 Diabetes Mellitus – T2DM – we should observe a lower duration of the reflexes, while the pauses between the reflexes increase, due to a longer MFR, i.e., 5 seconds, while the fractal Dimension lows to the value of two (Scheme 8).

In fact, in case of T2DM (or in case of real risk of diabetes) there is tissue acidosis due to the increase of pancreatic pH.



Scheme 8 - Pancreatic diagram in case of T2DM

Pancreatic pH

According to clinical and experimental evidences (Caramel, 2010b), tissue pancreatic pH is related to the reduction of latency time (Lt) and to the extension of the duration of the P.G.A.R., which expresses the local MFR - microcirculatory functional reserve. MFR is inversely proportional to fractal dimension (fD), calculated as simply as the disappearing time of P.G.A.R. before the appearance of the next one (Scheme 9).

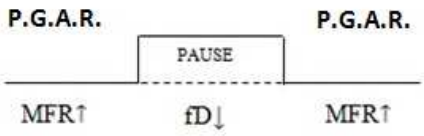
Summarizing, fD is directly (d) or inversely (INV) related to:

A) (INV) the local MFR - vasomotility and vasomotion – (Scheme 13);

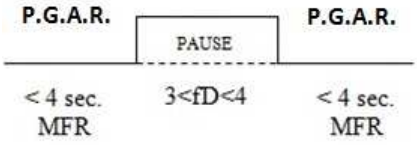
B) (d) the presence, or not, of type II DM or inherited Real Risk of diabetes (Scheme 11);

C) (d) the Lt of P.G.A.R. and then to tissue pancreatic pH;

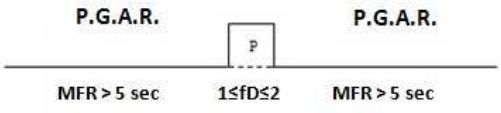
D) (INV) P.G.A.R. length (Scheme 10, Scheme 12).



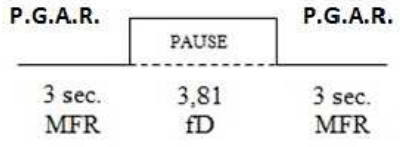
Scheme 9. MFR and fD are inversely correlated



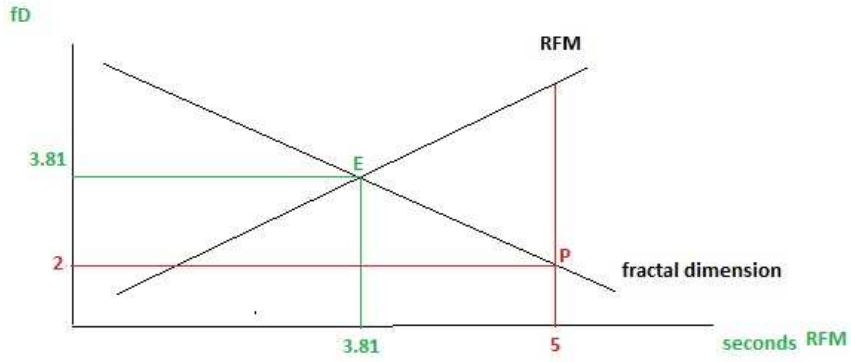
Scheme 10. Physiological MFR - healthy state



Scheme 11. "T2DM" and related fD



Scheme 12. An optimal MFR and physiological fD



Scheme 13. Inverse relationship between MFR and fractal dimension

Energy & Information

All events in nature belong to a particular form of different codified energy transmissions, so that the total energy cannot be created or destroyed. Manzelli argues that 'Information' is a kind of a virtual 'Energy' as a pure qualitative entity, and EI is a part of the total energy–matter transformation. Since life system is based on the communication system, DNA functioning can not only be seen as a storage of genetic information We can consider DNA/RNA dynamic system as an Energy Information (EI) catalyst (Manzelli, 2009) able to transmit and receive bio-physical quantum signals to and from the proteins in the living cells. DNA can be though as an "antenna" transmitting nonlocal information through 'gene quantum signals'.

All events in nature belong to a particular form of different codified energy transmissions, so that the total energy cannot be created or destroyed. Manzelli argues that information is a kind

of a virtual energy as a pure qualitative entity, and EI is a part of the total energy–matter transformation. The variation of the sum of all the transformations of energy, Vibration Energy (EV) codified Energy like Matter (EM) and Information Energy (EI) must always be equal to zero at any time.

- $(EM + EV + EI) = K$
- $\Delta (EM + EV + EI) = 0$

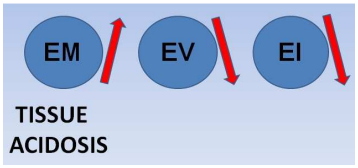


Figure 21 - EM and Tissue acidosis

For example, if there is tissue acidosis, we can observe that EM increases, parallel to a decrease of EV, and consequently of EI, in the same proportion.

Tissue acidosis is a signal of potential pathology (pre-metabolic syndrome) or of disease, so it needs to act to diminish the pH, i.e., improving tissue oxygenation and mitochondrial respiration. In the figure, we can see that if we improve tissue oxygenation EV growth up, together with EI, parallel to the decrease of EM, i.e., lowing tissue acidosis.

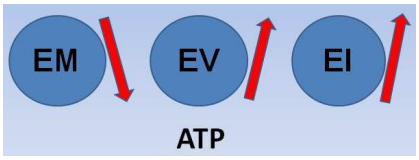
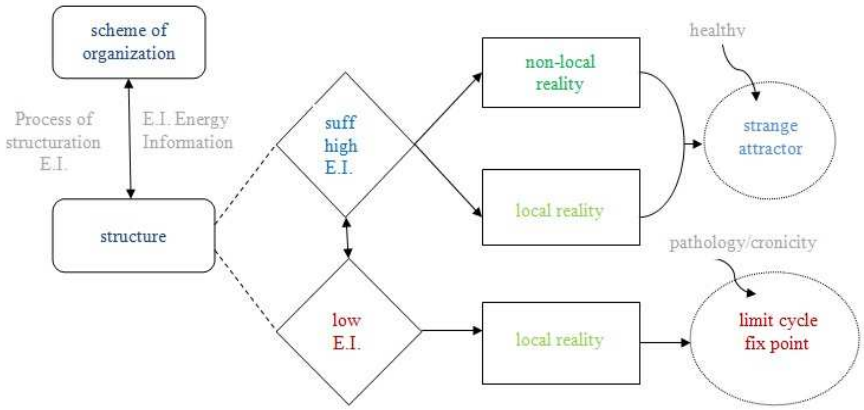


Figure 22. ATP and mitochondria

Autopoiesis and EI

In biology, Varela et al. (1974) proposed the theory of autopoiesis, useful to understand the connection between organization and structures in living systems. An autopoietic system, so as described by Maturana and Varela, is based on a scheme of autopoietic organization through a process of structuring which can lead to different structures. A recent work (Davia, 2006) connects autopoiesis, fractals, catalysis and dynamic systems. The autopoietic organization is conservative and always acts on itself: self-production, self-regulation, self-referential, recursion, circularity. The scheme of organization works relentlessly to achieve the autopoiesis through a continuous process of structuring, generating dissipative structures with non-linear dynamics (Prigogine, 1967). It has been verified and tested in biological systems the hypothesis of:

- the correlation between nonlocal reality and deterministic chaos;
- the co-presence of local reality and non-local reality in physiological states;
- a sufficient high amount of information energy (EI) as catalytic process to maintain no-locality in the autopoiesis (Scheme 14).



Scheme 14 – EI, chaos, non-locality and Autopoiesis

In the autopoietic living biological system (i.e., nervous system, immune system), if there was a disease, the autopoiesis would still function. The organization would remain intact, it is stable, continuous, always on, it is a conservative system, and if there were not, the structure and the system would disintegrate, it would disappear the life itself! In macro-interacting biological systems there is a "mind" synthesis of an autopoietic system that is based on a composite unit (i.e., PNEI - psycho-neuro-endocrine-immune system).

If the system was fully healthy, there would be actually a non-local reality (parallel to the local reality) - simultaneity and synchronicity - and the presence of deterministic chaos (chaotic or strange attractor). If there was disease, the autopoiesis would still be present, but the non-local reality and the correlated strange attractor equilibrium, corroborating the presence of deterministic chaos, would disappear so that we would observe just limit cycle equilibrium in the case of pathology, and fixed points in case of chronicity. The presence of just the local reality is a consequence of the reduction of EV and EI, but with proportional increase of EM.

An autopoietic dissipative structure, always acts satisfying (or trying to meet) the autopoiesis in a simultaneous and synchronous way: there is no cause and effect, but a-causality in a timeless dimension (Capra, 1997). An autopoietic system is autonomous so that it does not depend on time. This is enough to justify the behavior of living autopoietic biological systems, where there is simultaneity and synchronicity, indices of a non-local reality.

There is structural coupling between organization (conservative) and structure (dissipative) to achieve always the autopoiesis. For example, if there was a tendency to disease in biological systems (or if there is pathology), the organization – i.e., the PNEI, psycho-neuro-endocrine-immunological system, would always be orientated towards the survival, materializing and engaging compensatory mechanisms to restore the simultaneity and synchronicity.

Scheme 14 shows that in human bodies there is physiologically the healthy co-existence of two different realities: local reality and non-local reality. The non locality disappears if the

mitochondrial respiratory activity, and consequently EI, significantly decreases. For example Lory's experiment (Stagnaro 2008b) fails, if a stimulation is applied in a subject, following the Apnea test, with the result of an impaired mitochondrial activity. The compensation takes place because of 'nuisances' involving dissipative structural changes, but it is always subject to the power system and its inherent conservative autopoietic organization.

The QBS congenital Real Risk therefore arises at an intermediate stage between the scheme of organization and the structure, a first 'structuration' from the scheme (not observable) on which we can identify it (in case there was) using simple clinical tests at bedside, in a vision in which if there was RR, it would be able to tend to a pathology (potential disease), a pathology which, if occurred, would amount to a fully 'structuration' of the scheme of organization (i.e., genetic alteration of mit-DNA) to disease. RR, if pathologically evolving, is the slow 'eventing' of disease events. Also considered in itself, whether static, is a manifestation of the structuring process of the organization. The process is reversible in the sense that - through melatonin-conjugated[x], administration of energy (i.e., NIR-LED, Near Infra Red light-Led), and proper diet understood in the etymological sense, etc. the RR can become "residual", so that will neither disappear or will evolve towards the structure.

The principle of the process is the Energy-Information (EI), catalytically in nature. The level of Vibration-Energy (EV) related to energy-information (EI) from the perspective of QBS is measured on the level of tissue oxygenation: namely the latency time of reflex, which is not a reflex, is true. Indeed, stimulating the trigger-points of a biological system, such as the liver, "simultaneously" there is built up a sympathetic hyper-tonicity after a latency time dependent on the intensity of the stimulus: this is related to the intensity of liberation of adrenaline and nor-adrenaline in the biological system, so that we can observe the nonspecific gastric reflection, stomach swells, "simultaneously" when it is reached the critical level of low energy or low oxygen.

Under these conditions, in fact the biological system has become thermodynamically isolated. We are in this case, in the non-local reality: there is simultaneity and synchronicity. On a completely healthy human being (without RR) EI is in fact high enough, and then there is simultaneity of information. Local and non-local reality co-exist, exist simultaneously but in parallel, they do not overlap. When EI decreases, EM –Energy Matter – as a consequence increases, and whether EI falls below a certain threshold, non-local reality "disappears" and we can observe just local reality. In summary, if there is enough high EI, there is not RR, while if there is low EI, non-transitory and not occasional - low EI in transient form, for instance, is with the Apnea test in individuals completely healthy without RR – since permanent, then there is RR (associated, i.e., with Oncological Terrain).

The production of EI may be endogenous - it is created endogenously in humans through a transformation of breath in subtle and vital energy, and through mitochondrial activity - or exogenous - through the release of substances like melatonin, the adoption of an appropriate diet, NIR-LED (near infrared light) – that stimulates the mitochondrial respiratory function[xi], i.e., oxidative phosphorylation.

The endogenous EI rises and is formed in the mitochondria, the power plant of human body. The autopoietic system self-produces EI, by transforming EM, including food, water and

O_2 - which is converted into EV-EI. Endogenously we produce ourselves the EV-EI indirectly with the breath, in the sense that vital energy is a subtle energy that occurs through breathing (it is not air, it is not breath, but it travels and is created together with it).

Exogenously the EI is created by chemical transformations and biological properties of certain food we eat or through the release of specific substances (e.g., conjugated - melatonin) or certain stimuli (e.g., LLLT, including NIR-LEDs) to improve the mitochondrial respiration.

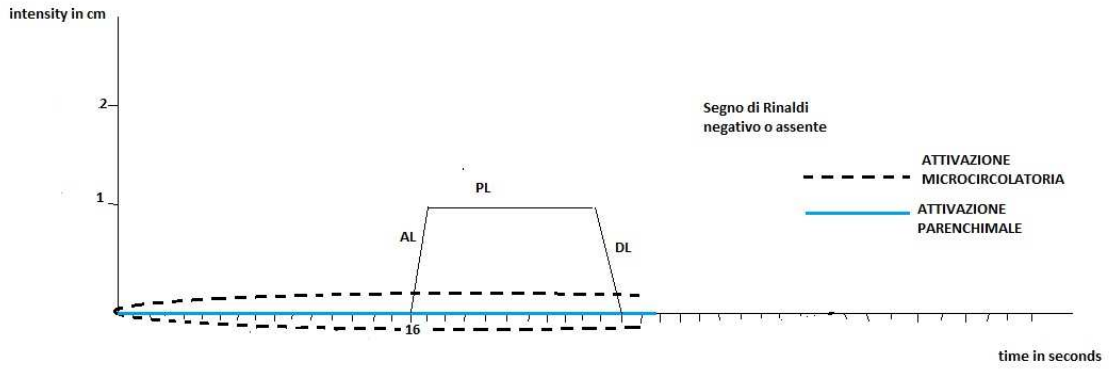
In biological systems the Energy-Information can be transmitted chemically - through metabolic processes - and/or electrically - with the neurotransmitters - peptides. The peptides can be imagined as an "antenna", which carry information (waves) non-locally, simultaneously and synchronously by resonance (in case of non-local reality with high EI), or locally in space-time. In biological systems the EI is transmitted through the classic routes in the local reality, using substrates that reach the target tissue via blood, lymphatic, venous (hormones, cytokines, etc.) or through the nerve pathways (neurotransmitters) characterized by polarization - depolarization: there is time and energy consumption (if I move a substance from A to B, this imply waste of energy, and spending time). On the contrary, in non-local reality pure and catalytic EI acts according to what is known in the microscopic world, expression of entanglement, observable with the QBS, of both worlds. DNA, like an antenna, simultaneously to "intense" stimulation on certain trigger - points, starts to "vibrate" catalyzing the reactions without energy expenditure, between the compound A and B, with production of C. For example: abdominal lateral pinch of fat "simultaneously" active function of liver PPAR (the mill that burns fat and glucose) revealed by the "simultaneous" local microcirculatory activation[xii]. There is a continuous structural coupling bodies-environment in all directions. If there is a tendency to disease (RR), the complex dynamics in biological system decreases: there is no or lesser 'chaotic dynamics' according to the fractal dimension (fD), detectable through the reflex-diagnostic-percussio-auscultatory (Stagnaro, 2004a), with the simple use of the stethoscope, measuring the latency, intensity and duration of reflexes. The absence of the strange attractor or of deterministic chaos, is signal of low EI, the entropy is tending to zero, then in this case there is a local reality of information transmission, there is not the non-local reality. We must therefore enter EI (or create the conditions to increase it) in order to restore a sufficiently high level of EI. In accordance to Angiobiopathy (Stagnaro, 2009a), improving mitochondrial activity in the parenchyma and in microvessel cells favorably intracellular free energy is involved and various biological activities are improved: the microcirculation will be normalized. QBS allows accurate and direct study of being and functioning of microvessels and only indirectly of the related parenchyma[xiii]. If it improves the way of being and functioning of the microcirculation does mean that it also improved the way of being and functioning of its parenchyma. This is done by stimulating the activity of mitochondria by acting on the vehicles that transmit EI: metabolism (chemical process), peptides' net (electric-electronic process), but also improving, normalizing tissue oxygenation, expression of the normal operation of mitochondrial oxidative phosphorylation. Indeed, the mitochondrial functional cytopathy is the *sine qua non* of more frequent and severe human disease and not. Exogenous prevention and therapy (with environmental action) is done directly on EI (and related EV) at chemical level: proper diet, conjugated melatonin, NIR-LED, or at electric level: such as acupuncture, which

also acts on neurotransmitters or peptides. Endogenous prevention and therapy (autopoietic) can be implemented for example through: improving the quality of breath, improvement of lifestyles and rhythm styles and slow pace of the same (i.e., eating serene, calmly, as appropriate as possible) choice of appropriate physical activities (exercise, sports), yoga, meditation, prayer.

EXPERIMENTAL EVIDENCES OF QUANTUM-CHAOS IN BIOSYSTEMS

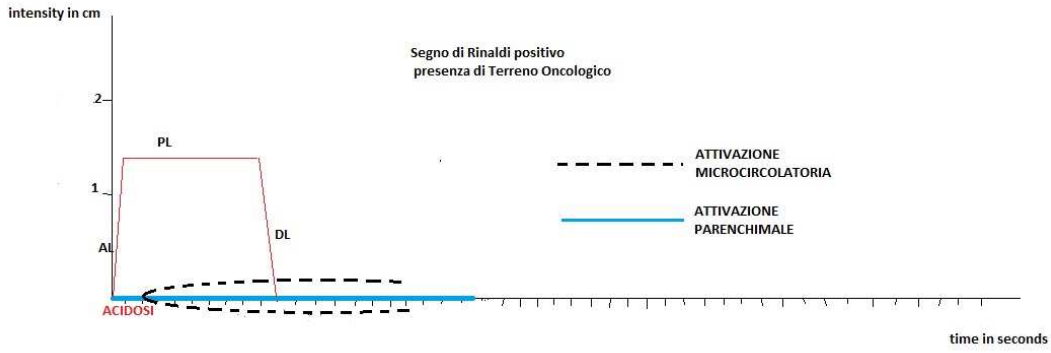
Rinaldi's Sign

We have seen in chapter 1 the cases of negative and positive Rinaldi's.
In case of negative Rinaldi's sign simultaneously to the 'intense' digital pressure applied upon the skin projection area of epiphysis there is both the simultaneous parenchymal and microcirculatory activation – there is not tissue acidosis, while the epiphysial gastric aspecific reflex occurs after a latency time of 16 seconds (Scheme 15).



Scheme 15

On the contrary, in case of positive Rinaldi's sign, simultaneously to the 'intense' digital pressure applied upon the skin projection area of epiphysis immediately the epiphysial gastric aspecific reflex is assessed, and there is the simultaneous parenchymal activation, while microcirculatory activation starts after few seconds (Scheme 16). The temporal mismatch between parenchymal and microcirculatory activation, in this latter case, is due to functional and structural impairment respectively of mircocircle and microvessels: there is microcirculatory remodeling and tissue acidosis - higher pH, because compensatory mechanisms are active to compensate the lack of oxygen, and a longer than basal duration values of MFR is observed.



Scheme 16

In both negative and positive Rinaldi's sign, the parenchymal activation is always simultaneous to the intense stimulus, because the intense pressure upon the cutaneous projection of epiphysis evidences the non-local reality: the DNA 'antenna' informs instantaneously the parenchyma, with the information: active yourself!

The microcirculation is an intermediary between the genome and parenchyma, so it is important to take into account its local realm: if the local situation has problems in its channel, or better microvessels, i.e., due to EBD obstruction, as the matter-energy-information is brought from A to B, the microcirculatory remodeling starts to compensate for this defect - microcirculatory activation, dissociated, type II or type III - but this activation occurs few seconds after parenchymal activation. Acidosis is due to the fact that the compensatory mechanism set up by remodeling, causes an excessive production of blood flow, which takes the way, in part, large or small, of short-circuits (arterio-venous anastomosis - AVA, EBD). Therefore the body, by its metabolism only partially activated, can not absorb this excess provoking, in case of disease, tissue acidosis.

Sternum gastric aspecific reflex

In health, if a digital pressure of "mean" intensity is applied upon the sternum, after a latency time of 10 seconds, then gastric aspecific reflex appears – SISRI. This is an example of local realm.
Under the above mentioned conditions, in health, it does not appear the gastric aspecific reflex if the digital pressure is 'intense' upon the sternum, because the pH is physiological (about 3.40), while in pathology the reflex occurs immediately due to the presence of tissue acidosis, i.e., bacterial and viral diseases, rheumatism, overt cancer.
By mean of a more 'intense' pressure we induce a closer thermodynamic system: i.e., the circular circuit sternum-stomach almost close. By this way, if non-local reality is running well (absence of pathology), the reflex occurs after 20 seconds, because there is the microcirculatory activation, type I, associated, physiological. In this case there is not tissue

acidosis, there is an optimal oxygenation, and acidosis appears after 20 seconds, because of blood flow reduction due to the local hyper-sympathetic tone which causes the gastric aspecific reflex. In turn, in the pathological case, the reflex appears at once, immediately: in fact there is already acidosis, but still non-local reality, along with the local one. The non-local reality disappears just in advanced overt diseases.
Acidosis is linked with pathology, and it is the only one which provokes the simultaneous activation of non-local information.

4. QUANTUM CHAOTIC DETERMINISM

"With the emergence of chaos theory, it has become clear that it is possible to go in other directions, and treat statistical laws as emerging from causal laws."

David Bohm

The consistency between deterministic chaos and the causal interpretation of David Bohm suggest us to think about a 'Quantum – Chaotic Determinism – QCD (Caramel, 2010c), where uncertainty and unpredictability are intrinsic property of the non-linear dynamical systems.

The QCD allows a causal background, a law, an underlying pattern that directs everything happening in nature, but where there is sensitive dependence on initial conditions and complexity (chaotic aspect), and non-locality and discontinuity (quantum aspect), in the apparently probabilistic dynamics behaviors (synchronicity and entanglement) of non-linear dynamical systems, where uncertainty and unpredictability are their intrinsic property (and therefore not by chance). Within the framework of QCD the free will is permitted, since feedback dynamics are possible, acting both:

- in the observed events
- in the space that exists between the deterministic law and its generating event in progress ("eventing")
- in the law itself, changing or altering its initial conditions.
- "Cause – Effect" is just the ex-post interpretation that we give to a sequence (constant, billions of times per second) of synchronous events by means of the interpretation key that we give ourselves to the concepts of time and space.
- Also we can define a new concept of causality, giving it a softer and prudent edge.

Based on the Quantum Chaotic Determinism (QCD*) potential causality* is one or more causes in power because:

1) initial conditions of quantum chaotic systems vary;
2) it does exist the free will.

In this way we philosophically legitimate the characters of uncertainty and unpredictability of quantum chaotic determinism without appeal to probability, randomness and chance.

Experimental evidence of QCD: the Manuel's Story

This is the story of Manuel, first newborn with negative Oncological Terrain, from parents both with positive OT. Manuel, born last February 28th, 2010, is the first baby born into the world without 'Oncological Terrain', although both his parents are OT positive. The 'Oncological Terrain' - OT, as seen in chapter 1, is the "Terrain" where it could "suddenly" appear the cancer one day in a subject. It must be stressed that not all people have this "ground" and that by means of a refined bed-side diagnosis it can be determined from the moment of birth if a person has or has not the OT. Even in the subject without OT "asocial" malignant cells may arise, but these are destroyed by effective antibodies defense or they are made to return to normal state. In other words, these tumor cells do not exceed the early stages of replication. Quantum Biophysical Semeiotics - QBS - teaches that those who are negative for the 'Oncological Terrain' will never get cancer, except - perhaps - very few situations of particular weakening of defense mechanisms (dialysis, anemia, emaciation, severe cardiovascular problems, etc.), while the subjects with positive 'Oncological Terrain' *might be at risk of cancer*. It is interesting to note that QBS allows the physician to recognize the 'Congenital Real Risk', located in a specific area of a biological system. On the basis of this diagnosis we can therefore lead to a real and effective primary prevention only on those that are finely selected in a rational way with the original QBS diagnosis. Positive 'Oncological Terrain' is an indicator of a genetic modification of maternal mitochondrial DNA. This means that in subjects with positive 'Oncological Terrain', there is a well-defined upstream mitochondrial cytopathy, respiratory distress status of the cell, which has been called CAEMH (Congenital Acidosic Enzyme-Metabolic Histangiopathy), resulting in turn from a genetic alteration of mitochondrial DNA almost always from the mother's side. We have to understand in this context, as seen in chapter 1, the significance of three simple words: 'white zone', 'gray zone' and 'black zone'. Generally, in contemporary medicine is thought to exist only two zones: the white (good health) and the black one (the disease), but we have to take into account the existence of the 'gray zone', the slow "event-ing" of the disease, which can take years or decades, as it is the case of type 2 diabetes mellitus. In essence, any disease regarded by the QBS is preceded by a slow process, often silent, but not detectable by usual diagnostic measures and laboratory tests, before manifesting itself. We are able to see, i. e., cancer, in its pre-embryonic and pre-metabolic stage, although it appears "suddenly". In fact, from the moment of birth it is possible to diagnose the presence or absence of 'Oncological Terrain', and moreover to detect in any positive OT subject, at any age, if his/her 'Oncological Terrain' is accompanied by the 'Congenital Real Risk ' of cancer and then localizing it and identifying exactly what kind of tumor could arise. The 'Oncological Terrain' is indeed a generic "ground", so that after diagnosing it, we do not yet know if and when it will appear its 'Real Risk' and what type of potential tumor is. To know these additional information we have to do one more refined QBS diagnosis. It is a multi-stage process: at birth we could have a 'Oncological Terrain', which may be accompanied soon or later by a particular 'Congenital Real Risk' of cancer. We are still in the pre-clinical stages of the disease. The disease is always

potential in these stages, but clearly from a simple 'Oncological Terrain', just joined by the 'Real Risk' of lung cancer, for example, in this passage, in this period of time, the "Risk" of cancer is increased. We can say that a person with OT plus 'Congenital Real Risk' of cancer can get a tumor, thus eliminating the conditional verb, and it is also explained the “suddenly” just quoted above. The word "suddenly" makes sense only for those who are unfamiliar with the OT and the 'Real Risk' of cancer. The 'Manuel’s Story' is the realization of a prophecy made in 2004 at the end of a Stagnaro’s monograph on QBS constitutions, where it is introduced the hypothesis that a negative OT child could be born from parents both OT positive, if they had undergone a preventive therapy’s treatment prior to baby’s conception.
In truth, this is a paradigm of pre-preventive therapy. Quantum Biophysical Semeiotics, in addition to the most severe disease diagnosis as, for example, many solid and liquid forms of cancer, type 2 diabetes mellitus, heart diseases, hypertension, osteoporosis, is concerned to suggest preventive therapies so that, especially in those at risk for some diseases, the still potential pathology does not manifest itself in practice. In another Stagnaro’s monograph it has been pointed out, for example, the importance of taking conjugated-melatonin according to the recipe of ‘Di Bella-Ferrari’, in conjunction with other appropriate preventive therapies, designed in the etymological sense: i.e., to avoid tobacco smoke, sedentary lifestyle and overweight, and at the same time to favor an healthy lifestyle, using for instance a custom Mediterranean diet, encouraging a daily physical activity and body movement, and energizing both the body and the mind, for example, through morning gym exercise, daily walking, yoga, meditation and prayer. It needs to be understood that the CAEMH reveals the state of suffering of the cell, particularly with respect to mitochondrial DNA, and thus the mitochondria, responsible for cell oxygenation. In case of alteration of mitochondrial DNA, it is clear that the mitochondrial oxygen becomes deficient. Taking melatonin, whose synthesis begins in the mitochondria, we are going to improve the mitochondrial respiration and functioning of the respiratory chain, i.e., the redox processes, reducing consequently the 'Congenital Real Risk' of cancer, if there was. The preventive therapy cannot eliminate definitely the "Risk" of cancer. We must always keep in mind that if there is a genetic alteration of the mit-DNA due to the mother, this will be forever. What we can do instead it is to make "residual" the 'Real Risk' of cancer. Improving the mitochondrial respiration, or tissue oxygenation, we render *harmless* the risk of cancer. To give effect to this outcome over time, however, a continuous preventive therapy is needed. Manuel is the son of two parents both positive for 'Oncological Terrain', but they agreed, at Stagnaro’s advice, to undergo a preventive therapy consisting of etymologically speaking diet and in taking conjugated - melatonin 'Di Bella - Ferrari', before baby’s conception. After a few months of treatment, Stagnaro personally visited them, discovering that they had a 'Oncological Terrain' with 'Real Risk' of cancer but finally in its "residual" variant. The conception occurred only after that visit, and Manuel was born with negative 'Oncological Terrain'. On Sunday, April 10th, 2010, Stagnaro personally visited Manuel, and I could see who was born without 'Oncological Terrain', though conceived by both parents positive for TO. This means that Manuel will never become ill with cancer, even in the presence of the several risk factors, and he will never surface in a 'real risk' of cancer

which, as before explained, may exist only in the presence of a pre-existing QBS Constitutions or "Terrain".

1st STEP – Diagnosis of positive Oncological Terrain

	Rinaldi's Sign (Scheme 5)	fractal Dimension	Traffic light (Figure 13)	EI – Energy Information	Diagnosis
Father	POSITIVE	2 < fD < 3	yellow	↘	CAEMH, OT and Real Risk of Cancer
Mather	POSITIVE	2 < fD < 3	yellow	↘	CAEMH, OT and Real Risk of Cancer
Manuel	Not yet conceived	Not yet conceived	Not yet conceived	Not yet conceived	Not yet conceived

Table 3

2nd STEP – Manuel is born without Oncological Terrain

	Rinaldi's Sign (Scheme 5)	fractal Dimension	Traffic light (Figure 13)	EI – Energy Information	Diagnosis	
Father	Positive	3 < fD < 4	Green	↗	CAEMH, OT and residual Real Risk of Cancer	Manuel's conception
Mother	Positive	3 < fD < 4	Green	↗	CAEMH, OT and residual Real Risk of Cancer	Manuel's conception
Manuel	Negative	3 < fD < 4	Green	Optimal	Absence of OT - health	

Table 3

In Table 4 it is evidenced the first step of Manuel's story: the diagnosis of Oncological Terrain and inherited real risk, denoted by a fractal dimension lower than 3, and from 'yellow' traffic

light, signal of danger. In these cases there is in fact an insufficient tissue oxygenation and mitochondrial respiration (lower EV and EI) due to CAEMH and alteration of mit-DNA. If Manuel was conceived at this time, he would born likewise with positive Oncological Terrain.

After this visit, his 'future' parents decided to start a preventive therapy with conjugated-melatonin. Three months later they made a second visit and the situation, as described in Table 4, was changed. The fractal dimension increased joining a value more than 3, and lighted the green light: there was still the positive Oncological Terrain, of course, seen that it is something genetic, but the real risk of cancer turned residual. This means that both tissue oxygenation and mitochondrial respiration, due to a greater EV and EI, have improved. Manuel's conception came only after that second visit, and he was born with negative Oncological Terrain (absent), clearly denoted by green traffic light, a fractal dimension between 3 and 4, and a physiological tissue oxygenation and mitochondrial respiration.

Manuel's story gives a strong evidence of quantum-chaotic determinism – QCD - as epistemological base of Quantum Biophysical Semeiotics. Furthermore, QCD features evidenced from QBS can be extended to all modern sciences, and this suggestion can be taken as follow up for future researches in all fields.

SUMMARY AND CONCLUSIONS

This paper introduces some of the theoretical, i.e., CAEMH, QBS Constitutions, inherited real risks, and practical principles of QBS, i.e., auscultatory percussion of the stomach, necessary fundamentals to grasp the meaning and significance of deterministic chaos and quantum behavior in biological systems. To understand the physiological or pathological behavior of a parenchyma, QBS makes an indirect analysis, through the investigation of microvessels, whose non-linear fluctuations provide important qualitative and quantitative information about microcirculation dynamics from structural and functional point of view.

The failure of the microcirculation is a symptom of a disease or potential pathology of the related parenchyma, and this is due to genetic alteration of mit-DNA mostly from mother's side that generally leads, from the moment of birth, the onset of a well-defined mitochondrial cytopathy called CAEMH.

CAEMH is the source of the different QBS constitutions and its congenital real risks, situations where the disease is still potential, gray area or pre-metabolic syndrome, i.e., pre-clinical stages of the disease. If there was effective or potential disease, this is due to a state of distress of the parenchymal and microvascular tissue cells, and it is evidenced by the reduced level of tissue oxygenation, and the consequent production of histangic acidosis, as well as the structural imperfections due to pathological EBD.

Fluctuations in microvessels are physiologically characterized by complex dynamics, identified by a MFR which lasts from 3 to 4 seconds, indicating the microcirculatory activation, type I, associated, and it coincides with the value of the fractal dimension, fD, marker of deterministic chaotic equilibrium geometrically represented by a strange or chaotic attractor.

In the case of existing or potential disease, MFR (measured in seconds and corresponding to the pause between two successive reflexes) increases due to the microcirculatory remodeling necessary to compensate the reduced blood flow, because of the functional and structural alterations described above, and in parallel the fractal dimension decreases as well as the complexity of the system (limit cycles, fixed points). In fact, in biology the fD is measured as the ratio between the maximum microvascular fluctuations (high spikes) and the lowest one in unit time, of vasomotion and vasomotility in the urethral reflexes. Consequently, when these fluctuations low of complexity, for example, and tend to limit cycles or fixed points, the fD decreases, indicating respectively potential or effective pathologies and chronic diseases.

Lory's experiment supports the existence of non-local reality in biological systems, legitimizing the extension of some of the properties of quantum physics to biology.

Deterministic chaos and non-local reality are strictly correlated reinforcing the hypothesis of a 'Quantum-Chaotic Determinism' underlying the nonlinear dynamics of living systems, as evidenced by Manuel 'story.

The behavior of biological systems in the human body is generally non-linear and under physiological conditions, as just discussed, it is strictly deterministic chaotic. These systems are dissipative systems far from equilibrium, which however raises the question of how to measure quantitatively and qualitatively their behavior. Stagnaro's insight is to study the behavior of microvessels, intimately connected with their parenchyma, so that if it met any functional and/or structural abnormal behavior in them, this would also indicate a real or potential malfunction of their parenchyma, everything in these cases due to the genome, or more exactly, to the genetic alterations of mit-DNA, present from the moment of birth. The study of microvessels is appropriately stimulating the trigger-points of a well-defined parenchyma, i.e., of the stomach, so that by QBS the doctor induces the particular biological system observed, i.e., coronary microvessels, at a certain phase coherent local behavior that causes, i.e., one or more gastric aspecific reflexes well classified and characterized mainly by three factors such as well-quantitatively measurable latency time, duration and intensity of the reflection.

Based on these data we can draw a very detailed case studies by which it can be said if the investigated biological system is healthy (physiological), in pathological conditions or chronic, and moreover, if there is a tendency or progression to disease, potential or real risk of diseases such as diabetes, CAD or cancer, i.e. as shown by means of Rinaldi's sign.

In summary, the microvessels behave as dissipative systems far from equilibrium, and, if properly stimulated, they lead to consistent local behaviors giving important qualitative and

quantitative information about their structural and functional state of health, and indirectly they inform about their relative parenchyma. In physiological conditions there is the co-presence of local and non-local reality, supported by equilibriums of type 'chaotic attractor', which diminish to equilibrium such as limit cycle in case of illness or even fixed point in case of chronicity.

Lory's experiment provides strong evidence of non-locality in biological systems, extending what it is already known in quantum physics: a quantum event at one location can affect an event at another location without any obvious mechanism for communication between the two locations.

Furthermore, since life system is based on the communication system, DNA functioning can not only be seen as a storage of genetic information. We can consider DNA/RNA dynamic system as an Information Energy – EI – catalyst (Manzelli, 2009) able to transmit and receive bio-physical quantum signals to and from the proteins in the living cells, so DNA can be thought as an "antenna" transmitting nonlocal information[xiv] through 'gene quantum signals'.

Energy Information – EI plays important role: this is a thin and catalytic energy dense of information, similar to the quantum potential of Bohm, who directs and facilitates, locally and globally, all biological processes and their networking systems. EI then catalyzes and rules the cognitive process that links the conservative autopoietic scheme of organization to the dissipative structures which constantly create and renew.

Treatment and prevention, according to the QBS, must be geared to EI's increase, restoring or bringing it to a sufficiently high level in order to ensure a lasting non-local reality and the presence of deterministic chaos, by means of improving tissue oxygenation and mitochondrial's breath, i.e., through diet etymologically speaking, electro-stimulation with infrared low frequency (i.e., NIR-LED) histangio-protectors (i.e., conjugated-melatonin), appropriate lifestyles (i.e., sport activities, walks, yoga, meditation, prayers).

An integrated approach of the scientific aspects presented in this paper, suggests the new philosophical idea of Quantum Chaotic Determinism as epistemological base for Quantum Biophysical Semeiotics as evidenced by Manuel's story (Caramel et al, 2011b), and for modern sciences in general. Furthermore, Lory's experiment has been the kick-off of the new discipline called psychokinetic diagnostic (Caramel et al., 2010b).

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[i] NHS stands for National Health Service

[ii] Metabolic syndrome is a combination of medical disorders that increase the risk of developing cardiovascular disease and diabetes. It is also known as metabolic syndrome X, syndrome X, insulin resistance syndrome, Reaven's syndrome. The pre-metabolic syndrome, as defined by Stagnaro, is the syndrome that precedes the metabolic one, and it is linked with congenital real risks and their associated biophysical semiotics constitutions.

[iii] Biophysical semeiotic constitutions, detectable since birth, are the inherited congenital ground or terrain of well defined potential diseases clinically hidden, which can last several years before appearing, in the slow transformation process from potential (pre-metabolic syndrome, pre-clinical stages) to effective pathology (metabolic syndrome)

[iv] The Royal Society, London, 1986

[v] The particle paths fluctuate chaotically, so that causal interpretation is not strictly deterministic as in Newton physics: unpredictability and uncertainty are intrinsic property of the deterministic dynamical systems observed, as in chaos theory, and not random or casual like in classical interpretation of N. Bohr.

[vi] This electron turns out not to be a simple structureless particle but a highly complex entity that is effected by the quantum potential – QP - in an extremely subtle way. Indeed QP is responsible for some novel and highly striking features which imply qualitative new properties of matter that are not contained within the conventional quantum theory.

[vii] Unlike the particles of Newtonian physics, the electron is never separated from a certain quantum field which fundamentally affects it, and exhibits certain novel features. This quantum field satisfies Schrödinger's equation, it is therefore causally determined.

[viii] The form of QP can dominate behavior: information contained within QP will determine the outcome of a quantum process. There is active information, a form having very little energy enters into and directs a much greater energy. There is an energy form acting to inform.

[ix] Quantum entanglement, also called the quantum non-local connection, is a property of the quantum mechanical state of a system containing two or more objects, where the objects that make up the system are linked in a way such that one cannot adequately describe the quantum state of a constituent of the system without full mention of its counterparts, even if the individual objects are spatially separated. This interconnection leads to non-classical correlations between observable physical properties of remote systems, often referred to as nonlocal correlations. During the formation of quantum theory, this property of entanglement was recognized as a direct consequence. Quantum entanglement is at the heart of the EPR paradox that was developed by Albert Einstein, Boris Podolsk, and Nathan Rosen in 1935, and was experimentally verified for the first time in 1980 by the French physicist Alain Aspect.

[x] Melatonin is a natural substance that our body produces itself. It is produced by synthesis in the laboratory and placed in the body to act on mitochondria, especially it increases mitochondrial phosphorylation, it produces more EV and therefore greater EI and this must be for the benefit of the entire body,it improves breathing (especially at night; we produce melatonin mainly from the early hours of the night until around dawn), and therefore this is a hormone that is universal and it is good for the treatment of multiple diseases, or tendencies to pathology, and then to make the RR residual. It is also a good neurotransmitter.

[xi] In therapy, based on what it has been observed in patients with Oncological Terrain places on the nodes of Curry or Hartmann (worsening of PNEI - psycho-neuro-endocrine-immune system), these energies released will improve and normalize respectively, by their influence on the alignment device, the orbital motion of subatomic particles, including the mitochondrial respiratory chain, which first reacts.

[xii] Lory's experiment is based on the fact that "all" subatomic components and then atomic and molecular structured to form a cell and the whole cell or parenchyma, are correlated between themselves and with "all" the other branch of the same embryological in a four-dimensional space, like they are just "plot" (entanglement) two electrons observed by Aspect in his famous experiment. The effect of' entanglement means that the information takes on a "non-local" dimension. Lory's experiment is as follows: if it is done a digital pressure applied over a parotid gland, or a salivary gland sublingual, of a "single ovular" twin sister, simultaneously it is observed microcirculatory activation type I associated in the pancreas of the other twin sister, regardless of the distance that separates them: meters or kilometers (see in the references Manzelli and Stagnaro).

[xiii] The micro-circulatory remodeling is directed by the way of living and working on the parenchyma: if the subject is healthy, the related parenchyma on the microcirculation is healthy (see angiobiopathy theory, dealing with diseases of blood and lymph vessels in accordance with the semiotics biophysics). Certainly a loss, rheumatism, immune, infectious, can act both directly and indirectly. See [http://www.semeioticabiofisica.it/microangiologia/common.htm]. It may be that in the long run re-organization becomes difficult or impossible because the flow decreases more, and then feedback mechanisms for which are to activate dormant cancer cells are built up. Aging with free radicals that accumulate contributes to further damage both micro vascular and parenchymal: even endothelium (cell layers lining the inner surface of blood vessels and heart chambers) and smooth muscle cells possess mitochondria. Remodeling micro circulatory type cancer is an expression of mutations of genes within cells in that forum: any change in gene expression - cell finds its expression in the parallel alteration of its microcirculation (microvascular tissue units): the tissue here is around the vessels, interstitial, not the parenchyma! If these processes are blocked, the entire organization stops. It is very important that if there are congenital abnormalities, genetically transmitted through the mother (see CAEMH, mitochondrial cytopathy or mitochondrial functional pathology in the site www.semeioticabiofisica.it) amending the unfolding vital physiological processes the most serious human diseases occur, and not, now real epidemics. Autopoietic networks must therefore regenerate themselves continuously in normal and physiological way, to maintain its organization.

[xiv] Information, from the latinum verb 'in-formare', which means 'to give a form', it is a truly more primitive fundamental activity than energy and matter, it is something that precedes every physical form (Aristotle). Information action is therefore related to the potential codification plan of producing an objective form and in turn we can perceive an object as a form of information transmission.