THE PLAN OF EVOLUTION

(Duality and General Systems in Biology)

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ABSTRACT

The Universe is made of systems of social networks. We distinguish 3 scales of complexity: Simplex networks of energy or information; complementary systems made with 2 networks of energy and information (particle/field in physics) and complex systems made with 3 networks: energetic limbs, informative heads and reproductive bodies, which combine both networks and ensure the survival of the whole system beyond individual death. Thus, biology is the science that studies complex systems.

The 3 type of social networks can be distinguished by its form which corresponds to one of the 3 only possible topologies of a 4-D universe: the planar topology of energy; the toroid, cyclical, topology of reproductive bodies and the hyperbolic topology of informative systems. Each topology dominates an age or horizon of evolution of the species: the young, energetic age; the reproductive maturity and the informative 3rd age. Since social networks are created by the scalar organization of cellular 'Nonn-Euclidean points', we can distinguish also 3 scales of existence for all systems: the cellular, individual and social scale. Thus, we define existence as the creation of complex systems, starting from a cellular scale till the individual birth of a complementary network (Physics) or complex system (biology), a whole, which will integrate itself in a bigger ecosystem or social network as a unit of the bigger scale, and finally it will dissolve back to the cellular scale when it dies, completing the life/death cycle of all network systems of the Universe.

The existence of those 3 type of social networks define also 4 dimensions/arrows of space/time, (physical jargon) or drives of existence (biological jargon), which explain the why of all the events of the realities, as all systems try to gauge information, feed on energy, reproduce by combining its complementary networks and evolve socially into bigger wholes, units of a new scale of existence.

For example, light-space and its 4 dimensions can be interpreted as the informative/electric/height arrow of a light wave; the reproductive/width/magnetic arrow, the energetic/length/speed arrow and the social/color arrow. In particles those 4 arrows are the 4 quantum numbers, the principal/reproductive arrow that repeats the cycles of the particle, the feeding/energetic secondary number, the informative/spin number and the social/magnetic number that reorders multiple particles. While all living beings feed on energy, gauge information, reproduce and evolve socially into multicellular systems. This 4th arrow/dimension of social evolution creates a scalar universe of growing fractal networks. So particles become atoms that become molecules that become cells that become organisms that become societies in the biological realm; or molecules become solar systems, galaxies and Universes in the astro-physical realm.

Thus, those 4 arrows/dimensions of all space-time networks and its 3x3 elements – its 3 spatial topologies, 3 temporal ages/horizons and fractal scales of existence define a plan of evolution for all the species of the Universe that we shall use in this paper to map out the tree of life, from its initial molecular scales till the creation of man and our 2 superorganisms, mankind and the eco(nomic)system.

THE PLAN OF EVOLUTION: The 3 ages, scales and forms of living organisms

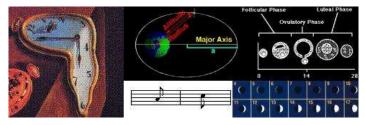
'As more individuals of each species are born than can survive; consequently, there is a struggle for existence. It follows that any being, if it vary its form in any manner profitable to itself, it will have a better chance of surviving, and thus be naturally selected. From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form.'

'On the Origin of Species' Darwin, on the arrows of reproduction and evolution of form of biological existences.

1. The Arrows of Life: Multiple Spaces-Times Laws Applied to Biology.

- 2. Topological Evolution: The 3 Ages of Species.
- 3. The 3 Planes of Life Existence
- 4. Eusocial Evolution of Life.
- 5. Cells, The Arrows of Life Organisms.
- 6. Chemical Vs. Electric Languages: Plants
- 7. Evolutionary Punctuation. Animal Phyla
- 8. The 3 Ages of Gaia
- 9. Man as a Fractal Organism.
- 10. Wo=Men: Gender duality: Complementary beings.

INTRODUCTION: A NEW SCIENTIFIC PARADIGM



Time is cyclical and multiple: each event has a frequency that carries form, information and defines a cycle or closed trajectory, which breaks space into an inner, 'fractal' region and an external world. The result is the creation of multiple, 'vital' spaces and clock-cycles. The age of metric science measured all those space-time cycles by equalizing them with the rhythms of a single clock, putting them together into a continuum space-time graph. This age adopted a philosophy of science based in the new machines used to measure those cycles (clocks and telescopes, today evolved into computers and cameras), called mechanism, from Kepler, who said 'God is a clocker' to Einstein who affirmed 'Time is what a clock measures'. But as we measure more cycles and perceived more forms of space, a new paradigm is needed to account for that variety of 'multiple spaces and times'. Such fractal theory of spaces and times introduces the discoveries of the complex sciences of systems and information. Its main thesis is the existence of multiple cycles of spacetime, which are divided in energetic and informative cycles. They form together 'complementary systems', from particles of information and fields of energy (quantum physics) to reproductive bodies and heads of information (biological systems). This duality of time clocks is backed by a more complex philosophy of reality organicism - since we found that all systems made of energy and information show organic behavior, including machines, today evolving into robots that merge their energetic and informative systems. Organicism and its mathematical units, fractal points, that gather into social networks called topological spaces

substitute the restricted concepts of Euclidean points and continuous spacetimes, explaining why all those cycles exist: Since we can reduce all forms and systems of reality to the only 3 topologies of a 4-dimensional universe: the energetic plane, the informative hyperbole and the cyclical toroid that combines energy and information in reproductive events. Thus self-similar, simple topologies of energy and information create complementary systems, which evolve further into organic systems, made of reproductive, energetic and informative networks. Thus we classify all space forms and time events in 3 topologies that put together in social networks, create organic systems guided by 4 time arrows: energy feeding, information gauging, reproduction and social evolution. Those 4 categories are the so-called drives of living beings. Thus, there is a 'Universal Plan' with an existential finality: to create organic systems, departing from energy bites and information bytes evolved 1st into social networks, then into complementary systems and finally into organisms: particles become atoms that become molecules that become cells, organisms, planets, galaxies and Universes. It is the 4th organic why that completes the adventure of science and this work explores in all its consequences.

1. The evolution of knowledge. The 4th organic paradigm.

A simplex explanation of this work considers the meaning of knowledge and what questions it must answer to exhaust the study of a subject. In journalism we ask what, who, how, when and why. In the evolution of science we observed a what (experience) and then asked who. It was the mythic age of science, the first paradigm of knowledge – when an anthropomorphic being, often a god was the cause of all events.

Then the Greeks used reason to ask the how of things, its causes and consequences. It was the 2^{nd} paradigm of knowledge: logic thought.

The 3^{rd} paradigm came with the arrival of machines that measured time and space, telescopes and clocks which answered 'when'. It was the birth of metric geometries when clocks

equalized all the cycles of time of the Universe, by comparing them with the rhythm of a mechanical clock and put together all the fractal spaces of reality in a single, abstract Cartesian continuum whose lineal time and space coordinates allowed to plot the data collected with machines, finding certain regularities in the forms and cyclical rhythms of species, which were formalized by the laws of science. The culmination of this process came with General Relativity, which refined the measures of the cyclical trajectories of particles in the quantum, microscopic world and the cosmological realm by adding the deformations of those rhythms of time and distances of space produced by the limits of speed of our light-Universe.

And yet when all was done and measured it was still needed to respond to the why of those forms of space and rhythms of time. The answer to those whys is the 4th paradigm of science.

And they can be resumed in two words: vital spaces and time cycles and a new philosophy of reality, fractal organicism. They will substitute and absorb— according to the Principle of Correspondence that makes each paradigm a particular case of the new, wider view - the limited concepts of a single space-time continuum and a mechanist description of the Universe.

The 4th paradigm was founded at the death of Einstein in the Macys congress 50 years ago, with the name of system sciences or complexity under a new principle of philosophy of science that was meant to substitute mechanism, called organicism, as it was understood that all what existed was a system or network of self-similar beings and those networks were the principle that structured all organic systems. It also added a 2nd arrow of time or 'primary substance' in the study of the Universe – information, which being fractal, discontinuous and non-derivable had not been properly mathematized in the previous paradigm

The mathematical difficulties to formalize information beyond its one-dimensional analysis by Shannon lasted till the discovery of fractal mathematics by Mandelbrot and the completion of Non-Euclidean mathematics by this author, with its definition of a fractal point 'with parts', the self-similar unit of all networks of the Universe, delayed a proper formalism for system sciences and complexity till the 90s, when I presented a summary of this work at the 50th anniversary of the International Systems Sciences Society. In the following years I gave a series of lectures as chair of Duality in the annual congresses of the International Systems Sciences society, which are the basis of this work.

Thus the basic unit of the new paradigm is also mathematical – the point – but a very special point, a fractal point which grows in detail and information the closer we come to it, till it becomes, as Leibniz put it, a world in itself. It is in fact a Non-Euclidean point through which infinite flows of energy and information can cross. The universe is made of networks of such points, and each network is what we call a world. Consider humans as such points, in which each head is indeed a spherical point that communicates constantly energy and information with its own body and the external Universe. Such complementary points are made of two networks, one of energy and one of information, which we call roughly the body and head of the Points.

And it turns out that those complementary systems are everywhere in the Universe – they are the beginning of it all:

In quantum physics, they explain the complementarity principle: all particles of information are associated to a field of energy.

In biology they explain the duality of cell body/DNA informative nucleus, or body/head that all biological systems have to exist.

In sociology they explain duality of the informative classes that create the languages of information that rule societies, money, and verbal laws and the people who earn money and obey it.

In economics they explain the duality of machines of energy and information.

All in the Universe are thus complementary systems made of networks of non-Euclidean points. Now this might sound void to the reader, and an insult to the anthropomorphic readers that think humans are the most important points of the Universe, but it turns out that the laws those points obey in their actions and communicative flows are self-similar for any network: humans and electrons behave the same when they move through slits or in herds, the geometries of social groups are also the same and the ultimate purpose of those points, to feed on energy and information, whatever kind, is also the same in all networks of the Universe. And so that group of laws of networks becomes a primary why for all beings of the Universe.

Further on, dual networks tend to evolve and reproduce new points through exchanges of energy and information.

The result is the creation of 3rd network/system: the reproductive network.

And so most systems of the Universe are organic, ternary systems made of Non-Euclidean points (which can be anything from atoms to cells to human heads) organized in 3 networks.

A human being, for example is a system made of 3 physiological networks: the energetic, digestive network; the reproductive blood network and the informative nervous network, with outlets to the exterior called senses. Those 3 networks provide the cells, the Non-Euclidean points of biology, with energy, information and reproductive hormones. And the result is a human being, himself a non-Euclidean point of more complex networks – the economic, reproductive network; political, informative network and energetic, military network of another complex system, a nation or more properly called the Financial-Military-Industrial system.

A fact the leads us to the final element needed to understand the why of the Universe: 'non-Euclidean points' organize networks that become points of a higher scale, which reproduce and organize new networks; and so the Universe keep growing in fractal scales, from particles that organize networks and become atoms that organize networks and become molecules that organize networks and become cells, that become organisms, that become planetary societies and planets and stars form gravitational networks that become galaxies, organized by dark matter into Universal networks.

And so the why of the Universe is very simply speaking a social, organic, reproductive why: the Universe reproduce information and organize forms socially into networks: From magnetic and electric fields, made of magnetic and electric constants that mix and reproduce a light wave to fundamental particles, quarks and electrons that absorb energy and reproduce new quarks and electrons, to energetic males and informative females that reproduce together, all in the Universe can be described with that simple scheme of things, which can be as detailed as needed to connect it with the 3rd paradigm of metric measure of those networks, its motions and forms.

All those systems, their mathematical and logical formalisms, the ternary plan of creation and evolution, they follow; their symmetries in time and space, its ternary topologies (since there are only 3 topologies in a 4-dimensional Universe, which correspond to energetic, planar networks; informative, hyperbolic ones and toroidal, reproductive systems) and the study of its Feedback, generator equation, which formalizes them all with the tools of fractal, non-Euclidean geometry, form the 4th paradigm or why of science.

Yet the reader must be aware that such paradigm implies a completely new philosophy of man and the Universe, more proper of Eastern traditions than Western, anthropomorphic, self-centered thought. Organicism substitutes mechanism; duality of energy and information substitutes monism (a single arrow of entropy or energy), form becomes more important than motion, the social network more important than the individual and life a better model than the machine. It also has deep implications for our praxis of science and policy, since on one side puts man again as the measure of all things – the more complex organism of information known to man – it also vindicates the importance of biological and social sciences over physical ones and it ushers a warning to mankind, which is obsessed by the technological evolution of

machines, forgetting the need to evolve humanity at social level and to take care of the life ecosystem developing a sustainable economy. Since it turns out that machines – organisms of metal – follow their own path of evolution as an independent species, which we men merely assembly, following the laws of evolution of all organic systems. Hence, we are now building, after making energetic bodies of machines in the XIX c. and informative heads (chip-brains, mobile-ears and camera-eyes) in the XX century, organic, robotic machines in the XXI c., which are competing with us as a new species in labor and war fields and could easily displace us as the top predator species of this planet by the end of this century.

The 4th paradigm is thus not only a theoretical advance in our knowledge of the Universe but also as science has always been, a tool to improve the future of mankind, which faces in this century challenges originated by the 3rd paradigm and its worship of machines of measures, largely ignored by the cult to the machine the 3rd paradigm caused.

The content of this work, which tries to give an overview of the philosophical and mathematical foundations of the 4th paradigm and its application to the 3 main bodies of human sciences, physics, biology and sociology is divided accordingly in 5 lessons which I will give in the ISSS congresses of Tokyo, Madison and Waterloo. Together and in the order given they formalize the 4th paradigm as a General Systems Theory of Multiple Spaces=Networks of Non-Euclidean Points built with 2 simplex Times arrows, energy and information and its complex combinations, reproduction, exi, and social evolution, \sum exi, which suffice to explain all the events and forms of the Universe:

Lesson 1: The Dualist Philosophhy of General Systems Sciences.

In this lesson we shall explain the structure of the Universe made of self-similar networks of energy and information, which are the 2 components of all the complementary beings of the Universe that constantly evolve into more complex systems, creating reproductive networks and evolving socially into bigger wholes. Lesson 2: Fractal Universes.

In this lesson we formalize the philosophy of General Systems Sciences with the advances of fractal and Non-Euclidean geometry. We first resolve the 5 postulates of Non-Euclidean geometry, which define all beings as 'points with parts', able to process energy and information; all lines as flows of energy and information between points; all planes as networks of n-points connected by energy and information flows and departing from those structures we deduce the mathematical laws that all complex systems made of multiple networks and extended through different scales of size, follow. We illustrate those laws with examples, and use this formalism in the following leasons to resolve and complete the metric models of physics, biology and economics, which now find their why in the structure of networks and systems, their 3 ages of evolution, its 3 basic topologies and the laws that all networks follow derived from the 5 postulates of ilogic geometry.

Lesson 3: Complex Physics, the arrow of Einstein.

Classic physics drags many errors derived from its definition of space as a continuum and time with a single arrow of entropy and energy. We introduce the model of duality with the arrows of energy and information and the model of multiple spaces, to define a complex Universe made of the interaction of 2 different membranes of space-time, the light-membrane and the gravitational membrane, and 2 arrows of time,, the arrow of entropy and electromagnetic energy and the 'arrow of einstein', of mass and gravitation, that attracts and in/forms the physical Universe.

Lesson 4: Duality in Biology. We study Biology and the evolution and differentiation of species in systems specialized in energy and information with the laws of Non-Euclidean Geometry and the two arrows of energy and information, its 'ages' in time and topologies in space, unveiling a guided plan of evolution that completes the work of Darwin and Mendel.

Lesson 5. The 72 years cycle of evolution of money and machines.

The application of duality and systems theory to economics unveils a biological model of evolution of machines of energy and information with a series of 72 years cycles of evolution of energy machines, information machines and now robots, with extraordinary consequences for the future of mankind. Since economics is a biological discipline, in as much as machines its main produce are systems that imitiate our human organs of energy and information.

Lesson 6. Memetics: the superorganisms of history and economics. We complete the Introduction to a Dualist model of system sciences with the study of the 2 superorganisms that are being created on planet Earth: The superorganism of human beings that we call history and its smaller super-organisms, (civilizations) and the FMI complex, the superorganisms of money, weapons and machines of metal, called the economy, which develop in a mutual process of symbiosis and competence.

Those 5 lessons which I hope to give in the different congresses of Systems sciences during the next years complete the model. If the reader is interested in the whole, even if we give the same brief introduction in all those lectures with the basis of the model, my advice is that he tries to read the lessons in the order they were given, as it will be difficult to understand the model without reading lesson 1 and 2, which explain the logic and mathematical foundations of the 4th paradigm.

Recap. The 1st paradigm of science responded what and who; the 2nd paradigm to the how; the 3rd paradigm to when, measuring space distances and time frequencies in great detail; the 4th paradigm responds to the why of the forms of space and cycles of time that all entities of the Universe follow. That why is organic, social: the Universe is made of complementary energetic and informative networks of 'Non-Euclidean points' that evolve and combine together, creating reproductive networks. And such complex systems create, new bigger, fractal networks units of a larger plane of space-time, evolving reality in scales of size that follow the same organic laws, from particles that become

atoms that become molecules, cells, organisms, societies, planets, galaxies and Universes.

2. The expansion of our concepts of space and time.

It is then obvious that all paradigms of science are related to the understanding of the fundamental units of time and space, the point, which gathers in lines that gather in planes, (defined as networks of points.

And so the advance of the understanding of those planes of space-time in each of the new paradigms of science sets the basis for a new flourishing of all branches of knowledge, as all what exists happens in time and space. And so a series of landmark books on time and space set in motion the evolution of those paradigms:

- The transition from the mythic age of knowledge in which the Gods, entities outside time and space controlled those parameters at will to the age of reason, was signified by two of such books, the 'Elements' of Euclid that defined a static, geometric space of 3 dimensions and the 'Logic' of Aristotle, which considered a single arrow of temporal causality, A->B for all temporal events.

The new age of metric space was born also in the XVII century when Descartes in his book the 'World' established the lineal coordinates of time and space, departing from the human point of view in the center of coordinates and Galileo wrote his 'Dialogues' giving us the first mathematical definition of time in terms of 'space location' and 'motion', v=s/t, and perfected the first machines that would measure ever since the rhythms of time and space (the clock and the telescope, today evolved into the computer and the camera). And those were the most influential books of the century.

In the XVIII C., Leibniz gave us his infinitesimal calculus to measure with precision small distances and changes in the motion of beings, and the concept of relational, multiple times – the first insight into the 4th paradigm. But Leibniz was too advanced for the age and so his rival Newton, who set the first laws that,

generalized the measures of the trajectories and rhythms in time and space of cosmic bodies, plotted in a single, continuum Cartesian space and measured with a single clock carried the day. Leibniz's concept was clearly superior from the point of view of the why of the Universe, but Newton's rods of time (the clock that equalized all time cycles and compare them) and space (the continuous, Cartesian plane and its reflective telescope), improved upon Galilean scientific measures and was adopted universally. Such was the awe his work caused that Pope exclaimed: 'And god said, Let Newton be! and all was light'.

In the XIX c. it was the time of Darwin, whose 'Origin of species' would define time as the evolution of information, or form of living beings and it opened the most talked about debate of the century. In the XX century it was the turn of Einstein with his Theory of Relativity, which few people understood till Mr. Hawking popularized its principles with his divulging book, 'A brief history of time', which was for that reason chosen by the students of Cambridge the most important work of science after Darwin's 'Origin of the species' – though the prize in justice should have gone to Mr. Einstein's original papers.

Mr. Einstein followed in his research a key tenant of the scientific method, the Principle of Correspondence, according to which a new theory of science must include the results of all the previous theories as particular cases of the wider theory. For that reason, he called his Theory of Physical Time, Relativity, since it was an extension of the original Galilean Relativity - a further study of the definition of time in terms of space and motion (v=s/t). But he used a new rod of measure; instead of the clock, the speed of light and in this manner further refined the measure of 'metric spaces'. Thus, his work exhausted the measure of time as a dimensional of spatial, energetic change in the motion and location of beings.

Einstein did more to foster our understanding of time by realizing that there were multiple times with different speeds in the Universe and time was a curved geometry, similar to the cycles of a clock. Thus he spatialized the concept of time as morphology of space and ever since we talk of space-time trajectories to define spatial change.

But time is any process of change - not only change in motion and location of space. Time is also change in the form or morphology of beings - change in information - defined by Darwin in Biology and several authors of the evolutionary school of History and Economics in social sciences (Butler, who applied the laws of evolution to machines; Schumpeter, who study those technological cycles; Vico, who saw cyclical ages of war and darkness, followed by times of enlightenment; Marx, who saw history, evolving in cycles, further studied by Kondratieff, and Spengler, who analysed cultural change with the morphological laws of biology.) All those theories of time changed were based not in the analysis of spatial, entropic, energetic changes in the motion of beings, but in the analysis of morphological, informative change, making certain the first insights of Aristotle that divided the sciences of change and time in physical studies of translational change and biological studies of morphological change.

Thus, according to the constant advance of our understanding of time and the Principle of Equivalence, in the XXI century we should expect a new book whose theory fusions the discoveries of Mr. Einstein in the XX century and Mr. Darwin in the XIX century - the concept of biological time, as change in the information of beings and the concept of physical space-time, as change in the spatial location, formal trajectory and speed of beings.

It follows that such theory must be a theory of multiple modes of time-change, and since each temporal change affects a vital space (Biology) or a physical space-time, it must be also a theory of multiple types of spaces. This is theory explained in this work – a theory of multiple spaces and times that unifies biological, sociological and physical modes of time-change.

Such a book has to be written, naturally by an expert in the science that tries to fusion Biology and Physics - the science of complexity, which Hawking himself affirmed to be the 'science of the XXI century'. Specifically 'Duality' the branch of Complexity which puts together the arrow of energy and the arrow of information seems to be the ideal science that can advance our understanding of space and time into the XXI century, by fusioning the work of Einstein and Darwin into a comprehensive theory of all types of spaces and time-changes.

And so as an expert on Duality, a science whose International Congresses I chaired for the past years¹, I wrote such model.

Thus, the 4th paradigm of science fusions the work of Biology and Physics by considering not only the arrow of lineal time, but also the arrow of information and the transformations between both, which create the cyclical beats of time that we observe in nature, defining a new foundational law of science: 'All what exists are complementary systems of reproductive energy and information that transform into each other 'ad eternal': $E \Leftrightarrow I$ '. And it goes beyond metric models of a single space continuum, a notch higher into the more general topological spaces, whose self-similarities will allow us to extract wider laws of reality, the final whys of the events and geometries we observe.

It is thus clear that the key to this new paradigm is the recognition that the Universe has 2 self-similar arrows, energy and negantropy, *fractal information, which was not fully understood in the past because its mathematical formulation through dimensional form and fractal repetition appeared at the end of the XX century.* Indeed, a key result of the new paradigm was the mathematical deduction by Mehaute², using fractal mathematics that when a system cannot keep its creation of entropy (expansive, continuous motion/energy), it starts a process of fractal, discontinuous, informative reproduction; which we can extend as physicists of the 3rd paradigm did with the discovery of molecular entropy to all scales of systems of reality, creating the fundamental beat of the Universe, the feedback rhythm, $e \Leftrightarrow I$,

from where all other equations, from the life (>I) & death (<E) cycle, to the dual membranes of the Universe (Gravitational, attractive masses >I Vs. Entropic, electromagnetism <E), to the processes of reproduction (ExI) will be deduced.

How far a 'Theory of multiple spaces and times' will go to fulfil the claim of being the space-time Theory of the XXI C., completing the structure of science will depend on its capacity to provide solutions to unresolved questions of science and predictions testable by experimental results (Popper). Yet the odds are good, since many of those solutions and predictions done as earlier as the 90s when the first texts on Multiple Spacetimes were published, had already being tested³ - an encouraging sign for its future.

Recap. Time and Space are the final elements of reality. As humans evolve their understanding, new scientific paradigms are found.

3. Topologic points of space and organic cycles of times.

Einstein said that Leibniz was right and there were multiple times and hence multiple spaces but to create such complex model of reality required starting from the beginning.

Indeed, the ticks of the heart, the stomach, the moon, the atom and the clock are different, but to measure them we needed a unit of time and so we equalized all rhythms with a clock, and to compare the spatial trajectories of those cycles we needed a 'background of space', so we put together all the broken spaces of reality defined by multiple cycles of space-time which created forms of reality – the chair, the body, the earth, the sun, the vacuum - into a joined puzzle, which we called Cartesian space-time. The error came when we forgot those simplifications and considered that the single space-time continuum used to measure all other spaces and times was the only real space-time.

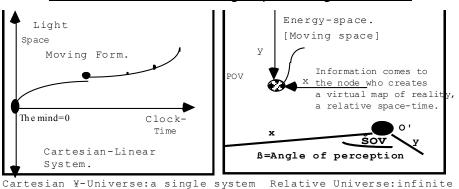
And because a Cartesian graph is an abstract continuum with only a rhythm of time, the rhythm of a mechanical clock and a surface of points with no 'breath' (Euclidean definition of a point), ever since science has believed in a single, absolute time and a single absolute space.

But what are all those items that break space in infinite beings?

To understand them it is needed first to evolve further mathematics, the language of science, and again Leibniz and Einstein are the points of departure, with another german mathematical genius in between, Mr. Riemann, who in the XIX c. realized that 'through a point infinite parallels can cross'. (5th postulate of non-Euclidean geometry). Thus points are not 'points with no breath' (Euclid), the abstract definition that creates the space-time continuum but 'fractal points', which grow in size when we come closer to them. And so stars are points in the sky that become huge as we come closer to them. And a microscope discovers an entire world in the minimal size of a cell. Einstein offered a partial solution to this conundrum considering that from our scale of size, those Non-E points curved the information of the universe that fluxed on it. But Leibniz had given a better answer: 'the smallest point is a world in itself'. This is the meaning of a fractal point. And so we change also the 1st, 2nd, 3rd and 4th postulates of geometry, where points become 'topological balls', and the Universe a geometry of multiple fractal scales of spacetime, which grow in size and information when we come closer to them

Non-e, fractal points are indeed a world in themselves, topological points with a volume of energy and information that related to other points with waves not abstract lines, which carry energy and information and create networks that warp into bigger points. So particles become atoms that become molecules that become cells that become organisms and so on.

And each of those points have a different rotational rhythm or clock of time, a different speed and a different size, which in each scale is used by those particles to gauge information and measure distances and energies and motions, as each of those points interact with other points of its relative spacetime world. And so only the sum of all those st-points creates the absolute Space-Time of the Cartesian plane, whose rods of measures and time clocks are those of the human 'point' our eye ball, who sees light and measures space with a rod of light and see space with the 3 perpendicular dimensions of light (the magnetic, electric and cspeed fields).



The devil of the mind. Our light-space: Linguistic truths.

Cartesian ¥-Universe:a single system Relative Universe:infinite sys
The World of Descartes
The real world

This rods of measure limited to the human world and scale, which Descartes precisely defined in a book he called the 'world', warning that they were the rods of the human mind, have ever since used to describe all the other points, without realizing that they were only the charactersitics of the space-time designed by our eye with the parameters of light-space, (the electromagnetic vacuum in which we exist with its 3 light-caused, perpendicular Euclidean coordinates and its c- speed). Once scientists started to make measures and inventing machines to help them in that task they forgot the admonitions of Descartes who told them that perhaps a devil had put that world in his mind: 'I think therefore I am' was indeed the meaning of it all: our mind is the best metronome, which creates a 'meaningful mapping' of reality with light – but cannot measure or penetrate in other scales of spacetime or opaque points of different substances around us.

In any case Cartesian space (Galilean Relativity) and c speed (Einstein relativity) became the absolute rod for all other

measures. This allowed the development of a 'referential world', similar to the way the visual mind perceives time and space, but this frame of reference made with light pixels is not the only possible mapping of all vital paces and time cycles of the Universe. There should be other species with other rods of measure, which might perceive spaces we don't (smelling spaces which dogs use to make their mind, gravitational spaces which seem to guide the actions of black holes, etc.).

This creates a new method of knowledge, proper of the 4th paradigm that we call the informative or linguistic method.

Since it validates the existence of all kind of languages and senses that give us multiple images of reality. Thus the linguistic method states a higher probability of truth is achieved with several perspectives and linguistic descriptions of a certain system; as each point of view will create a self-similar image of realuty, and so by integrating them all we obtain a complex, kaleidoscopic image of the whole. Reason why most system have redundant, parallel systems and biological organisms are bilateral eyes, ears, etc.

The parts of the point.

So we cannot construct if we want to account for all those cycles of time and vital spaces, a theory of reality based only in lightspace and its Euclidean coordinates and light-measure. This was proved in the world of mathematics century by Rieman, Poncaire and Mandelbrot. And it was implicit in the concept of absolute relativity, where measure is relative to the observer and the rods of measure we use. So we need to consider a Universal structure based in a type of space more general than 'metric spaces' called 'topological spaces', **spaces** whose fundamental properties are no longer 'distances' and 'sizes', which are relative, but properties like 'adjacency', 'formal curvature or information', 'selfsimilarity' (instead of equality), 'complementarity', 'function', 'geodesics', etc. In a model of relational, multiple discontinuous spaces what matters is to describe network systems with general properties given by their topology and the functions and cycles those topologies perform more than their detailed measure in metric space, which physicists have used to describe them till now.

What all those different spaces of reality, from the chair to the man, from the sun, to the galaxy and the universe itself have in common is the fact that despite of their apparent different form when we do measures – the length of their limbs, legs or the surface of its external membrane, or the density of its different parts, all of them have parts that structure a whole; a so all of them are *systems*, and all of them are a combination of the 3 possible and unique topological spaces of a 4 dimensional universe; that is, all of them combine *the hyperbolic, informative topology, the spherical, energetic topology and the cyclical, reproductive, toroidal topology* that mathematicians use in different combinations to map out all beings of reality.

Organic functions and motions in time of spatial forms.

We give to each of those 3 topologies a function, since the experimental method shows that information is accumulated in hyperbolic, broken structures with complex forms (such as your brain, a black hole, a computer); tiled membranes, made of small planes, triangles, squares and hexagons, are the most resistant and energetic systems, and reproductive processes are cyclical, feedback equations that 'repeat' a certain form. Thus a science of formal, topological structures in space and its parallel functions in time, a 'system sciences', is more general than a science of measure. Since it studies the properties of those 3 type of species and use them to assembly and describe all entities of the Universe. This is done by evolving the mathematics of the XX century to include 4 more postulates of non-Euclidean geometry and the concept of a fractal point. Since we have also to account for the other property of the spaces we see around us: each of them when observed in detail is made of multiple smaller self-similar parts, we call generically 'cells'; and so even the smallest point when

seen in detail becomes a fractal point with multiple parts, also called a non-Euclidean point. And it turns out that the manner which in the parts assembly themselves into wholes, and then become parts of even bigger wholes (so particles become parts of atoms parts of molecules parts of cells and planets parts of organisms and galaxies, parts of societies and Universe, in biological and physical spaces) are the same rules. And all of them do so by connecting themselves through networks, sharing flows of energy and information. Yet those networks leave dark spaces between their connections where other networks can occupy a place. Often we find that the system mixes two types of networks – hyperbolic informative networks and energetic, planar or spherical networks (as a sphere has in small surfaces the properties of a plane).

And this type of structure, which combines two networks, one of information (particle, head) an one of energy (limb, field), often mixed in a 3rd reproductive network (body) turns out to be the Universal structure of all efficient, long-lasting entities of physical and biological space, the fundamental particle of systems sciences and complexity, a 'complementary entity of energy and information). Thus at the end of this journey, we shall establish a new way to look at the universe, with topological spaces instead of metric spaces and with laws of systems and networks that become parts of bigger wholes – that is a universe of infinite fractal scales.

Finally we must analyse how all those different spaces are connected to form the puzzle of a total universe, and to that aim again topology with its concept of open ball and closed balls and the laws of thermodynamics with its analysis of exoergic and endoergic systems, come handy to understand how those fractals, broken, discontinuous spaces share certain common regions, membranes and bridges through which energy and information can flow in one or other direction to peg them together in stable, bigger forms.

Thus the structural analysis of systems, networks and topological spaces is a wider way to see the order, structure and meaning of

things. It does not seclude the old ways of analysing metric spaces and do measures: because once we have that wider view, each different self-similar species will be differentiated by its precise 'metric'. So for example we shall establish a category of beings called 'cars' according to the assembly of its parts into a whole, made of certain materials, combined structure and functions - the car will be an energetic system, where the human will play the informative role, which will have always 4 wheels as that is the most efficient structure to create a parallel 4-square plane of minimal friction to move over another plane -the road (since a network of 4 points or square and one of 6 points or hexagon are the most stable bidimensional structure) and so on and so on. Yet to differentiate a Mercedes from a Renault, we need measures; and so what we are creating is a new superstructure over all the other disciplines and detailed analysis of all the species of the Universe that unifies them from a higher point of view - a goal of philosophy of science that can be traced to the 1st man who looked at the Universe and felt an integrated part of it.

Why this is important has to do with the difference between both type of spaces: metric spaces must be equal in distant and size to be the 'same', and so we cannot go beyond each detailed description to create homologies that give us the 'wider whys' of reality. Topological spaces however are just self-similar based in very general properties, which allows to classify many forms as a single type of topological function and conclude that all functions of reality respond to the same 3 topologies in space and functions in time, needed to describe the entire 4-dimensional Universe since in topological forms 'distances' and sizes are relative. So what is conserved is the overall 'lineal, planar shape' of energetic functions, (limbs, weapons, proteins); the cyclical, toroidal shape of reproductive cycles, which combine energy and information to recreate a form, (body cycles; mitochondrial cycles' assembly cycles in a factor), and finally the hyperbolic, broken, convex, warped, cyclical forms of informative systems, (brains, cameras, eves. languages, black holes.)

Why this road has not been taken before is obvious: the 3 mathematical foundations of it are the 3 most recent branches of mathematics, only developed in the XX century, topology by Poincare, Fractal mathematics, developed by Mandelbrot (1973, fractals) and the completion of Non-Euclidean geometry by this author (Physics of time, 94). So in the same manner that quantum and relativity required the solution of the 5th non-Euclidean postulate (Riemann) and the understanding of Hilbert spaces in the XIX C., the new paradigm foreseen by Plato and Leibniz, acknowledge by Einstein and Poincare, can only happen once its mathematical structure was understood.

Recap. The 4th paradigm uses the new mathematics of non-Euclidean geometry, topology and fractals and the new logic of multiple time cycles, to define a new fundamental particle of space-time, the fractal point, a world of space-time in itself - an entity made with the same topological regions of energy, information and reproduction, which constantly tries of feed, inform and reproduce itself. All what exists is an i-logic point, with the same general topologies, which can be described then in higher detail with the use of metric spaces (3rd paradigm of science.)

4. Topological forms are knots of time cycles.

If the fractal point and its topologies create an organic Universe of networks of energy, information and its evolved combination, the reproductive network, it is because all those points and networks have motion. They are dynamic points, made of rotational, vibrational, lineal, cyclical and elliptical motions. And so we must make a new step in this new brave world and affirm that all forms are motions; in the same manner Galileo realized that the Earth, which seems still had motion and turned around the Sun. This fundamental truth of the new paradigm is the 'Paradox of Galileo': why we see it all still if it has motion? And the answer is that we can see reality either as still space or form, and then describe it with the topologies aforementioned or as a motion that leaves a trace of form as those pictures of night cars leave a line, and then all becomes a motion in time, a change. Change or motion are the classic definition of time traced back to Aristotle,

who also said there were two types of change or motion, the motion in the location of beings studied by physics and the motion of the form of beings (the life/death cycle, the evolution of form) studied by biology. And so this new/old definition of time, which gives us whys to the change of reality substitute the definition of the 3rd paradigm: 'time is what a clock measures'. And it gives us the organic whys to all motions, which are either energetic motions, of lineal topologies or informative motions with more form, cyclical, clock-type topologies. And its combinations, reproductive motions that combine both creating new curves and forms. And so each topology of the universe has a function and we can see all beings made of a lineal form/motion/limb and a cyclical head/motion/ informative storage. And this is so because the line is the shortest distance between two points and the sphere, the form that stores more information. So from virus with a head of information and a lineal limb to semen, trees, light with a photon and a transversal tail, fishes with a head in front and a moving body or trees with a lineal trunk and a ball of roots and leaves on top, we find some basic topologies with vital functions that bring us the biggest of all whys: forms are topologies and topologies have motion, which expresses an organic function either a simple energy/information system, with a head that gauges and a field/limb that moves, or in the most complex beings, an intermediate cyclical toroidal, elliptical body that reproduces also the system. And those are the ultimate whys of reality: gauging heads/particles; lineal limbs/fields that move; elliptical bodies that reproduce the system and social networks that put together multiple st-points into bigger structures that will again repeat the same game:

'All topological st-points are knots of time cycles, which trace motions that gauge information, feed on energy, reproduce or evolve socially the point into networks of points that become knots of a higher, fractal space-time plane.'

If we consider all systems to be networks, as it is obvious that even the smallest form is born of a network of parts that create the whole, so even atoms are made of simpler particles, we can distinguish 3 fundamental types of social groups:

-Simplex waves of energy (herds) or information (networks).

- Complementary systems of reproductive energy and information with 2 networks, an informative particle and an energetic limb/field.

Those are the simplest systems which merely create actions (physical particle, virus). But most systems on the Universe are complex systems made with 3 networks: energetic limbs, informative heads/particles and a reproductive network that ensure the survival of the whole system in an autonomous manner. Those physiological systems, or organic networks, are the most abundant and it remains to see if al systems are complex systems and the uncertainty of perception make us believe that complementary system do not reproduce – or at least those who do not reproduce are reproduced by an external enzymatic process, which acts as the 3^{rd} network.

So we talk of the complex system of the human organism with a reproductive blood network an energetic digestive network and an informative network. But also the economic ecosystem can be described as a complex networks with an informative system, money, and an energetic system, the military system and an organic system of machines. And so on. The simplicity of those 3 essential forms of which the simplest is a dead form, which requires to be complementary to have actions, exi and requires a third form to be reproductive becomes then fundamental structures to understand organic systems, complex systems, economic systems and as they evolve in time normally from a simple network of energy that evolves into a complex network of information, associates to an energy system and finally mixes both to create a reproductive system, we have also a template for understanding the plan of evolution later studied in more detail.

It should be obvious to the reader the direct connection between the time arrows and its descriptions with dual elements (energy/information) or ternary systems, which evolve socially cells into networks (4-dimensional systems) or a more detailed analysis of the 3 main systems of an organism and its subparts (9 dimensional Universes).

Often we just need to explain reality at the level of 2 arrows, energy and information, which are enough to give meaning to most physical events. So, in the part dedicated to physics we will explore basically the energy arrow of lineal forces and the informative arrow of particles, charges and masses.

On the other hand, the 4 arrows of energy, information, reproduction and social evolution, equivalent to the drives of a living being suffice to explain most biological events, as biologists do in his work, so we will deal with biological species, mainly with those 4 'drives' of existence.

The 3 ages of time: the life/death cycle

Further on, the 4 arrows of space-time have a clear order in time, such as we are born as a seed of information that:

-Max. E: Goes through an energetic youth of fast motions, in which the energetic limbs and external sensorial membrane dominates.

-E=I: Balances energy and information in a mature, reproductive age, in which the internal, topological, reproductive system dominates.

- Max. I: Till it warps all its energy into form, in the 3rd age in which the central, hyperbolic, informative brain/particle singularity is dominant. This age ends in:

- Death: Exploding back into energy, erasing its information in the process of death.

And so this order from energy to information or life E->I and then its local reversal of time arrows from information to energy or death, I->E, becomes the fundamental cycle of existence of all species of reality, from human beings, to matter (energy=gas state, liquid=reproductive state, solid=informative state), to the Universe itself from the bigbang to the steady state to the Godel's vortex, described by the 3 solutions to Einstein equations, which must be ordered in time.

Thus after making a topological, spatial analysis of any entity, the 4^{th} paradigm makes a temporal, causal analysis of its life/death cycles, since both are related as each topology dominates each age of the species or individual form.

The 3 fractal scales of space-time.

Yet a closer analysis of those ages shows that it all starts in a simpler st-1 space-time scale, that of the initial, cellular seed of information, the singularity of the Universe or the plasma state of matter, then the system reproduces and evolves socially till becoming an organism of the st-plane of existence which we consider the main life cycle, in which the organism will perform social tasks with other self-similar organisms of the st+1 social scale, till it dies and returns back to the st-1 cellular level. And so existence is also a travel through 3 st±1 scales of reality. And so we need also to do a ternary analysis of the 3 fractal scales of space-time in which all systems exist. They are the cellular, organic and social or ecosystemic scale in biological entities and the atomic, matter and cosmic state of physical entities, in which atoms gather into gas, liquid and solids that form part of cosmic entities, planets and stars.

Those 3x3 elements, the topological, temporal and fractal analysis thus give us a far more complex understanding of a system. And so now we can try to analyze them all mathematically, establishing the 'fractal, generator equation' of all systems of the Universe across a minimal number of 3 scales, 3 ages and 3 topological regions.

Recap. There are 3 types of systems, simplex systems of energy or information, complementary systems of energy and information and complex systems which add a feedback reproductive system: $e \Leftrightarrow i$. They dominate in 3 ages of time, energetic youth, reproductive maturity and

informative, 3rd age, in which a species travels through 3 scales of selforganization, born as a st-1 seed that reproduces and self-organizes, surfacing as an individual form in the st-plane, which will perform certain tasks in an st+1 ecosystem.

5. Generator equation of the Universe.

Since Time and space express the widest Laws of both, Philosophy and Science, in their search for an explanation to the Future, a Theory of multiple Times and spaces is both, a Philosophical, Religious Theory of Reality and a Scientific Epistemology of Nature. For that reason, even if this work uses the experimental method and its logic and mathematical languages to describe those arrows, we can easily translate the classic jargon of philosophy and religion to the modern jargon of Multiple Spaces-Times. Then each time arrow becomes an essential 'Will' or 'Why' of the Universe, explained in classic religions through Gods or anthropomorphic 'Avatars', each of which represented one Will or Arrow of Time.

In that regard, the concept of a causal arrow of time or 'will' of the Universe has been with us since the beginning of knowledge, albeit expressed with different languages. Religion and philosophy has used the verbal language, to study those arrows. In the ancient times the concept was 'impersonated' by God as the 'seer' or 'will of times' (Saint Augustine), which in his different manifestations represented those arrows.

In modern times, science has used mathematics and logic to study them, albeit in its simplest forms (Euclidean mathematics and Aristotelian logic), which we will upgrade in order to understand the more complex, Non-Euclidean, fractal geometry and Non-Aristotelian, simultaneous logic of those Arrows. Since modern science lacks the needed 'linguistic tools' to fully grasp the interrelationships between the 4 main arrows of time, reason why most scientific theories use only one arrow to explain the Universe. 4 are paramount:

'Monism', sponsored by physicists, which considers only 1 time arrow, energy, also called entropy.

'*Duality*', sponsored by Eastern philosophies in the past and Complexity Theorists in the present, which consider two types of changes: changes in the information or 'form' of beings and changes in their energy or motion.

'Trinity' sponsored by all kind of philosophical and Religious doctrines, which considers time to have 3 ages, past, present and future, youth, maturity and old age, renewed by death.

'4-D': More complex theories of change, mostly of biological or religious origin, consider 2 other arrows of time: 'reproduction' (the constant repetition of beings that happen all over the Universe) and 'love' or 'eusocial evolution' (the coming together of individuals into groups).

'Multiple Time-Spaces': In this work we reject simple monist theorists, which introduce too many errors to be of any use for the 4th paradigm. Instead we accept 3 degrees of complex analysis: dualist studies of energy/information systems useful in physics, the simplest systems; 4-dimensional analysis with the synthetic arrows of energy, information, reproduction and social evolution; and the most exhaustive model of multiple time arrows and fractal spaces that divides those arrows in different modes of social evolution and reproduction. Thus in the exhaustive model we differenciate 2 reproductive arrows:

- exi: The physical arrow of reproduction called an 'action', that combines energy and form, *exi*, becoming the unit of physical events.

- $e \Leftrightarrow i$, The biological arrow that combines informative heads and reproductive bodies, which constantly interact through feedback cycles that exchange energy and information, creating and reproducing organisms, the essential particle of biological spacetimes. - We also differenciate two types of social evolution:

- Σe : Herd or wave evolution in which each entity only relates to those that surround it.

 $-\Sigma^2 i$: Network evolution of informative bytes in which each entity relates to all other entities of the group, hence creating i^2 'axons', - the main elements of the network.

- Finally we add the fractal arrows of multiple space-times, ignored by the 3rd paradigm that uses a single space-time:

 $-\int \partial$; The Generational, temporal life cycle integrates a self-reproductive cell, which multiplies its numbers, into a superorganism and disintegrates it in the process of death. It can be extended in time as one self-similar form repeats itself generation after generation between birth and extinction.

- \sum , \prod : The ecosystemic, spatial arrow that integrates all those systems in space and time, in bigger \sum -herds and \prod -networks $\sum (\Sigma E \Leftrightarrow -\Sigma^2 i) \Leftrightarrow \prod (\Sigma e \Leftrightarrow -\Sigma^2 I)$

- st=n, X^n : The fractal, transcendental arrow of multiple spaces that creates super-organisms made of smaller organisms, evolved across many fractal planes of existence, from particles, to atoms, to molecules, cells, organisms and planets, stars & galaxies till till reaching for st=10, the Universe and beyond the absolute reality, whose number of minimal cells will be X^∞ :

 $(\sum (\Sigma E \Leftrightarrow \Sigma^2 i) \Leftrightarrow \prod (\Sigma e \Leftrightarrow \Sigma^2 I))^{st=10,\infty}$

It is the Fractal Generator, feedback equation of the Universe and all its exi=stences, whose partial equations and/or synoptic analysis connects the 4th paradigm with the 3rd paradigm of metric measure. Since we can in fact treat both members, integrated across all species of space and all species of Time for St=1, as the Absolute, Single space-time continuum of the metric method.

We shall therefore study most systems as dual systems of spacetime, guided by its 4 dimensional arrows, energy, information, reproduction and social evolution, which have 3 topological regions, that dominate each of its 3 ages of time, as the species develops from its st-1 initial seed into an organism that performs functions in the st+1 system. And that will be enough to understand the general nature of any species, event or form of the Universe; but from time to time we will provide a more comprehensive vision to exhaust the model with the 9 arrows of space-time; so to get enough detail needed in a work that pretends to complete and usher the world of science into a new paradigm, given the enormous complexity that the previous paradigm of metric spacetime has reached in its analysis of the species of reality.

Recap: Historically, 2 types of theories on Time Arrows dominated human cultures. **Monist** theories consider the Universe to be caused by a single causal arrow, called 'God' in religions and 'Entropy or energy' in Physics. **Dualist** theories consider the existence of 2 arrows, energy, the destructive arrow, called Shiva or Yang, and information, the creative arrow, called Vishnu and Yin, the creator of Live. Only a few, complex philosophers (Leibniz), disciplines of science (Biology, Theory of Evolution, System sciences) and religions (Taoism, Buddhism, Zurvanism, Christianity), have also understood the two more complex arrows of future time: the arrow of reproduction of energy and information (exi) and the arrow of social evolution or arrow of love.

Theory of Multiple Spaces-Times fusions all those disciplines, unifying the Time jargons of Philosophy, Religion and Science and provides 3 levels of time arrows, dual theories of energy and information, which suffice to explain most physical systems; 4-dimensional theories which add the arrows of reproduction and social evolution, needed to explain most biological phenomena and finally 9-dimensional theories of 9 arrows/cycles of space-time that exhaust all possible events and cycles of the most complex species of reality, the human super-organisms studied by social sciences and the Universe at large. The algebra of multiple spaces-times defines a Unification equation of all arrows, events and morphologies of space-time, whose exhaustive and particular analysis reveals both the thoughts of god and its details of each species.

6. The linguistic, Ternary method.

For those not mathematically inclined, the 4th paradigm offers a logic method of knowledge, called the linguistic method, since all languages know have a content of truth that gives knowledge. And so if the total truth of a being is probability 1, and it is only stored

in the being, external point of views give us a lesser amount of knowledge that increases when we include more perspectives, languages and detailed analysis.

According to the ternary principle, knowledge starts in simple monism Duality is the next image that observes 'complementary beings', and often puts together body and limbs on one side, normally $-\frac{1}{2}$ of the mass of a system and the informative head/particle on the other; but accurate knowledge starts with the ternary principle; seeking for an energetic, informative & reproductive system; and then *the 3 symmetries of the ternary principle – the 3 ages in time, the 3 topologies in space and the 3 scales of existence. And that is wisdom.*

Consider for example, the 3 elements of life, C, N, O. Today we are still in monism and so even biologists will tell you that Carbone is the basis of life. Yet carbon is only the body of life molecules. Some thus add Oxygen, the energy of life. And indeed, the biosphere has exactly the same mass of Oxygen and Carbone (24.9%) in your bodies as limbs and bodies tend to weight or occupy self-similar volumes. But this misses the Nitrogen, the intelligent, informative atom of life, which is only 1% of the biosphere (0.27%) and was called first 'azoe', which means in Greek without life. Yet with its cyclical forms and its Hydrogen 3dimensional eyes, it perceives the external world and structures life, accumulated in the DNA and brain. Then you need to understand beyond that topology and its ages of evolution the scales of reality, from those DNA-cells to the brain to the external St+1 ecosystem of water in which we exist. Since indeed, those 3 elements are exactly 50.7% of your mass, ¹/₂ of reality, the rest being mostly Hydrogen the primordial substance of water and the Universe.

Recap. The new method of knowledge of the 4th paradigm is the linguistic, ternary method, which accepts all languages of knowledge and uses the ternary structures of fractal points in space (its 3 topological regions), in time (its 3 ages of evolution) and its structure across $3 \text{ st}\pm1$ planes to exhaust our knowledge of any system.

7. The content of this work.

Because of the novelty and wide scope of this new r=evolution of human thought, this text, mostly a recollection of the conferences I gave at ISSS during my tenure of the chair of Duality¹ are only an introduction to the theory of Multiple Time-Spaces, which I also have named 'Time Arrows' Theory as the determinant factor of the model are the 4 main arrows of time, energy, information, reproduction and social evolution that all its 'vital spaces' follow. The entire theory, whenever is developed by scientists to its full extent will mean the reorganization of mankind's encyclopaedic knowledge of -now divided in partial theories - into an interdependent, organic body of thought structured by the ultimate 'will' or 'why' of reality: the vital will of existence that all its systems follow, either consciously (complex informative species like man), or automatically (physical and biological systems that follow mechanically or instinctively the 4 main arrows of time, since otherwise they would become extinct; as all complementary species need energy for its limbs and reproductive systems and information for its informative system; they need to reproduce or would become extinct at the end of its limited time; and they survive better if they are able to organize in systems of self-similar cells that work together as a bigger, faster whole). *Existence* is in fact the theme of the 1st part, which studies the Arrows of Time as a Philosophy of Science that applies to all disciplines called System sciences or Complexity.

In the 2nd part we advance our understanding of multiple spaces, with the evolution of the logical and mathematical languages used to describe it. And in the rest of the work, once we have evolved the metaphysical, logical and mathematical tools we use to interpret the experimental facts of Nature that happen in different vital spaces under the guidance of the 'dimensions' or arrows of time, we will use those new tools and laws of multiple spaces and times to advance the 3 main bodies of scientific thought developed by mankind: Astrophysics, Biology and Social Sciences.

The reader should understand though that this work is a mere introduction to a foundational subject, which deals with the basis of all scientific inquire - the concepts of time and space and the nature of the logic, causal languages of time and spatial, geometrical languages we use to describe it. So we cannot be exhaustive but give merely an overview of its application to the resolution and structural organization of all sciences. For that reason we will give just a general overview of the model but also for each science we make a specific, 'in depth' analysis of a more restricted question or sub discipline; so the specialist realizes the scope and depth of the model.

Thus in the analysis of the multiple, causal logic of a Universe of many time arrows we will consider in more detail the causal chains between time arrows that cause the 'existential' order of the life/death cycle: In mathematics, we shall explore in more depth, the laws of Geometry and topology, giving only a summarized account of its applications to Algebra and set theory. Since indeed, the realization that the Universe is made of topological structures, which only in a detailed analysis acquire a fixed, measurable form is the main discovery of this model.

And those 2 key elements of the new paradigm of space-time will be later applied to each science.

So in Physics among the many questions multiple space-times can resolve, we consider the 'Ages' of the Universe and its parts, galaxies and stars; and the topology of its most mysterious objects, black holes.

In Biology we apply the ages and topologies of all systems of the Universe to solve the paradoxes of evolution and explain the 'topological plan' and 'horizons' of all species, which followed those laws in its 3 evolutionary ages or 'horizons'.

And in social sciences we will use those laws to resolve the program of evolution of the human kind; the cycles of life and death of civilizations; the 'program' of human existence mediated in the biological plane by genes and in the cultural plane by memes; and in economics, the phases of evolution of machines and money that define the economic ecosystem; to finally study the outcome of those 2 processes of evolution: the creation of superorganisms of humanity (cultures, religions, nations and civilizations) and superorganisms of machines (companymothers, networks of machines and global stock-markets) – and the interaction between them.

8. Conclusion.

The importance of the new paradigm of topological timespace arrows – the ultimate why of reality - is obvious: It does not only complete the responses of to *all* the questions that exhaust the truth of a certain research - the what (experimental evidence), the who or how (causal logic), the when (metric spaces) and the why (topological time arrows) *but it also provides a hierarchy of truth that eliminates* mathematical fantasies and false theories.

Indeed, once we determine what we want to study (experimental evidence), we must observe its why and how - its topological structure and causal logic (how or who), which the combined use of time arrows and topological spaces clarifies. Those 2 systems of truth, experiment and theory, limits with the experimental what, and the why and how of topological time arrows, what things are certain and what are myths, linguistic fantasies, unreal events or false interpretations. Then, finally we can study the details, analyzing with clocks and instruments of science, its metric properties. Today the excessive use of machines of measure, overdeveloped by the Industrial R=evolution has obscured that hierarchy, and the use of computer models increasingly creates another aberration – the belief that anything, which is mathematical and can be modelled in the 'virtual reality' of a computer is truth. This makes any theory truth, because it can be proved by definition that any mathematical theory can be represented in a computer, which is a mathematical machine; as any verbal fiction can be written in a novel, which is a verbal 'machine'. And given the amount of information the computer provides in 3-dimensions, such virtual models might seem more real than reality itself, even if they are quixotic fictions created by

the combined imagination of the computer and the scientist. Thus, the 4th paradigm returns research to reality as it is; not as the metrics of 'Touring machines' resolve and represent it.

Recap. A model of multiple spaces and times has applications in all the sciences of humanity, illuminating the why of all time events and spatial organisms.

Notes:

¹ Congresses of Cancun, Sonoma, Tokyo, Madison, Waterloo and Hull (2005-2011) where I develop in 10 lectures the basic elements of a theory of multiple spaces and times or 'General Systems Theory' and its applications to all sciences.

² 'Broken Spaces-Times' Alan de Mehaute

³ 'Radiations of space-times' c. 94

I. THE ARROWS OF LIFE

1. What is life?

The fundamental innovation of System Sciences and the model of Multiple Spaces-Times, regarding the meaning of life is obvious: All what exists in the Universe shares the 4 fundamental properties of life, which are mimetic to the 4 main time arrows all systems of the Universe follow. Life, like everything else in the universe, feeds on energy, gauges information, reproduces and evolves socially. Thus in the organic Universe everything is life. *This is the essential tenant of organicism - the philosophy of science sponsored by System Sciences, which this work explores from a scientific perspective.*

In the past, the meaning of life was explained by 'monist physics'¹ and religions, ^{departing} from 2 different scales:

-Physics explained it from the lower 'fractal scales' of physical matter – hence life, according to physicists was merely a chemical mechanism. The error of this theory is to ignore the organic nature of atoms, from where the organic properties of life depart.

- Religion explained it from the upper scales of human social 'Gods' – and so for religions life is the most sacred form of existence, different from all other beings in as much as it is the gift of God to mankind. And only God and Man were 'special beings'. The error of this theory comes from an anthropomorphic vision of God, the mind of the Universe, whose laws are common to all species.

In system sciences, life is merely the manifestation of the arrows of space-time, the will of the Universe, in complex systems created with a specific triad of atoms, C, N, O. Yet any other type of atoms could also create potentially complex super-organisms that participate of the properties of life; since all atoms feed on energy, gauge information, reproduce its particles and evolve socially into molecules. And so we can construct 'life beings' with other atoms, as the evolution of robotics, soon to cross the 'threshold' of life, clearly shows. What is then the difference between 'carbonlife' and 'metalife' (robots) or other hypothetical forms of life? At this point of the evolution of machines only a difference of informative complexity. We had 4 billion years of evolution and machines, which we create, imitating our organs of energy and information, have had only 300 years. So as today regardless of the potential informative complexity of silicon-based life, carbonlife is still the most complex form created on planet Earth by the complex interaction of the arrows of time, which biologists call the drives of life.

So a multiple space-times theory affirms that life is just the manifestation of those arrows and further on studies it from the 3 planes of:

- Physical matter, whose organic properties are transferred from atoms to molecules to cells to multicellular organisms.

- Religion. Since now God, the mind of the Universe are the laws of multiple space-times and the organicist philosophy derived from it, more in tune with Eastern philosophy.

- And from biology proper, where we consider all the scales in which life happens (the chemical, molecular scale; the biological, organic scale; and the ecological and social scale), as biologists and complexity/system theorists do.

Only then we will have a complex view of life that extends through 3×3 relative scales of exi=stence.

2. Main laws of Multiple Spaces-Times applied to Biology.

It is this 3rd biological/ecological approach the one that has fully understood the meaning of life, as a complex system that 'feeds' on energy, gauges information, reproduce its energy and information, and evolves socially. As we did in our analysis of the physical universe with Multiple Spaces-Times, we shall resume the advances brought about by the 4th paradigm, before we make an orderly description of its applications to the study of life, from its initial molecular scale till its final evolution of human dual forms of energy and information (sexual duality).

The 1st types of laws applied to biology are the laws of spacetime cycles and its causality, which define:

- The life/death cycle as a series of ternary ages and horizons in the evolution of organisms and species. We shall therefore be able to explain the plan of evolution of species and life beings, with the 3 ages of energy and information.

- The events and behavior of living organism as the product of the 4 main drives of existence, gauging information, feeding on energy, reproducing and evolving socially. Life beings are superorganisms, created a knots of those 4 time arrows, which in biology are equivalent to the 4 drives of existence that define life. We shall observe that in any scale of biological entities, from DNA molecules to individual species to societies those 4 wills of existence explain the behavior of each species, including the human beings: We constantly inform our head with different languages, feed our body and lungs with energy, conduct a life based in family values and sexual desires, and evolve socially with other human beings and machines into super-social organisms, cultural organisms, in which we perform our social functions as a 'cell' of the super-organism.

The 2nd set of laws of Multiple-space times applied to biology are the complementary, inverted properties of energy and information and its complex arrows, reproduction (biological radiations) and social evolution, (evolution of cellular forms). They determine its complementary and ternary structures and physiological networks, both in cells and in organisms, with heads, bodies and limbs.

They determine the Darwinian events (predators vs. victims) of Nature and its 'rhythms' and beats of existence (punctuated evolution⇔ reproductive radiation)

Further on, the properties and size scales of biological spacetimes, dominant in information are inverted from those of physical space, dominant in energy and determine the different processes of creation, evolution and emergence of super-organisms in both ecosystems: physical systems tend to be entropic, with few informative, time cycles and only a weak time force, while its spatial forces, speed motions and destructive big-bang processes are overwhelming; while biological systems are negantropic, full of different time-cycles and clocks, with rich, complex in/form/ations and limited speeds and reduced spaces.

If the Universe is a fractal puzzle of cyclical masses and charges, associated to lineal light and gravitational forces, in 2 scales of enormous simplicity of form and extension in space; the vital spaces that evolve into life forms are far smaller in size and yet far more complex in information, which is the dominant element of life spaces.

What this means is that the 3 scales of life beings, the biochemical, organic and social scale are very different in form, given its richness in life beings, yet move and occupy a relative small space. So in life beings what matters most is the invariance of the functions of those forms that transcend between scales, even if the topological deformation of the exact forms is enormous.

The 3rd sets of laws of Multiple Spaces-Times applied to Biology are the 3 invariances of motion, scale and form.

Since life beings are informative beings of minimal energy/motion, motion invariance is irrelevant. Thus the 2 invariances that matter in life are the existence of fractal scales (the bio-chemical, cellular, organic and social/ecological scales) and the invariance of topological forms in all living organisms that repeat the 3 topological structures of a 4-Dimensional Universe and within scales of life that repeat the functional arrows of information, energy, reproduction and social evolution, which emerge from scale to scale.

The laws of i-logic geometry (form invariance) applied to biology: In the 3 scales of life of the Earth the invariance of topological form is not maintained strictly but both cells and human organisms, and economical nations, do maintain the invariance of

functions: that is they deploy systems of feeding, gauging information, reproducing its substances and evolve socially.

The Invariance of topological form=Function is therefore maintained as always in the 'fractal Universe' with a certain degree of self-similarity, never with absolute equality.

Further on, we shall be able to classify in each of the fractal scales, any species or form of life, as a lineal system of energy (proteins in bio-chemistry, limbs in human bodies) or information (DNA rings and nuclei in cells, heads and eyes in human beings), and structure them according to the 3 topological forms. So with the advanced tools of topology we differentiate in a life being a ternary structure composed of a hyperbolic, informative, high topology or head/cellular nucleus, an energetic, extended membrane and lineal limbs/cilia and a series of cyclical networks that connect both regions (reproductive bodies, mitochondria).

The 4th set of laws of multiple Spaces-times are the inverted laws and flows of energy and information between those scales, which define the laws of genetics.

The 5th set of laws are the ternary laws of differentiation of species in energy, information and reproductive sub-species and the ternary laws of functionality that explain the multiple functions of most biological entities within its bigger organism.

Thus a Biological model of Multiple Spaces-Times deals mainly with the specific analysis of those scales, its species, life-cycles, arrows of existence and energy-information inversions, offering a more detailed analysis of the plan of evolution, by adding to the mix the 3 ages/horizons/ternary differentiations of evolution in time, the organic, topological morphology caused by such evolution and space and the relationships between its fractal planes of existence (genetics). It is the science of palingenesis that now becomes central to biology.

Those laws of Time theory are essential to biology, since they explain the morphologies, evolutions and behavior of life.

Recap. The Biological world follows as any other system of reality the laws of Multiple Spaces-Times: The laws of causality that determine the life and death cycle and the evolutionary horizons of species; the laws of invariances in form, motion and scales; the laws of morphology, causality, behavior and social evolution defined by the 5 postulates of i-logic geometry, which explains the creation of molecular networks that created cells and cellular networks that created civilizations, shaping the 3 scales of life beings: the cellular, individual and social level.

II. TOPOLOGIC EVOLUTION: 3 AGES OF SPECIES.



In all space-time scales species follow a future arrow towards more information, which increases in 3 horizons and finally evolves individuals into societies, herds and macro-organisms, related by a common language/network of information.

3. The plan of evolution: Synopsis.

The process of evolution of species is equivalent to the $3\pm$ st ages of individuals with a twist: death is not the only 'solution' to the cycle, but the duality of ∂ -disintegration or \int -integration of a social group (in the case of life a cellular group), which defines the life/death cycle gives two choices to some 'top predator' informative species: After its 3 horizons or evolutionary ages the species might become extinct or transcend into a super-organism.

In the graph, the seminal, 1st species packs a lot of information in minimal space: It is the Worm Hole, the chip, the 1st bilateral animal, the 1st mammal, the horse and the 1st Homo Sapiens, which seem to have evolved from a dwarf ancestor, which first discovered technology and had a dwarf brain, albeit with an evolved morphology similar to that of the Homo Sapiens: the Homo Floresiensis.

Then the new 'highly informative' top predator follows in its evolution a plan of dimensional evolution that transforms species with a high content of energy into species with a high content of information through $3\pm$ st horizons, self-similar to the ages of an

individual organism. Since species are, in fact, macro-organisms in which each cell is an individual of the species.

-First in its 'energetic youth', the species grows in size as horses, humans, bilateral animals or black holes do.

-Then the species suffers a reproductive radiation colonizing new ecosystems.

Next the species suffers a diversification, according the ternary principle into 3 subspecies, one dominant in energy, another in information and a 3^{rd} one balanced in both parameters.

- Finally, a new top predator extinguishes the species or the informative one evolves into social organisms of different complexity, stronger than the individual and survives.

Recap. The simple, morphological plan of evolution that each fractal species of the Universe repeats is *caused by the fact that there are only 2±1 forms in the Universe, lineal energy and cyclical information and i=ts reproductive, body combination.* So only 3 new types of species can be created, one with more energy, one with more information and one that reproduces both.

4. The plan of evolution in depth.

According to the *Paradox of Galileo*, all minds, including man, are self-centered beings who believe to be the center of creation, because they gauge information from its point of view. Thus most of reality either exists in a dark space the species doesn't perceive or uses a language the species doesn't decode or it is further away from our 'noses' to be of any importance to us. So, regarding evolution, humanity believes either in 'chaos', which makes humans the only intelligent species (the scientific, Darwinian approach to evolution) or in 'personal, planning Gods' (the religious approach) who have designed a Universe to the image and likeness of humanity.

The truth is the opposite: all is intelligent and vital and we are made to the image and likeness of the Universe. Empirical facts, of which this book offers many cases, prove that the Universe and all its parts are organic and perceptive and it is indifferent to our species, just one of the ∞ self-centered points of view it hosts.

In Biology the 3±st ages of an entity of multiple fractal spacetimes between birth (st+1) and extinction (st-1) apply both to organisms and to species that go through 3±st horizons, parallel to those 3±st ages and main arrows of time of all systems of the universe. Thus there is an informative, 'intelligent', organic order in evolution. Though it is not a plan designed by a 'personal God' who cares for humanity, but by the limits that the morphology of lineal space and cyclical time and its combinations impose to the evolution of species. The so-called 'intelligent design' is the ternary, existential cycle that applies to every form of the Universe as it evolves in 3 possible sub-species: an energetic, lineal species, an informative, cyclical one or a reproductive form, of balanced $\Sigma E = \Sigma^2 Ti$ parameters. Those 3 forms become the 3 horizons between birth and extinction of any species: A top predator form of max. energy, or I horizon of the species; a balanced form, Σ S=Ti. that reproduces so fast over its prey-energy that creates a 'biological radiation' and parallel extinction of the lesser victim till reaching a trophic balance, or II horizon of the species and a form of max. information or III horizon: Max. E, Max.Re, Max. I.

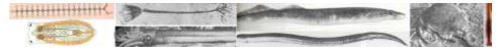
+1: Birth: max. Ti. The chip paradox (conception).

In the previous graph, the creation of a new species takes place according to the same 3 ages of any space-time cycle that become the 3 horizons of any species: after conception that creates 'a seed' of pure information and minimal Energetic Space, species go through a young age of energy growth that creates 'bigger species'; a mature, reproductive age of forms in balance between its energy and information, when the species maximizes its reproduction, radiating in huge numbers; and a third horizon of informative evolution, when it diversifies into multiple subspecies, becoming finally extinguished by a new top predator form, since its evolution has reached its limit. However, in certain species, after the III informative horizon, a fascinating phenomenon happens: if the species has developed a new language of information, it gathers into herds that evolve socially together creating macro-cellular organisms of a 'higher', more complex Plane of existence. So prokaryote evolved into giant eukaryotic cells, and those cells evolved into animal beings, of which ants and men, the most successful, informative insects and mammals, evolved further through pheromones and verbal information into societies and civilizations.

The 'Black Hole' age of any species is parallel to the informative, genetic conception of any organism, born out of a 'seed' that packs the maximal genetic information in minimal space. It is caused by the dominance of informative cycles over its Energetic Vital space. So a new top predator species is born with a lot of new, genetic=Temporal Information packed in a reduced size (Max. Ti=Min. Se). This happens because information is processed faster in smaller spaces. For example, a 'logic instruction' is resolved faster in smaller chips. It follows that tiny species with huge numbers of 'neurons' deliver in group stronger and faster actions of energy and information, Min. Σ Se x Max. Σ^2 Ti, than slower, bigger species (Min. Σ^2 Ti x Max. Σ Se):

Since they are highly informative, they can coordinate those fractal actions in herds that act simultaneously as a single organism. So their actions show a higher existential, exi force, which defines them as top predators, as they are stronger and faster than the 'slow actions' of a single, bigger body. For example, small English boats shooting faster against big galleons defeated the Spanish Armada; a pack of wolfs kills slow reins and herds of orcas kill bigger whales. Small, intelligent top predator brains rule bigger, less informative bodies, because time dominates space, information dominates and shapes energy. Thus men, the most informative animals, are the Earth's top predators; Worm Holes with maximal gravitational information are the top predators of the Universe and chips rule machines.

<u>I Horizon: Energy Age: max. ΣSe: Top Predators and</u> <u>Extinctions</u>



In their youth, species fed and grow into energetic, lineal, planar, top predators, becoming carbohydrates (fats), worms (planarians), lineal echinoderms and fishes, monotrema, Neanderthals and smart weapons.

A new-born, small foetus grows very fast in size as it multiplies its cells. By homology, a new, more efficient species is born as a small, informative, complex being that latter grows in spatial size during its energetic youth becoming a lineal, energetic, big, top predator species that feeds on less evolved forms. Thus after conception, young fishes grew into big sharks of linear forms; after the polemic, dwarf Homo Floresiensis, who seems to have invented technology, the next Homo Sapiens with an extensive fossil record were big, energetic Neanderthals; the 1st big molecules of life were fat carbohydrate chains of linear form; the 1st insects acquired soon gigantic bodies in the Carboniferous; after chips were born as small machines placed in PCs and toys, the first robots they control are big tool-machines and huge weapons of mass destruction, lineal missiles and planes, that kill human beings.

During this energetic age, often a parallel process of extinction of a previous species, which becomes victim of the new predator, takes place. So when lineal proteins appeared, free carbohydrates disappeared from the primordial soup; in the Cambric most water species disappeared as cephalopods with eyes multiplied; mammals feeding on eggs probably extinguished dinosaurs except those who put eggs in unreachable places (birds); humans extinguished most mammals and weapons extinguish nontechnological cultures and when they become terminators, man.

II Horizon: reproduction: max. $\Sigma Se = Ti$: Radiations of species.



In the graph, species evolved through their 2^{nd} and 3^{rd} horizons.

In the II Horizon the species finds a balance between form and energy and it reproduces in massive radiations: The protein age gives way to the age of amino acids, with nitrogen, informative atom on its 'relative heads' that multiplied all over the Earth; slow, reproducing sharks gave way to balanced tubular fishes that multiply much faster; brachycephalic Neanderthals gave way to dolichocephalic Cro-Magnons that colonized all continents; while young, giant stars, born in the I horizon, acquire the balanced size of yellow suns, the commonest of all stars.

III Horizon: Max information: Max. Evolution=differentiation

In its 3rd horizon species increase its information, growing in the height dimension or acquiring cyclical forms, improving their sensorial, informative skills: Nucleotides dominated life molecules; echinoderms changed to cyclical shape; fishes developed their inner networks in the dimension of height; amphibians became round; saurian and mammals became bipeds; Neanderthal became Sapiens Sapiens with round skulls and chipped machines acquire today android forms with their heads on top. And the key of this process is obviously the evolution of a hyperbolic, informative element: Nucleotides appear when they add informative, nitrogen rings and cyclical sugars to amino acids; a vellow sun becomes a neutron star of higher gravitational, informative density; insects develop its brain capacity and bees and ants appear; while the Homo Sapiens evolves more complex technological tools; finally in the III Industrial R=evolution of machines, informative chips and televisions dominate the economic ecosystem...

<u>±st: Extinction vs. Evolution into super-organisms.</u>

The main difference between organisms and species happens after their 3^{rd} age: Organisms dominated by nervous, informative systems, which control closely its cells, warp their cellular energy, till the organism dies, according to a clock set by the rate at which energy is metabolised, 'in-formed' by their nervous system.

Yet species, due to the discontinuous nature of their individual 'cells' do not exhaust their collective energy. So they might survive without further evolution, in its 3^{rd} horizon, or they might become extinguished by a new, more efficient species appearing on their ecosystem. Or they might evolve socially, becoming the 'cells' of a macro-organism. We talk, in fact, of 3 basic strategies of survival, according to the Ternary Principle:

- Max. ΣE : Creation of balanced, trophic energy pyramids that supply new victims.

- $\Sigma E = \Sigma^2 i$: *Diversification of individual forms* into new species that will survive the extinction of the parental species. Thus we talk of evolutionary, genealogical trees of 'son species', similar to those of any individual. Yet, while the different generations of an organism work together, creating informative networks between them that shape herds and families, 'son species' tend to kill-extinct the mother species, feeding on their energy. We call that fact, *the Oedipus paradox*. So mammals killed reptiles, men killed mammals and robots might kill human beings.

- Max. Ti: Species also evolve socially their individual forms into super-organisms, thanks to the creation of networks by specialized, informative 'cells' that integrate all other cells into a whole, bigger form, which has more *exi=stential force* than the individuals of a herd - the fundamental parameter of a top predator, as its exi force determines the strength and capacity its actions have to modify the environment and survive in the fights for existence. Since herds extend in *wider space ecosystems, in which they share a min. quantity of information*, their individuals hardly relate to each other beyond the reproductive couple or the hunting herd; and so their actions per time unit are slower and less coordinated. Hence we consider that the creation of superorganisms is the final evolutionary stage of a herd of individuals from the same species: each individual of the herd becomes then a 'relative cell of the body' of the super-organism. While the specific language of communication and information of the species and the specialized cells of information that carry them, become the relative nervous/informative network of the superorganism. Those informative cells form networks that pack closely the other cells *in min. space, controlling them with a specialized language of information*, as the queen pheromones do in anthills; nervous cells/impulses did with chemical cells in the Pre-Cambrian age or financial and verbal languages have done with humans in societies, which are superorganisms of human beings.

Most space-time systems co-exist in 3 main scales of microcosmic and macrocosmic forms (physical species do so at the atomic, molecular and crystal scale; biological ones, at the cellular, individual and ecosystemic level), which are self-similar because they are created by the previous process of differentiation and social evolution of individual parts into bigger wholes.

- *Extinction*: Yet if species fail to achieve informative, social evolution, growing into super-organisms, they become victims of other species that have continued their evolution and become extinct or in case of having a higher rate of reproduction, lay at the bottom of a trophic pyramid. So today 90% of insects are social insects; Neanderthals became extinguished by verbal Homos and Protista with limited genetic content (mitochondria) became slave organelles of social, eukaryotic super-cells.

In all species and all scales of existence, the process of evolution is dual: species differentiate into 3 forms, which then recombine, giving birth to new species, as it happens in cells (energetic proteins, informative DNAs and reproductive RNAs that make up the cell), or in atoms (energy forces, informative quarks, balanced electrons that reproduce its nebulae on gravitational space).

Recap. The process of evolution of species is equivalent to the $3\pm$ st ages of individuals: born of a seed or first individual of maximal information, the species grows its energy in its youth,

radiates in an age of massive reproduction and finally diversifies into ternary types. After its 3 horizons or evolutionary ages the species might become extinct or transcend into a super-organism.

5. Ternary principle of causality applied to evolution.

According to the space-time duality, if Biology is the science of the living observed in space (topological organisms), Evolution is the science of the living observed in time (ages/horizons of evolution). Thus many of the unknown whys of Evolution are resolved when considering the sequential order of evolutionary cycles, as particular cases of the sequential order of time ages coupled with the morphological, topological forms of lineal energy and cyclical information, combined in reproductive bodies. The 3rd key factors to take into account are the laws between scales of biological existence (genes and organisms). And it is a tenant of multiple space-times, derived from 'multi-causality' that in most events of Nature we need to find multiple causes that reinforce each other, coming from those 3 key factors of reality: the existence of multiple planes of existence that influence each other, the existence of ternary topologies with 3 bio-logical functions and the causal order of the 3 horizons/ages of life.

As it happens those 3 elements were discovered in the 3 ages of 'evolution' of Evolution Theory, which as all paradigms of knowledge has 3 ages:

-Darwin focused in the morphological evolution of species.

-The modern synthesis added the genetic codes of information that express the vital functions/arrows of the organism.

-Gould completed the model with studies related to the different cyclical time beats of species.

- And now the 4th paradigm, the 'social evolution of all sciences' puts all those facts together, which sketch a clear evolutionary plan natural to all species of multiple spaces-times of reality:

In that regard the laws of that evolutionary process have been discovered by Biologists since Darwin published a rather accurate

account of the biological process of morphological change. However Darwin already pointed out in his book that Evolution Theory still faced a critical 'unknown' why: How *random mutations* could select the most efficient forms of energy and information to develop complex organs? Darwin wondered how wings and eyes with its extreme complexity could be born in so short time: If all mathematical forms were allowed in a random mutation, chances that those mutations provided the right path to evolve eyes and wings was minimal. This difficulty has prompted the absurd argument of religious Creationists in favor of a Divine plan, selecting those paths. Let us consider the ternary principle of causality to resolve this mystery in more detail:

Topological Solutions

The problem is solved by the Ternary Principle/Restriction, which allows only 3 mutations of form towards species with higher lineal energy, cyclical information or enhanced, balanced, Σ S=Ti, reproductive capacities. Thus mutations, according to the Ternary Principle, are limited to the 3 only possible morphologies of 4-dimensional spaces and its 3 homologous functions in time: informative functions are spherical forms; energetic functions are lineal; and reproductive, exi, functions combine both forms. So organisms that mutate follow those restricted cyclical and lineal paths systematically and tend to create energy and information systems. This explains how so complex organs such as wing and eves can be formed in so little time: Since wings are energetic organs, they are planar forms, born naturally through a specialized series of lineal mutations. Since eyes are informative organs, they are spherical, naturally born through the other main path of evolution: informative growth.

E leats of species: punctuated & allopatric evolution

Further on the previous topological solution is *reinforced by a sequential, time order/cycle*: A basic ExRe⇔I beat of all time cycles accelerates the process: species undergo 2 cyclical phases, switching between their spatial, reproductive states *that cause a biological radiation= massive reproduction of the being* and their

informative, evolving states that causes a punctuated evolution of its morphology. In cyclical time that process is just another dual case of transformations between spatial and temporal states, defined by the Space-time equation:

ΣSe (Max. Reproduction) $\Leftrightarrow \Sigma^2$ Ti (Max. Evolution of form).

Punctuated evolution happens in the informative state, often in synchronicity with a cold=informative age, during which the fossil record shows an acceleration of mutations and evolutions. While in hot=energetic ages of the Earth, the evolved top predator will start an age of massive reproductive radiations and body growth with little formal evolution. Thus, the rhythm of evolution has 2 phases: a 1st phase of evolution of information in time, described by Gould (punctuated evolution in minimal space with minimal reproduced species and maximal time speed), which creates a dominant species, followed by a massive reproduction in space of the new top predator species (with minimal time evolution and maximal spatial expansion), which often triggers a parallel process of extinction of a previous top predator or prey, displaced by the new dominant species. It is once more a proof of the inverted properties of space and time, and the fractal nature of space-time movements, which are always an 'stop and go' process, in this case an evolutionary, reproductive complex rhythm of space-time arrows. So punctuated evolution means that when the species radiates into self-reproductive waves, it doesn't evolve in time and we do not see any variation. But when the species evolves in time, it hardly reproduces in space, often evolving in isolated, small groups (allopatric evolution). Those stop and go rhythms found in the fossil record, are 'ceteris paribus', partial perceptions of a discontinuous beat of $\Sigma exRe =>I => \Sigma exRe$, extinctive= reproductive + evolving states, proper of the reproductive motions of all species of the Universe.

Ultimately, such dual cycles of life and extinction of species proves paradoxically, the immortality of the space-time Universe:

Max.Σ Energy (Prey)->Max.Information (Predator)->Death (Max.ΣEnergy)->Feeding (Max.Ti) Since each relative past and future will cancel each other; each death will cancel a life; each antiparticle will extinguish a particle... But the arrow of reproduction will repeat them again to continue the game, which means that the 3^{rd} arrow of fractal reproduction of relative presents, made of energy and informative arrows, dominates a Universe that acts as *a 'self-reproductive fractal of energy and information'*.

The fundamental particle of the Universe is a space-time, fractal super-organism, a present being, born out of ∞ fractal balances between those cellular micro-cycles of energy and information, $\Sigma e \Leftrightarrow \Sigma^2 i$ that iterated ad infinitum and chained by energetic, reproductive and informative networks/cycles create the constant, organic forms of the Universe. Since those arrows/cycles of time are exchanges of energy and information iterated in cyclical actions, any organism can be described as a natural fractal that switches constantly between those $3\pm$ st arrows/cycles of time, energy, information and reproduction, between birth and extinction. The beauty of Fractal organism is the simplicity of its recurrent cycles/cells (temporal, dynamic view/spatial, formal view), based only in 2 parameters, energy and information, which can get infinitely complex by iterating its forms.

The perfect rhythm: palingenesis

The palingenetic process of evolution and reproduction also converts a cell into a fetus that becomes a macro-dimensional organism, sum of multiple cells: Palingenesis alternates the process of cellular reproduction and informative organization, causing the creation of a foetus as a constant sum of those 2 phases, $\Sigma ExRe$ ->Ti-> $\Sigma ExRe$. A fact that should not surprise us since an organism is a microcosmic species of cellular DNA.

Thus a rhythm to observe in all organic processes of informative evolution across space-time planes is the 'compression' in time and space of the entity evolving according to the inverted properties of energy and information: informative organisms diminish its spatial size to accelerate its evolutionary rhythm of morphological change (chip paradox), evident in the case of the first mammals (shrews) and technological humans (Floresiensis). When we observe the organism in its temporal evolution palingenesis also compresses its speed of evolution into a minimal space-time, during its fetal age. So 500 million years of evolution are reduced to a mere 9 months. The organism evolves in time and space through multiple species and planes of existence, from a cell to an adult, packing temporal eons of the entire earth, into a tiny st-Space-Time region. Thus, if we want to fully understand the nature of palingenesis we have to stretch our analysis in 2 directions:

-Max. I: In time through the evolution of all its previous species.

- Max. E: In space through the morphological analysis of all those species in its tissues and inner networks.

Both processed, despite its enormous complexity adjust to the laws of multiple spaces-times and in the complex models of this work were key analyses to decipher the fractal tree of evolution of all life species on Earth, later studied in more detail.

Interaction of planes of existence and ages of time.

- Finally, we can consider a correction of the deterministic concept that genes are the only cause of variation in species.

This idea is due to the unicausal Logic of metric measure and the need of exact instrumental perception that are dogmas of the 3rd paradigm. Yet in theory of multiple spaces-times all systems are paradoxical, multicausal and information also flows from the higher, more complex system to the simpler parts. Thus there must be a flow of information from the higher 'neuronal' system of the brain to the genetic system that allows more 'precise' Lamarckian variations to reinforce the process of genetic random mutation during the informative phase of evolution in allopatric, limited spaces and limited numbers. It might never be found since it would require decoding the fast, informative messages of the brain but the mechanism according to complex laws of multiple spacetime and its ages should be like this: During youth, when the species imprints its neuronal cells with maximal DNA-informative content as it learns and makes efforts to develop new morphological features in a changing environment (the classic examples of giraffes' neck and Galapagos bird's peck) those efforts are encoded in the fast changing DNA systems of grey matter, which during adolescence, when the reproductive cells are developed are transferred to the seminal cells that will become the informative seeds of the new, mutated species. Because again the codes to transfer are 3 simple topologies and we know the brain has an homunculus image of all the parts of the body, one could hypothesize that as this homunculus images mirror the body parts a parallel neuronal-DNA mapping somehow is able to mirror the morphological changes the individual achieves during its youth as it stretches its neck and makes it longer or pecks harder seeds and grows a stronger peck.

And so only considering the 3 reinforcing causes we can conclude that evolution of complex systems in fast time is possible.

Recap. Evolutionary theory went through 3 ages that stressed topological evolution (Darwin), interaction between the scales of life (genetics) and the different speeds of time and $E \Leftrightarrow I$ beatings of the Universe. All those elements come together in multiple space-times Theory as ternary causes that explain the speed and accuracy of evolutionary changes.

III. THE 3 PLANES OF LIFE EXISTENCE



In the graph the 3 existential scales of humanity: The evolution of an organism happens through the interaction of its 3±st planes existence, which in man are its ecosystemic, social level; its organic, biological level and its cellular, genetic plane. This law of Evolution finds its whys in the 4th postulate of i-logic geometry. In that sense, life between birth as a cell and extinction can be considered a trip through those 3 planes of existence.

6. The 3 scales of life existence.

In Multiple space-times Theory there is not only *individual evolution* but also *hierarchical, social, scalar evolution*, through the \pm st 3-scalar structures of all spacetime systems. *Such* triad of 'organic scales' illustrated in the graph defines the existence of an organism, at the st-1 cellular, genetic scale, at the st-scale of physiological networks and individual organisms, and at the st+1 scale of species and ecosystems in which they exist, exchanging energy and information.

Since we already studied the trip of life between those 3 planes in our lectures on i-logic geometry, we shall now consider another key element of all systems of multiple spaces-times, the synchronicity between the microcosmic and macrocosmic planes that determine with its massive changes in energy and information parameters the destiny and evolution of the smaller parts. In that regard, the evolutionary changes of animal phyla that brought man from the initial cell have to be considered from the perspectives of those synchronicities between the 3 scales.

Take the most famous event on life history; the creation of multi-cellular organisms that happened in the Pre-Cambrian age when the survival game of existence made it 'necessary' due to the simultaneous interaction of those 3 st-levels:

- st+1: The Earth passed by an icy period in which cells overpopulated the remaining hot spots. And so as the informative density of cells and its evolutionary speed increased in those tiny spots, it provoked the merging, cannibalism and social evolution of prokaryotic cells into eukaryotes. Thus the creation of new life species was accompanied by a raise in its survival stakes, caused by the activities of the global ecosystem that accelerated the process. Since once and again the Earth's glaciations will cross those new accelerated, evolutionary discontinuums.

- *st*: Yet those Earth's changes don't evolve organisms 'per se', but trigger their competence, which causes their evolution. So the will to evolve socially exists in the organism not in the ecosystem that merely sparks off the process. For example, multicellular organisms were born in a similar fashion to eukaryotic cells, when an ice-ball age packed cells into underwater volcanoes, which developed social strategies to hunt together individual cells.

- st-1: However, unicellular cells existed also in earlier glaciations and yet they did not evolve then. Their evolution only happened in the Pre-Cambrian age in the precise moment in which also at genetic level the so-called intronic DNA multiplied the capacity to codify genetically complex multicellular tissues - since redundant, intronic DNA, in charge of the regulation of complex organisms, appeared in the Pre-Cambrian age. Thus only when the 3 'hierarchical levels', the genetic, organic and environmental acted simultaneously that explosion of life was possible.

Thus again we find a case of ternary causality is needed to fully account as in most process for an event which Aristotelian unicausality cannot explain alone, but merely divide scholars in opposite positions, making truth Leonardo's ex-abrupt: 'the only harmonious sound found in a meeting of scholars are the winds of their asses' Hopefully the 4th paradigm will resolve that (-;

Again in the next evolutionary explosion at the end of the Cambrian age, the 3 levels acted simultaneously:

At organic level, the chemical systems that dominated life on that age gave birth to the first visual systems, which in the late Cambrian triggered a new massive evolutionary age with the arrival of squids with eyes. Those squids evolved in the still, lower, bio-luminescent zones of oceans, during the parallel massive changes in the forms of continents that sank the border zones of shallow waters, accelerating extinction of 'obsolete' smelling animals without eyes. Finally, the 3rd cause made it all possible: certain eye genes appeared and made possible the creation of the most complex sensorial organ of life.

What is the order of control between those 3 levels? They are apparently simultaneous but a detailed analysis of the pre-Cambrian episode shows that the Earth changed first, and its changes in energy and form implied higher survival stakes among individual cells that caused their evolution, as they came together and started to exchange genetic material, provoking 'accidental' mixes with redundant intronic genes that were finally used to control the multi-cellular organism.

Thus, again we find that unicausality, which considers only the lineal arrow that goes from genes to organisms, misses the second dual arrow that causes evolution from the higher organic st-system down to the genetic scale; as it happens once and again in all types of Space-Time systems. Indeed, we have to put together the pieces of a car to create the car; but the human designer exists and ultimately in the Universe at large the i-logic laws of multiple spaces-times *are the designer that* chains the different \pm st-levels of an organism; controlling it also from top to bottom in the same degree that st-1 levels control it from the bottom to the top. In that

regard genetics, has to accept some fundamental principles of multiple space scales and multiple causal systems:

Past (energy, microcosms) x Future (information, macrocosms) = Present st-scale of the organism.

'The plane of existence with higher exi force determines the direction of future'

Or in other words the small and visible quanta of energy do not determine all the events of biological reality even if we perceive them easily; since it is the whole and its networks of information, which curve and form 'spatial energy'. Yet since the more complex systems are more difficult to decipher and information/future systems are smaller, faster and often invisible, it is a rule of scientific inquire during the metric paradigm to work only with an entropic, spatial, explosive, hot, microcosmic first cause. And then as science evolves contradictions impose revisions that prime a second informative, temporal, implosive, cyclical, cold cause.

So genetic quanta determine an organism in the same or lesser degree than its ecosystem - a fact, which of course, has certain metaphysical implications, when applied to the biggest organism of it all – the Universe: the ultimate cause of it all might be the big-bang singularity - the genetic memory of a previous Universe that will develop according to the laws of i-logic geometry, the *mind of the Universe, its ultimate cause*.

That mind-singularity came before its Universal body – it was the eternal informative code of reality.

Let us now consider how the main laws and creative differentiation of such Universal 'plan of evolution' affects those 3 hierarchical levels of living organisms in more detail.

st-1. Ternary differentiations on the genetic and cellular level.

The cellular level was fundamental to the process of evolution in its first stages in which cells differentiated and multiplied its e-exii varieties, creating a decametric scale, origin of the subsequent differentiation of organic networks and tissues into 3X3+(st+1)=10 fundamental types whose forms and function can be explained as ternary differentiations of the 3 topological species and its 9 dimensional functions.

Yet cells also act through the genetic level, codifying not only the creation of life molecules but also the higher organic scale through epigenetic, intron and redundant RNA and DNA material, which started the massive differentiation of species in the pre-Cambrian age. Epigenetics should work following the hierarchical and multifunctional principles of multiple spaces & times, *coding sub-structures of higher complexity that scientists still need to decode, as the decametric scales of multiple spaces-times tend to generate* 3x3+(st+1) *structures, with new functions closer to the higher levels of the organism.*

So the informative DNA is the highest scale of existence or 'will of the cell' and it has a lot of redundant extra-RNA that it should use together with the hormonal language to 'dialog' socially with other cells in/forming the functions of social tissues. Hormones should establish 'spatial dialogues' and redundant RNA temporal dialogues to code those systems. And both languages together should create the higher st+1 organic cycles and spatial structures of the organism.

Finally on top of both informative systems, the ternary principle adds the brain's nervous impulses to fine-tune those 2 languages with military precision, as indeed nerves can 'kill' as military do, undisciplined subjects/cells.

Ternary differentiations at individual, organic level.

In the biological, organic level, evolution is fostered by the fundamental differentiations of any $\sum E \Leftrightarrow \sum^2 I$, relative space-time field that cause a 'limited' number of possible formal species:

- Σ : *Fractal differentiations* between big, single animals Vs. smaller animals with multiple parts that become their preys: for example, single eyes and single bodies in molluscs Vs. multiple eyes and body parts in insects. *They prove that single informative networks are more efficient that loose herds.*

- Big bang/energetic vs. big banging/reproductive rhythms/ differentiations during the embryo stage, in which organisms establish 2 strategies of reproductive, cellular growth:

- Accelomate and Seudocoelomate are big-bang organisms, which multiply its cells in a dense ball without inner cavities. Hence its size is minimal.

- Those organisms evolved latter into *Coelomate*, organized with the topological structure of st-points. Since they have 2 internal bilateral 'big-bang cavities' that grow much larger by invagination, in which the future EXI cyclical organs of exchange of energy and information (digestive, lung and vascular tissue) will develop. Those cavities are surrounded by inner and outer tissue that will form the external membrane or skin and the inner nervous, informative systems. Coelomate further differentiated according to the Ternary, Fractal Principle in new subclasses and grew into larger organisms, expanding further those cavities. So today most animals are Coelomate.

- The Fractal, Ternary Principle in Space (3 topologies, 3 differentiations) and Time (3 causes, 3 horizons) also explains:

- *The evolutionary differentiations* in time of species through 3 horizons of increasing informative and social evolution, from individuals to herds to tighter organisms.

- The 3 networks/organs in space of those species - the energetic, digestive network, the informative nervous or hormonal network and the reproductive network - which further evolved as they increased its informative complexity towards 'the future' in 3x3+(st+1) tissues and networks.

- Both processes together determined the organic evolution of animals, as each new top predator improves its organic

networks, displacing a previous top predator. So mammals improved their blood, energy, nervous and reproductive systems, displacing reptiles and men improved their brains, displacing mammals.

- Finally the different *dualities and inversions of space-time* manifest in organic life through:

- Spatial Symmetries (left to right) called bilateralism.

- Asymmetries of temporal, hierarchical dimensions, since informative heads dominate reproductive bodies and are placed always on top in the dimension of height.

- Chemical and electrical languages. The duality bodybrain shows in the interaction between the reproductive blood network that dominates the spatial body and the informative network that dominates the brain and nervous system. Nervous cells and languages control chemical languages and cells by creating simultaneously informative, nervous orders and chemical, energetic orders that arrive latter to the cells, reinforcing the electric message. So within the organism, neurosecretory cells make and pour hormones to the blood network, while sending messages to the nervous system that will arrive first as advanced orders. Another example happens in the brain: electric neurons translate nervous impulses into chemical hormones and 'calcium waves' that reinforce the message, transferring it to the chemical cells. This primacy of faster, informative systems happens also in ecosystems: a nervous animal species preys on chemical plants.

- The *Black Hole paradox*. That dominance of information over energy shows also in the competence between species: Top Predator brains win over top predator bodies, thanks to their faster fractal or social actions that give them more IxE force per unit of time. So mammals win over dinosaurs and chips control machines. This means that a dominant species often is born as a small, fast form (Min. E=Max.I) that latter grows in size. - *The Oedipus paradox:* The growth of complexity with the passing of time shows in the fact that new top predator species grow by feeding in previous, parental species, which become the 'energy' of their reproduction, as they share and compete in the same environment. So animals fed their son species, men; and men feed their son species, machine-weapons, evolved in wars.

The ecosystemic and geological level.

The planet acts on life at ecosystemic level, establishing the settings for prey-predator events and the conditions for evolution that can be summoned up in a word, *Geographical isolation*:

Evolution is dangerous. Since during the mutational phase the underdeveloped new organs hinder the survival of the being. For that reason the 3 'scales' act simultaneously to accelerate evolution:

- st-1: At genetic level, organisms suffer a change in their time speed, increasing its fractal, informative mutations.

- st: At organic level species follow a plan, provided by the lineal-cyclical duality of spatial and informative shapes, the only 2 possible paths of morphological evolution. It requires also the extra exi force provided by top predators. So species use only a little amount of its IxE force externally to absorb energy, changing its energy/information rhythm, e->I, from spatial movement in search of energy into inward, temporal, informative mutations.

- st+1: At ecosystemic level a species requires a secluded environment in which he won't be menaced by top predators during the short time in which the evolutionary program dwindles survival chances; creating also densely populated regions that multiply the speed of informative change. For example, amoebas, fishes and amphibians were born in fresh water, a relatively secluded environment; while anaerobic bacteria, animal life and cephalopods, probably came from abyssal places, another secluded region. Finally, apes and birds came from secluded trees.

Without that synergy between the 3 scales of existence organisms would never evolve but become extinct during the

supposedly chaotic ages of mutational evolution. Yet once the new form is found its survival chances improve geometrically, since it has evolved positively according to the i-logic plan, hence reaching a higher exi force. Then the being gets out of the secluded environment and changes back its I->E rhythm, starting a spatial, reproductive radiation, becoming a new top predator.

Thus, a ternary e->ixe->i rhythm of evolution-reproductionenergy feeding is proper of all successful species.

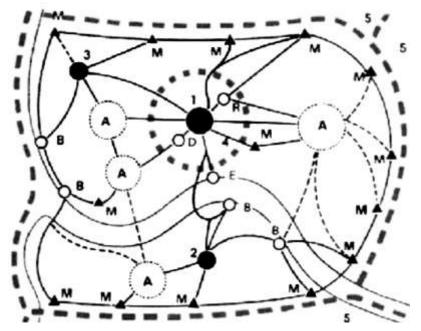
-Finally the st+1 Geological and climatic changes accelerate both: Extinction processes, especially among species of shallow waters that live in sea platforms, destroyed periodically by continental collisions) or species which depend on external temperature to regulate their metabolism (reptiles); and evolutionary processes, as they rise the 'stakes of survival' and establish a climatic parallel Se⇔Ti rhythm; as cold zones foster informative evolution.

All those environmental differentiations can be resumed in a word, *Hierarchy*, which manifests in the restrictions imposed by the higher ecosystemic planes of existence to the organism. For example, as animals migrated first from seawater to river and shallow waters, then into land, the transparent air environment eased their sensorial vision and so it fostered their informative, electronic, nervous evolution and developed further the informative dimension of height from where light comes.

Recap. The ternary principle of multicausality explains how the genetic, individual and ecosystemic planes of life existence simultaneously caused the great changes in the evolution of species. Those 3 levels of change co-act simultaneously since they are relative past, present and future levels that come together in the creation of the organism. That is, genes do not impose evolution to organisms that impose evolution to ecosystems, but according to Non AE-logic the 3 levels co-exist in a relative present, influencing each other and co-evolving together creating new species with higher information and IxE force, *the arrow of future in all ecosystems and worlds* from the Earth, to the galaxy,

a growing vortex of informative species with higher mass towards its center. Thus 3 scales and the ternary, fractal principles – the plan of evolution - suffice to explain the evolution of life from molecules to human beings.

7. External dimensions/networks of organisms: territories.



In the graph, a mammal territory. Any animal territory is an ilogic space-time with 3 zones:

- An informative central territory (1) or den, where animals reproduce and 2 secondary homes where the herd performs secondary organic cycles (2,3).

- An energetic membrane (M, 5) - an invisible limit that provokes a confrontation if a stranger crosses it and where most energetic preys 'flee' away from the den of the predator.

- An intermediate zone with cyclical paths of absorption of energy and information; where we find a hunting territory, places to drink (E), to bath (B), socialize (A), defecate (D), etc.

In organic terms, a dimension is a network. So a living organism can be considered a sum of cellular quanta united by 3 basic space/time discreet dimensional networks, which are its physiological systems: the digestive/energetic network, the informative/nervous network and the reproductive/blood networks around which cells teem, creating a stable, organic st-point. In other words the energy and informative networks of a living being are its internal, diffeomorphic dimensions (of relative length and height), to which the organic system adds a 3rd, reproductive dimension that combines both elements and represents the width or 'volume of cellular quanta' of the system. Finally its movement in the external world becomes its 4th temporal dimension. Yet that 4th dimension of external activity can also be considered a network territory in itself, sum of the 3±st cycles of existence of the being, creating a bigger vital space that will become the basic unit of an ecosystem or social organism made of individuals of the same species. In the figure we draw the vital territory of a minimal social pair of mammals, differentiated in 3 clear sub-sectors:

- Max. Information: Informative den or central territory (1,2,3):

It is the territory of reproduction used to copulate and store basic food and energy to raise the young. It is a forbidden zone where not even hunting is allowed (4). In social species of great mobility, aerial or marine, where borders are much more extensive, this territory is very ample and tends to be located in warm latitudes.

- Energy=Information: Dual Territory of energy hunting and informative socialization (5).

It is the feeding, social and hunting territory, on which the central informative being feeds itself. It is outside the zone of reproduction. It is the winter territory of many migratory birds.

Given the relativism of all movement, in biological territories the informative singularity moves to hunt its energy quanta, as opposed to galaxies where stars and space-time dust moves towards the central worm hole. Within those limits there are also neutral territories of communication, courtship reproduction and free energy, like water troughs. So the intermediate territory works both, as an informative and energetic territory where different victims and predators trace parallel cycles and come together around meeting points (E, B, R).

- Max. energy: Borders that limit the territory.

Membranes are dangerous zones because the informative center watches them with special care to control any invasion of its hunting/social territory.

Those limits fluctuate according to the power of neighbours. For example, the vital space of a fish increases during mating, since the couple is more powerful than a single individual.

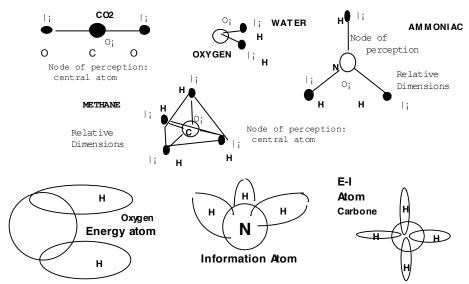
Marks (M points) fix those limits and reduce combats. They are often invisible, as most territories are defended against competitors of the same species, who understand the informative code of those marks; but rarely against members of other species. So we find all kind of linguistic marks:

- Smells (common in mammals, like foxes, rhinos, antelopes), excrements (in canines and felids) or other glandular secretions.

- Optical marks often connected to scents: The brown bear creates marks in trees, rubbing them with his head, warning adversaries of his great exi size and force. In human empires (nations can also be treated as biological territories) visual marks correspond to armies displayed in the borders. In human homes those marks used to be shields with weapons; now they are cars and other proofs of money, the new language of social power.

- High pitch, acoustic marks, proper of birds, which are triggered when a rival enters the territory.

Recap. Vital territories of animals and human nations can be explained with the 3 topological regions of st-points.



IV. SOCIAL EVOLUTION OF LIFE: TOPOLOGIES & AGES

In the graph, the 4 basic molecules of life, CO₂, H₂0, CH₄, (Methane) and NH₃ (Ammonia), are composed of the 3 organic atoms, C, O, N and its slave hydrogens. They also adopt the same efficient st-morphologies that crystals have with a central, informative atom surrounded by submissive, spatial Hydrogens that process and send to the center Van der Waals flows of information and energy.

8. Topology: from C, O, H atoms to amino acids.

In the smallest scale the molecular 'bricks of life', CO_2 , H_20 , CH_4 , (Methane) and NH_3 (Ammonia), shown in the graph are, as it happens in the geological world, crystalline structures. Yet they are far more malleable and complex than solid crystals, because they exist in liquid ecosystems. In those simple life molecules Carbon, Oxygen and Nitrogen are the Top predator central atoms that capture and surround themselves with weaker IxE Hydrogen atoms, which act as carriers of their relative energy and information, creating the external membrane of their molecular st-point structure. Hydrogen atoms act either as their 'senses',

processing electromagnetic energy into Van der Waal forces of information or as an energetic limb that the central atom expels or attracts in alternating cycles that displace the molecule through water. Thus the simplest organic molecules studied as st-Points have:

-Max. I: A top predator N, O, C atom in its hyperbolic center.

- E=I: It is surrounded by an intermediate st-body of hydrogen that processes the information and energy of *the water medium* (*Max.E*), in which the molecule lives, extracting it for the central atoms of life with the molecular, external 'electronic cloud' of the organic 'crystal' that becomes *its* 'energetic membrane'.

In the next scale of social organization those 3 elemental particles of life, N, C, and O will become themselves the 3 fundamental zones of bigger 'i points', called organic molecules:

- *Max. 1:* The informative element of all life molecules and fractal part of its relative 'heads' are Nitrogen atoms. Its informative character is shown already in the crystalline ammonia, where Nitrogen is the dominant vertex of a tetrahedron shaped with 3 more Hydrogens. Accordingly ammonia is a perfect atomic clock in which the Nitrogen vibrates constantly back and forth through the hole shaped by its 3 hydrogen 'eyes', with an informative cycle of $\pm 10^{16}$ times a second. The first atomic clocks were in fact based in that simple molecule due to the accuracy and speed of times of its vibration, which in life molecules allows nitrogen to 'inform itself' and translate 'moving orders' to the 'carbon' body of the molecule.

- E=1: The structural atom that creates the rigid body structures of life molecules is the carbon atom. It has the maximal number of valences - 4 orbitals that create dual bondages with 2 other carbons - constructing long, formal ternary chains of great structural rigidity. As such it is the most visible, intermediate form of all life compounds. And so biologists, due to its 'visibility', have traditionally considered it the 'fundamental element of life'. When we ad Hydrogen atoms to complete its 'crystalline' body we obtain methane the simplest molecule of life. Then when we join 2 carbons with dual bondage, we form ethane, which already acts as a hormone, (±reproductive molecule) inhibiting the structural growth of plants.

- Max. E: Finally, the energy of life systems is water, which fills the 'external world' in which life feeds and internally becomes in complex living organisms called cells, the filling energy of the intermediate space, enclosed between its carbon-based protein & fat walls and the inner, informative, nitrogen-rich, ADN hyperbolic singularity. Water is the simplest, most abundant ternary molecule of the Universe, made with 2 slave hydrogens and 1 dominant oxygen - the atom that has the maximal 'electronegativity' after fluorine. Thus, oxygen can capture the electronic body of any other atom. That is why the oxygen components of carbohydrates enact its energetic cycles, moving those organic molecules within the water ecosystem. Since they stomp on water, breaking it and creating expansive and implosive 0H, H^{\pm} ions that impulse the molecule; as you walk on the floor, 'stomping' on the electromagnetic fields of the ground or as a fish moves, hitting the water with its tail.

Recap. Nitrogen heads, carbon bodies and oxygen energy create the simplest life beings, amino acids...

9. Topology: From carbohydrates to cells.

In the next graph, the glycine is the simplest active life form with 3 st-zones:

- Max. I: The nitrogen head directs the glycine.

- E=I: A dual carbon creates the first rigid 'membrane-body' of life with its strong, covalent bondage, joining the head and tail:

- Max. E: Its oxygen COOH tail 'walks' on the water, breaking, attracting and repelling its OH-, H+ radicals.

Amino acids show their complex, reproductive and social arrows, catalyzing through their movements the replication of new amino acids and forming social chains, called proteins.

The inverse properties of st-amino heads and e-oxygen tails make possible the creation of long chains of amino acids in which their nitrogen heads bite their oxygen tails becoming neutralized as part of a complex social structure: the protein.

The nucleotide improves upon the amino head, carbohydrate body and oxygen legs of the amino acid, adding to those 3 lineal forms a dimension of informative height; as latter will occur in macro-organisms, when flat worms become cylindrical. So the amino acid head becomes a dual nitrogen ring, the body becomes a sugar and the tail multiplies its oxygens around a highly electronegative Phosphoric acid. The outcome is a nucleotide acid (right side of next graph) - *the top predator life molecule*, which evolves socially all others into the next st-scale of life, the cell.

10. The 3x3+(st+1) horizons of social evolution of life.

Biological organisms, as physical organisms did in their growth from atoms to galaxies, evolved in 3x3 horizons of increasing social complexity creating the $3 \pm st$ scales of life: the age of molecules, the age of cells and the age of multi-cellular organisms, specialized in energy (plants) or information (animals).

Let us study those ages in more detail, further differentiating them in 3 sub-ages according to the Ternary principle.

Since if we apply the law of the 3±st Ages to organic molecules we can explain how they grew in informative complexity and spatial size till acquiring the form of living organisms, in a process similar to the evolution of particles that created the cosmological bodies of the Universe.

Those $3\pm$ st evolutionary ages of life, each one sub-divided in $3\pm$ st sub-horizons, are: the young age of molecules, the mature, longest age of cells and the 'recent' age of living organisms, which will end with the creation of a global single organism, Planet Earth (st+1):

The 3±st ages of molecules.

- st-1: The atomic age. the simplest chemical molecules of life are formed. The 3 simple atoms and molecules of life recombined its energetic, reproductive and information functions and grew, forming bigger chains thanks to its atomic affinity, acquiring more complex 'vital properties'. The simplest combination of them, the CNO molecule, urea, is considered the first molecule of life and its 'crystallization' in a lab, departing from non-living atoms, was considered the birth of biochemistry and the prove that life is an atomic system that shares the same properties of any other ExI system of the Universe.

- *Max. E: The energy age*, dominated by lineal, long, simple fats, huge carbon chains with oxygens attached to its ends.

- \Leftrightarrow : The amino acid age. COOH, methane and ammonia, the 3 simplest life molecules of the triad of life atoms, O, C, N, combine as the relative energy, reproductive and informative organs of amino acids. Amino acids reproduce exponentially in the primordial organic water soup and evolve socially into proteins.

- Max. 1: The nucleotide age. Nucleotides, the informative molecules of the life, add an informative dimension of height to lineal amino acids, forming nitrogen and sugar rings. They dominate all other carbohydrates. Soon they will also evolve socially into huge chains called nucleic acids.

- st+1: Social age. Nucleic acids, the macromolecules of life with max. Exi force, integrate socially all other carbohydrates in herds of vital molecules, creating the cell, the following st-scale of life.

The 3±st ages of cells.

- st-1: The previous 3±st horizons of evolution of molecules brought the first cells.

- Max. E: The age of RNA Protista. The energy age of the cell is dominated by the simplest RNA Protista, whose ternary ststructure is based in: an external protein membrane; a series of 'convex' spiralled RNAs, the singularities that directs the cell, and an internal, intermediate water zone, the cytoplasm, where the cell reproduces its specific energy and information - thanks to the free 'energy' of water radicals - with the instructions given by those RNAs. Those protista reproduce massively, exhausting the organic elements of the life soup. Then it comes:

- \Leftrightarrow : The Age of DNA Protista. It is the balanced, mature age of protista. Dual RNAs peg together to form informative DNA rings, which store new genetic information that permits further growth and differentiation of Protistas, according to new, improved 3 stregions:

Energy membranes invaginate the cell with a tubular network, the Golgi apparatus and protect the still DNA with a differentiated nucleus membrane; while new, specialized organelles perform the energy and information processes of the intermediate zone, creating reproductive Mitochondria and Chloroplasts.

- Max. 1: Informative age and differentiation: The Eucaryiotic age. Informative DNA cells multiply its genetic memories, while RNAs differentiate into a triad of forms that increase in the intermediate space-time the reproduction of membranes and proteins, creating giant cells. They cannibalise and enslave smaller, symbiotic cells, specialized in the dual arrow of energy, (mitochondria and chloroplasts) and information (ribosomes). Those who absorb chloroplasts become algae; those who feed on mitochondria become animals.

- st+1: The biggest eukaryote animals are amoeboid cells that evolve faster, informative, electronic languages using heavier metal ions, K^{*} and Na⁻, to send their messages to other cells through their membranes. The nervous language allows simultaneous cellular actions, creating mobile multicellular organisms called animals. While slower chemical languages that use 'hormonal vowels' put together unicellular algae into plants.

Let us consider the evolution of animals:

3±st horizons of evolution of animals: network's organisms:

- st-1: Conception. Electric cells create multicellular organisms in control of all other cells, gathering in 3 physiological networks -

neuronal, muscular and glandular=digestive systems that perform the informative, reproductive and energetic cycles of the organism as a macro-living st-point. The sequential dominance of those physiological networks creates the 3 ages of life - the energetic youth, reproductive maturity and informative old age - and the 3 horizons of evolution or 'main phyla' of multicellular animals.

- *Max. E:* The energy system -a central digestive tubedominates the 1^{st} horizon of multicellular organisms, occupying the central zone in 3 sub horizons of formal evolution: the age of sponges, the age of hydras and the age of worms, the first bilateral animals created around a tubular, lineal digestive system that moves in the dimension of length.

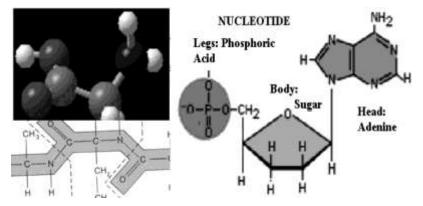
- ⇔: Worms develop blood networks based in metallic carbohydrates that carry to each cell of the body its oxygen energy, food quanta and the dual hormonal orders of the brain: reproductive orders and 'killing orders' performed by amoeboid leukocytes. Thus, as blood networks increase the efficient control of fractal cells, animals grow in size, starting an age of massive sea life diversification. Today we still have 90% of the genes of those worms.

- Max. 1: Life jumps a fundamental discontinuum, when the first molluscs become insects and the first fishes become amphibians, colonizing the Earth. Their sensorial and nervous systems become overdeveloped in the new environment that has a higher transparency to informative light. Land animals specialize their 3 networks to the new medium in 3 sub-ages: the age of amphibians, which still reproduce in water, the age of reptiles and the age of birds and mammals, dominant in visual and nervous systems that ends with the arrival of Homo Sapiens.

- st+1: Homo sapiens develops a new informative language, the word, evolving into historic super-organisms, civilizations and economic ecosystems that grow in size till reaching a global dimension.

Recap. Biological organisms evolved in 3 horizons of increasing social complexity creating the $3 \pm st$ scales of life: the age of molecules, the age of cells and the age of multi-cellular organisms, specialized in energy (plants) or information (animals).

11. The energy age: 3±st Simple molecules.



In the graph, a glycine, the simplest 'organism' of life or amino acid with its self-similar form to a small mammal, with a nitrogen head, a carbon body and its oxygen legs. And the two fundamental species of complex molecular life: a nucleotide, dominant in information, attached to a sugar body and phosphoric acid and the detail of a protein body; the most reproduced species of the system. Lineal fats that store energy becomes the 3rd essential topology of cellular life.

The first age in the evolution of life is the age of simple molecules. Water became an organic soup filled with ammonia and simple chains of carbon, among which we highlight:

- *Max.E: Acids and fats.* They are headless, without nitrogen heads - a long, lineal limb of energetic carbons with oxygen legs on its extremes. They will become the fundamental energy of cells.

- *Max.I: Sugars* add an informative, cyclic dimension to headless fats. They are carbohydrate hexagons evolved socially in long chains, through oxygen connections, called polysaccharides.

Amino acids: exi functions and evolution into proteins

The 3 life molecules, ammonia, methane and water, create *the spatial structure* of glycine, the simplest amino acid which resembles an animal, with the positive charged nitrogen head (amine), the negative charged Oxygen tail (carboxyl), and a carbon body chain that fusions together the 2 extremes, creating the i-logic 'generator equation' of amino acids:

Oxygen legs(E) < Carbon body (EXI)> (I) Nitrogen head.

st-points adapt their morphology to the dimensions and directional movement of their specific environment. Thus, while a still cell is cyclical, moving life molecules are lineal forms in which *the nitrogen 'head'* is upfront to absorb information & energy in the direction of movement; *the structural carbon* membrane is in the center; *and the energy cycles* are performed by the *oxygen* tail that moves on the water:

- *Max. 1: Informative cycles* are directed by its ammonia 'clock'. Nitrogen vibrates across its Hydrogen triangle, perceiving and transferring electromagnetic information elaborated as Van der Wall forces to its carbon body that orientates the molecule in a chosen direction.

- E=1: Reproductive and social cycles: A rigid carbon chain can peg to its sides by affinity (3rd postulate of i-logic geometry) other carbon structures that latter might split, reproducing new glycine or might stick together, shaping new species of amino acids.

-Max.E: Energy Cycles: The oxygen moves the molecule, propelled by the dual polarity of water.

- *Social and Transcendental cycles:* Their social evolution gives birth to macro-molecular proteins.

- *Existential, generational cycles*: The purpose of those molecules is to exist, performing their organic cycles.

Thus, after the birth of the first amino acids, Earth probably witnessed a massive replication of glycine, which soon diversified in all kind of sub-species that pegged to the original glycine new pieces of carbohydrates bodies, nitrogen eyes and oxygen legs. Thus the organic soup became an ecosystem of top predator amino acids that catalyzed the reproduction of new amino acids, absorbing the simpler molecular 'nutrients', till amino acids saturated the Earth's oceans. Then those different amino acids associated in complementary st-herds, in which specialization occurred again, as some amino acids were designed better to gather energy with extra oxygen legs; some had extra nitrogen heads to process information and some were long carbon chains better suited to split, peg and reproduce new amino acid pieces. Thus we can easily classify amino acids as informative amino acids, with ring structures filled with Nitrogens; energetic amino acids, with added Oxygens - Phosphors and sulfurs, atoms with high 'electro negativity' that are able to capture energetic electrons; and reproductive amino acids with long carbon chains.

Social evolution of amino acids: the protein age.

Amino acids in their social stage of evolution became, according to the inverse morphological laws of transcendental evolution, the 'relative energy' of new macro-molecular proteins. So they lost its 'active' heads and tails, pegged now to each other, as the 'fixed' neutralized st-points of the protein's spiral structure; where the active parts are radicals joined to the central carbon of the amino acid. Those bulky, seemingly unnecessary radicals that hindered the motions of free amino acids show its true value in proteins... (This often happens in evolution, which requires first mutational, inefficient stages that reorganize into functional macro-systems thanks to the directed ternary systems created by fast, planned evolution. If all were chaotic, slow Darwinian mutations most mutations would not survive long enough to transcend into useful new organs, as Darwin already noticed it, studying wing evolution. Thus transitional stages are a proof of 'i-volution'.)

Proteins are huge carbon chains that fusion the fractal actions of those radicals with many oxygen legs and a few nitrogen eyes into a simultaneous present of Max. IxE force. They are like centipedes, entities with simple perception but a fearsome energy that allows proteins to cut and kill all the micro-molecules of the life ecosystem. So they became the new top predators of the original carbon soup, probably chasing down free amino acids to replicate themselves.

Finally, lineal proteins evolved further, according to the inverse laws of transcendental, social evolution, forming self-replicant hollow membranes with cyclical, still forms, which nucleic acids will latter fill and dominate, creating cells. Indeed, the protein's simple minds made their top predator status short living when the 3rd informative horizon of molecular life, the nucleotide, evolved.

Informative age: Nitrogen bases and Nucleotide acid.

In the previous graph, we show the final, informative age of life molecules, which occurred when the amino acid evolved its lineal, simplex 3 st-regions adding a new, informative dimension and creating the 3 globular zones of the nucleotide:

- Max. E=1: The improved body is called a sugar that has, instead of the carbohydrate's zigzag line proper of amino acid bodies, a pentagonal form, a powerful compact body cycle that appears in all scalar morphologies. Further on, the sugar pentagon adds a lateral oxygen's rudder that can chain or unchain itself to other sugar rings through easy to break oxygen bridges. So the reproductive speed of the new nucleotide's body based in the capacity to peg and split its body increases.

- Max. E: A nucleotide tail adds up a highly energetic, phosphoric acid (PO_4H_3) that has more oxygens than the amino acid's original COOH tail and so it swims better in water. The heavier phosphor is also a nitrogen-friendly atom, from the same 3-5 valence electronic column. So the head improves its control of the tail and its energetic oxygen atoms.

- Max. I: Finally the Nucleotides' heads add up new nitrogens, creating cyclical, hexagonal rings, called Pyrimidines, which once more diversify in 3 subspecies: Thymine, Uracil or Cytosine...

- Uracil is lighter. So it is the brick for building highly mobile social nucleotides called RNAs.

- Thymine is heavier, since it has one more carbon, while Cytosine adds Nitrogen with 2 Hydrogen 'antennae'. So they are the bricks of DNA, the most informative, still molecule of life.

Finally the most complex nucleotide heads are Purines: dual, pentagonal and hexagonal nitrogen rings, joined by a strong covalent C=C wall that form dual couples, called Adenine and Guanine, which add an external nitrogen antenna with 2 Hydrogen eyes to probe the unknown world.

So the globular structure of Nucleotides also creates more evolved social forms, the RNA and DNA acids that will control protein membranes in the cellular scale.

If structural bodies dominate amino acids and proteins, the dominant element in Nucleotides are their nitrogen heads. They become the unit of the social, informative languages of cells, playing a key role in all their informative tasks, as the main elements of most hormones and the fractal units of macromolecular DNAs, which will create the higher, cellular scale of life forms.

The age of nucleotides: ternary differentiation of species.

So after the age of Amino acids and proteins, there was an age of Nucleotides, which differentiated again according to duality in 2 subspecies: One rich in energy, the other richer in information:

- *Max. E: The energetic Nucleotides are ATPs*, the key molecules in all energetic life processes. Breathing and feeding could not happen without ATP, the specialized energy Nucleotide that again subdivides in 3 subspecies, which can be identified as the energetic, balanced and informative ATP:

- Max. E: ATP proper - an Adenine nucleotide with a longer tail with 3 Phosphors and 10 oxygens, ordered in a classic decametric, 3x3+(st+1) scale: each phosphor controls 3 oxygens, and the 10^{th} oxygen connects them to the sugar body.

- E=I: ADP, which has lost 1 phosphor and 4 oxygens (an HPO₃ molecule) releasing in the process 34 KJ of energy,

balancing its form with less energy but the same Nitrogen information.

-Max. I: AMP, which has lost another HPO_3 , becoming a cyclical molecule, since the phosphoric tail touches its nitrogen head. So it acts in cellular processes as an informative carrier, transferring hormonal information, amplifying it and programming the cell's nucleus with that information.

- Max. I: The informative, social evolution of nucleotide acids gives birth to RNA and DNA.

Nucleotides evolve socially, becoming according to the laws of transcendental inversion between micro and macro planes ($I_{st-1}=E_{st}$), 'energy cells' of RNA and DNA spirals, grouped again in triads that form a spiral cycle. Those triplets surrounded by energetic ATPs create genetic scales in groups of 3, 9, 27...

Those 3^n elements in turn will shape the structure of 2 new macro-molecular informative species, differentiated according to the ExI complementary, dual principle:

- Max. E: Lineal, moving RNAs that carry the actions of the cells, again differentiated in:

- Max. E: Ribosomal RNA joined to energetic proteins that peg the carbohydrate's pieces.

- E=I: *Transfer RNA* that carries the fractal units that reproduce carbohydrates.

- Max. I: *Messenger RNA* that copies DNA information and takes it to the Ribosome.

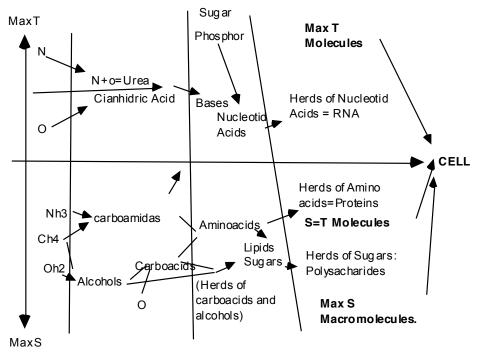
- Max. 1: Cyclical, still, informative DNA, made with 2 complementary RNAs, which carries so much informative, genetic information about the metabolic and reproductive cycles of all other carbohydrates that will become the 'brain' of the new scale of life, the cell... The nucleotide structure of DNA shows the magic 'tetrarkys' that fascinated Pythagoras: 1, 2, 3, 4 dimensions that add up into a decametric scale. Indeed, 1 DNA made with 2 RNA chains joined by nucleotide pairs form a structural tie of

DNA; 3 nucleotides form the basic informative 'gene' to create amino acids; and 4 dimensional bases is all what it is needed to create all the cycles and elements of the cellular game.

Those 3 type of molecular 'ages' will become then the 3 'topological' st-forms of the cell: amino-acids become the energy bites of the cells along with water, its medium; proteins will create the walls reproduced in its organelles and nucleotide acids will become the informative, perceptive species that run the show.

Recap. The evolution of life molecules took life through its first 3 ages, the age of amino acids, the age of proteins and the age of Nucleotides, the informative, hyperbolic species that will reorganize them all to create the cell.

12. The social evolution of macromolecules into the cell.



In the graph, the evolution of carbon-life molecules in 3 series of growing size, diversified in Max. Spatial Energy, Max. Temporal Information, and Se=Ti balanced subspecies.

The Ternary Principle diversifies species and then combines them. So methane, Ammonia and Water combine to give either an informative Carbonamide or an energetic alcohol. Both are evolved finally into a carbon-acid.

Both species again mix in balanced amino acids, to further increase their information and energy tendencies adding new Informative nitrogens (bases, porphyrins), or adding Oxygen legs (sugars, lipids). The balanced combination, the amino acid with two oxide legs, and one Nitrogen head, evolves into the next level of macromolecules, the proteins.

On the other hand nitrogen bases keep evolving in social rings; while acids add a macro-atom of enormous energetic power, Phosphor to improve its energy abilities. Finally sugars form with oxygen polysaccharides.

We have 3 species of macro-molecules in a new E-exi-I game:

- Macromolecules of enormous capacity as Energy, the Phosphoric acid and other long acid systems (sugars, lipids).

- Macromolecules with structural versatility: proteins.
- Macromolecules of high informative capacity, RNAs and DNAs.

They are the 3 specialized molecules that give birth to the new plane of social existence, that of the DNA-cell.

st+1: The macromolecules of the 3 previous horizons, guided by the genetic, informative language of nucleotides, transcend socially into the cell; a st-point, in which they will play the same specialized roles they played in the macro-molecular age, creating the 3 st-specialized zones of a bigger, fractal plane of existence:

- Max. E: The external membrane, inner invaginations and cilia are the energetic borders of the cell controlled by lineal proteins, intertwined with long, energetic chains of fats and sugars called polysaccharides, hyper-abundant in oxygen. Proteins become 3dimensionally warped as units of the spherical membrane with globular, inverse morphologies due to the law of transcendental evolution that transforms the morphology of a form in its inverse form, when it transcends into a higher scale $\sum (E_{st-1}=I_{st})$. Among those inner invaginations we highlight lysosomes, smaller protein jails that store the excess of energetic fats and sugars, kill carbohydrates or eject them outside the membrane.

E=1: The intermediate region reproduces the cells' energy and information: *energetic chloroplasts and mitochondria* provide electronic energy needed to perform the moving cycles of the cell; while *informative ribosomes* create the materials needed to maintain the membrane and nucleus.

- *Max. 1: The inner nucleus* is the informative center of the cell, filled with cyclical, informative DNA macromolecules and 3 lineal sub-species of RNA, which perform together the orders of the still, DNA brain, creating a simultaneous herd of Max. I x Max. E force that rules all other symbiotic elements of the cell. RNAs control proteins, which act thanks to its energetic strength as the body element of all cells, shaping their hard membranes, killing other carbohydrates and transporting RNAs' hormonal sentences throughout the organism.

To reinforce their control of those proteins the first RNAs herds might have killed all those amino acids and proteins they did not need. So today there are only 20 surviving amino acids, all oriented towards the left side. Why? According to the multifunctional principle we can consider 3 reasons:

- 20 amino acids form the magic number of 2x10 couples, which allows an efficient division of energetic, informative and reproductive tasks, without redundancy.

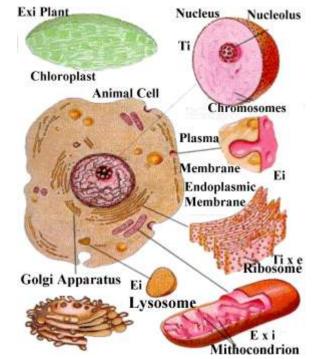
- A single orientation in space-time allows all those amino acids to act simultaneously together, multiplying its IxE power as a herd, without anyone 'giving the back' to the group.

- Since the most efficient reproductive system is the specular, sexual method, in which 2 complementary inverse morphologies gather together, a carbohydrate chain could replicate, as DNA does, by specular affinity, attaching parallel forms to its body

structure, creating its specular image twice. So if an L amino acid replicates a D amino acid (a macho replicates a female so to speak), and then the D amino acid replicates an L amino acid, the system becomes a self-reproducing amino acid, free from RNA control. By avoiding the reproduction of D amino acids, nucleic acids control the creation of 'castrated' amino acids and proteins. So Nucleic acids probably extinguished D-amino acids to control better the castrated proteins of their cellular farm. Humans also castrate tamed animals; yet amazingly enough they are researching self-reproductive nano-robotic bacteria that might extinguish us, forgetting that reproductive control is a basic tool of any biological top predator.

Recap. Cells are made of energetic amino acids, reproductive proteins that form membranes and informative nucleotides, enclosed in its nuclei.

V. CELLS, THE ARROWS OF LIFE ORGANISMS.



In the left side, the cell has 3 st--zones:

- Max. E: It has an external, thin membrane, which in free cells have cilia that move the cell and act-react to external stimuli. In organic cells energy is provided by the blood system of the macroorganism. So external cilia disappear and invaginate as lysosomes that kill carbohydrates.

- Max. I: In the center, there is a nucleus of max. informative density, filled with cyclical or spiral DNA/RNA's networks that control the st-point.

- ExI: RNAs dominate the intermediate space-time, directing the energy organelles, mitochondria or chloroplasts that produce energy; and the informative ribosomes that reproduce products, pegged to the Golgi apparatus - a membrane's invagination.

13. Youth Horizon: From Prokaryote to Eukaryotic cells.

The previous description of the evolution of molecules requires to change the 'chip' of the scientist and accept the tenants of organicism in simple atoms; which so far science has only, according to the Galilean paradox of self-centered perception, accepted for the next scale of life – the cell.

At the beginning cells, called monera, did not have a differentiated nucleus membrane, which means their informative singularity was mainly moving RNA. As evolution continued through the dual/ternary differentiations proper of all EXI systems, RNAs split accordingly in 3 sub-species to carry out the specialized energy, informative and reproductive tasks of protein control, carbohydrate production and self-replication, through complementary, inverse, specular translation. Then, one RNA, which produced a specular image of itself, probably got pegged to that image and became 'fixed', as a still, dual DNA, an informative mirror of an RNA molecule, geared to reproduce it. Accordingly those first DNA molecules acquired the cyclical ring form they still have in all monera.

Soon the extraordinary reproductive growth of DNA cells made them giant cells that exhausted their trophic nutrients. So finally they cannibalised other cells to maintain that reproductive growth. First those cells would be killed and their nutrients absorbed but then some very efficient energetic and informative cells would become slaves within the cell 'farm' in a process repeated in all stscales: first top predators are hunters but then informative top predators create farms. So worm holes use herds of stars to absorb intergalactic dust; men use dogs to herd sheep; and monera cells used ribosomes to reproduce informative molecules and mitochondria to absorb energy, forming the first macro-cells. Those who 'ate up' mitochondria, which produce energy from carbohydrate products, would become animal cells and kept hunting other cells to find semi-elaborated nutrients. Those who 'ate up' chloroplasts, which produce energy from small carbohydrates and light, would become plant cells.

Now the quantity of DNA in the cell grew to add up the DNA of those organelles and its variety of cyclical memories was so vast that it had to pack itself further, changing its bidimensional, cyclical form into a 3 dimensional spiral, and acquiring structures of energetic sustain: proteins that coiled around DNA and a nucleus with differentiated walls that surrounded DNAs. The age of eukaryotic, gigantic cells had started.

Recap. As information multiplied in simple cells, the RNA age gave way to the DNA age whose extra-genetic code should control the evolution of complex multi-cellular structures.

14. The vital cycles of the cell.

The cell is a brain-body system constructed with 2 elements, nucleotide acids, based in nitrogen bases and protein bodies based in carbon chains, which are the informative and spatial systems of the cell. Around that EXI core duality we find an expansive intermediate, cyclical region with all kind of slavish organelles that perform their energy cycles (based in the energetic properties of oxygen, water and similar electronegative atoms); and their informative cycles. Both cycles are catalyzed by denser metal atoms that boost the E/I capacities of carbohydrates. Thus, through the interaction of carbohydrates, metallic ions, proteins and nucleotide acids, cells perform the $3\pm$ st cycles of all st-points:

Max.E: In an organism, Mg, copper and iron capture oxygen and deliver it to each cell to perform energetic cycles; while in the cell cytochromes kill and split the energetic hydrogen atom into H^+ and e⁻ ions in mitochondria or chloroplasts; absorbing its spatial energy; while metal atoms stabilize protein enzymes.

Max. I: Na and K ions control the expansive and implosive rhythms of the electric membrane, sending informative messages among cells -while RNA and DNA molecules process *information* within the cell, reproducing new carbohydrate molecules.

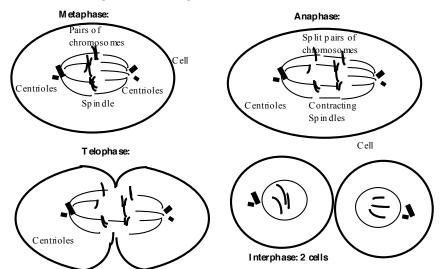
- The combined effect of the accumulation of energy and information within the cell triggers the reproductive cycle, guided by RNA and DNA molecules.

- \sum : Cells *evolve socially* into macro-organisms. Yet only the RNA-DNA system creates complex informative, control networks.

- \pm st: Cells live a *generational* cycle chained to an organism that kills them 'periodically', or as free cells that die when captured by top predator living beings. Since most cells can be immortal if no other system kills or controls them hierarchically.

All those cellular cycles are not 'mechanic processes' but they have evolved departing from the organic, dual, Darwinian and symbiotic interactions between proteins and nucleotide acids, the dominant energetic and informative macromolecules of cells. The most important cycle is the reproductive cycle, which in the cell as in other fractal space-time represents the existential will that ensures the perpetuation of the species. Let us consider it.

Recap. Cells follow the same arrows of existence of all st-points.



15. The reproductive cycle.

The interphase, prophase, anaphase and telophase complete the reproduction of the cell, in which the centriole, a perfect example of a decametric structure, with 9x2 lineal proteins and a central 2x1 nucleus that controls the lower scale of 9 forms, plays the key energetic role of motion control. The reproductive cycle of cells shows an evolutionary pattern observed in many dual cycles between 2 complementary st-points of relative energy and information, which first confront their energetic and informative inverse forms. But as time goes by often by chance they realize that social, complementary evolution is more efficient than Darwinian, energetic destruction. And so they end up evolving together, following the positive, creative arrow of the Universe. We can hypothesize according to that homology the 3 ages of evolution of the reproductive cycle:

- Energetic, unicellular age: Sexual reproduction probably started as a Darwinian, energetic process of hunting in which lineal, energetic sperm killed the cyclical ovum and learned to host its DNA-code as virus do, in the ovum's center. Yet as the sexual cycle evolved beyond *the energetic, young age* of the cycle, the 'war of sexes' ended and the cycle moved into a *balanced* 2nd age.

-E=I: Reproductive, 'colonial age'. Now information was exchanged between both forms, the sperm and the ovum - since sexes are in fact a specialization of species into *energetic males* and informative females. Ad a new symbiotic dual form was born. Those forms would start reproductive radiations multiplying the number of cells. So probably sexual reproduction is a key factor in the multicellular explosion of the Cambric age.

- Informative, palingenetic age. Finally, in the 3^{rd} age of sexual evolution the informative female species dominated the cycle, as females have more genetic code (2 complete X chromosomes) and control during pregnancy the reproductive, palingenetic cycle that brings the embryo into a new 'macro-organic level of existence'. If we observe the family cycle of human couples, women also tend to dominate the couple in its 3^{rd} longer age, as Proust already notice; since information lasts longer than energy in time.

In those complex organisms a living, reproductive cycle is dual: it departs from the simplex reproduction of a single cell that multiplies. Then those self-similar cells suffer a complex process of palingenetic reproduction that recreates an organism made of billions of cells, departing from that single cell.

Cellular reproduction: a tug of war between DNA and proteins.

Let us consider in this synoptic paper, the simpler process of cellular reproduction, as we have treated palingenesis in our analysis of the 4th postulate of i-logic geometry:

Organic cells reproduce within a day, chained to the symbiotic daily feeding period of the organism that provides them with energy and information for that reproduction. Fractal cellular reproduction shows also that duality between positive, organic complementarity Vs. negative Darwinian struggle that either balances E-bodies and I-brains into organic systems or determines their mutual destruction when that balance is broken (death processes, Lorenz Transformations, etc.) In the reproductive cell cycle, the most efficient body proteins - lineal, tubular centrioles - and the top predator, informative DNAs enact an ambiguous struggle between their Darwinian desire of mutual destruction and their need of complementary evolution.

So cellular reproduction is a mixed cycle based in both kinds of relationships in which first the lineal species of cellular energy (centrioles, which are long $(9+1) \ge 2$ protein fibers with a perfect decametric structure), untie the cyclical species of pure information (DNAs), trying to split and kill them. Yet DNAs, once uncoiled, defend themselves 'informatively', creating a new membrane that breaks the centrioles apart into 2 groups, and also breaks the cell creating 2 new ones. We can distinguish several phases in that dual struggle, dominated alternately by each of those 2 forms that involve all the other elements of the cell, directed in their dance by those max. E x Max. I top predator elements or 'upper classes' of the cell. It will be a tug of war that illustrates all the geometrical strategies of Darwinian and complementary events between dynamic st-points:

-In the *interphase*, both top predator substances replicate. The centrioles are outside the membrane, which protects the DNA.

-In the prophase centrioles start their hunting: the protein's membrane of the nucleus dissolves, exposing DNAs'

chromosomes that become visible preys. As all other universal preys do, from wriggling worms to high frequency rays, from submissive servants to herds of electrons in front of a quark or fishes in front of a shark, chromosomes try now to hide by coiling up, becoming contracted, shorter forms. Then the hunting starts. Centrioles have replicated and now double its fractal action, moving to both sides of the DNA nucleus, forming dual, long molecular chains joined by filaments. So they *create a polar field of forces that captures in its filamentous web the self-replicated DNA*, as a North and South Pole create together a magnetic force field that aligns atoms or two boats web a net to capture fishes.

-In the metaphase chromosomes defend themselves from the 2 centrioles that throw the 'hooks' of their force field, stretching the DNAs. But those chromosomes that have replicated in the earlier interphase evolve now socially in couples of parallel forms, increasing its fractal mass and moving away from the centrioles in a classic protective strategy: They arrange themselves in the equator of the spindle, adopting a Darwinian, perpendicular position, the farthest away from those centrioles. It is exactly the way in which diamagnetic particles that flee from magnetic fields, arrange themselves trying to receive the minimal quantity of force from the North and South Poles of the magnetic field.

-In the Anaphase centrioles counter-attack, splitting away the chromosome pairs.

In the telophase, DNAs find their winning, defensive strategy: They are the informative species that store the genetic code of all cellular forms. So DNAs start to reproduce new membranes in a frenzy till those membranes break the centrioles' spindle through its middle zone, isolating each centriole and breaking their field of lineal, protein forces. Since lineal, energetic or reproductive beings, like centrioles or 'magnetic' fields are, cannot create monopoles. Only temporal, implosive, informative cyclical particles can do that. So the spindle dissolves and the new membrane divides the cell. Now the system reaches again a balance, as the dual chromosomes and the dual centrioles become again single forms surrounded by a new membrane.

Thus the dynamic tug of war between a protein's body and a nucleotide's brain ends up in a draw, creating 2 cells instead of one, which will re-start after a rest period a new *interphase* process of protein and DNA reproduction. Since the Universe is indeed a game of reproductive radiations, the ultimate will of all beings that want to survive their fractal, periodic death by creating a self-similar 'present' form.

A variation of that process required in sexual reproduction, is called meiosis, in which the twin reproduction of DNA and its subsequent destruction of the nucleus' membrane is provoked by the energetic sperm that enters the ovum, invading, as a virus does, its DNA nucleus and merging its genetic material. So, as it happens in the interphase of a cell, the fecundated sexual cell has 2 parallel quantities of DNA, albeit with different genetic material, coming from the ovule and the sperm. So as the replicating process repeats through the same phases of any cellular reproduction, the final result won't be an identical cell but a cell that mixes the genes of both, the sperm and the ovum. When besides sexual duplication there is an interphase with chromosomal duplication the final 2 cells will be diploid cells with twice the genetic material of the original cell. This happens only in multicellular organisms, as redundant genetic material is useful to store genetic orders needed for the complex construction of multicellular structures; but it would be redundant in the simple life of a monera cell, which escapes the interphase duplication.

The exi duality of lineal sperm and cyclical ovum extends outside the realm of form and transcends to the upper scale of multi-cellular organisms and sexual characters: the ovum is an informative, cyclical, autotrophic female cell with higher chromosomal content; while sperm is an energetic, heterotrophic, lineal male cell with higher mobility. And we find according to the Fractal Principle, 3 evolutionary types of increasingly differentiated sexual cells: semen and ovum, which are equal in spatial size and temporal form (isogamy); semen that is equal in form but smaller than the ovum (anisogamy); and ovum and semen, which are different in spatial size and temporal form (oogamy), as in human beings.

Those differences between male sperm and female unicellular ovum, latter diluted as their genetic materials mix, reminds us of the differences between unicellular animal and plants, the main dual differentiation of life along its exi parameters that we will study now in more detail.

Recap. Sexual reproduction evolved from an energetic event in the unicellular age into a reproductive radiation and finally into the palingenetic process dominated by the ovum.

Cellular reproduction can be explained as a tug of war between the informative DNA and the reproductive proteins of the centrioles.

16. Ternary cell's differentiation: plants, animals and fungi.

The kingdom of life shows in all its beauty the generic process of evolutionary differentiation of any space-time field, along the main 3±st dimensions, departing from a 1st singularity, which in the world of life is the Monera phylum - the initial cell, whose *ternary differentiation gave birth to energetic plants, reproductive fungi and informative animals:*

Max. E: Energetic plants use light as energy. Biologists talk of plants as autotrophic cells; still forms like the ovum, which create their energy and information quanta from light and water, in any place. So they made their membranes harder and thicker to maintain themselves centered in a territorial, discontinuous, vital space, regardless of what happens outside.

Max. 1: Informative animals use light as information. Animals are heterotrophic, moving cells, which feed on other forms. Hence they developed thinner external membranes and cilia, which according to the multifunctional principle differentiated further into increasingly sophisticated sensorial antenna to localize their preys and lineal, moving engine with a master centriole - a

'protein head' on its base. So though in a 1st phase unicellular plants were more complex, animals ended up evolving greater quantities of inner, informative RNA-DNA to act-react faster in their unknown moving environments.

E=1: Reproductive fungi are organisms that have qualities belonging to both, the animal and plant kingdoms. Fungi feed on dead substances and survive thanks to their maximization of reproductive skills.

The inverted forms and functions of plants and animals define both species as 'antisymmetric systems' ruled by their opposite diffeomorphic parameters of energy and information:

Their informative cycle and brain-body dimensions are inverted: plants have their brain down in the roots, since they use light as energy; animals have it on top, since they use light as information.

Their energetic cycles are inverted: plants breathe CO_2 and produce oxygen; animals breathe oxygen and produce CO_2 . They also use carbohydrates in opposite ways, since plants foster constructive stillness and animals destructive movements: so plants make sugars the fixed structural element to construct cellulose and starch, their external membranes; while animals use sugar's oxygen bonds breaking them to breath, liberate oxygen and move the body.

Their social and reproductive cycles are inverted: Animals are hierarchical organizations with a clear class division between informative, 'upper class' neuron networks and body cells, while plants are 'democratic forms' with minimal differentiation. So plants foster the spatial, reproductive arrow and animals the evolutionary, temporal arrow.

Their *generational cycle* is inverted: animals have faster, shorter vital cycles, since its temporal language is the faster, electronic, nervous language; while plants have longer life cycles at a lower 'speed of informative processing' - since they transmit chemical information through the hormonal system.

Departing from those 2 languages life evolved into a new scale of multicellular organization creating:

- Max. E. *Chemical*, multicellular organisms, plants that use hormonal languages.

- Max. I: 'Electric' organisms, multicellular animals that use the electronic language.

Recap. Plants, animal and fungi, the first 3 kingdoms of multicellular life are a ternary differentiation in e, exi and i species.

17. Death.

In Cyclical Time death is caused by the finite limits of fractal time and space. Death is a clear prove of the discontinuity of space and time. If we were continuous, that continuity of time and space would make us immortal and infinite. Which means that only the ∞ sum of fractal time-spaces or absolute Universe is eternal: the laws of temporal energy, the logos-mind of the Universe do not have and end nor a principle, because the sum of all the transformations of energy and information balances a dynamic Reality that never dies, remaining always in a relative, equal present. Reality exists 'per in secula seculorum, amen'.

Only reproduction guarantees certain immortality, re*creating our form in other region of space*. Yet in all species the rate of reproduction also goes through 3 ages, and so when reproduction halts, not only the 'cellular' individual but the species of the 'higher plane' dies:

- *Big bang phase*: A new species multiplies very fast departing from a 1^{st} individual.

- Steady state: Its reproductive rate stabilizes.

- *Population Crunch:* Finally it slows down to a halt, extinguishing the species.

Death is in fact the most obvious prove of the discontinuity of space and time. If we were continuous, that continuity of time and

space would make us immortal and infinite. Thus only the infinite sum of quantic time-spaces, the absolute Universe is eternal.

For the rest of us only reproduction guarantees certain immortality. Yet the rate of reproduction of any species is also quantic and goes through the 3 ages, starting slow, increasing its rate and finally slowing down to a halt, extinguishing the species or type of DNA-cells of any organic system. So in a human being the number of divisions of any cell reaches up to 50, whereas in chickens it goes up to 20 divisions. The greater rate happens in the oldest, living species: the Galapagos turtle that divides 10^2 times its cells. E= $10^{i=2}$ is in fact the commonest constant in information warping, from the protonic accumulation of form in the atomic table, which after 100 forms becomes unstable to the limit of human aging.

According to the ternary principle, 3 biological strategies however seem to succeed death:

-Max.E= Some simple systems (coelenterate) reverse its time clock.

- Max. Re: Cells 'trick' their organic time clocks, to free themselves from the servitude of death, by multiplying its quantity of reproductive genes - its DNA molecules. The record belongs to cancerous cells, very rich in DNA, from the reproductive uterus of Henrietta Lacks, the so-called HeLa cells.

- Max. I: Humans achieve partial immortality through cultural memes.

Is there a species whose number of reproductions is infinite, an immortal being? No. Since even the nucleons of the big-bang reproduced e^{60} times to create the Universe, shaping a similar reproductive curve to that of living beings that now has slowed down to a trickle. So all dies for the game to renew itself.

Causes of Physiological Death.

The opposite process to the creation of life and the creation of form is the destruction of form into energy or *death*, (I<E: *Max. E*

x Min.I), equally common. As one feeds into the other and together balance the dual arrows of the Universe.

Thus, the fundamental cause of death is to exist beyond the balance of form between the E and I components of any St-field. All beings have limits of excess of energy and/or form, which once crossed will bring their extinction, as their energy and information quanta 'explode' and split, dissolving the networks that kept the form together and were its inner consciousness. If a particle explodes close to C speed and splits its energy/information parameters according to Lorentz equations, so does a human being after dying. His energy dissolves back into his st-1 simpler cells. And then, since all deaths are dual big-bang explosions, humans return finally to the molecular, amino acid level from where they departed.

If we want to be specific about the *causes of death in* human organisms, death is the product of an imbalance, either by an excess of energy that causes sudden death in minimal Time (Max. e=Min. i), through war, sudden sickness or accidents, or by the accumulation of temporal information that spends the energy of the being during its long 3rd age, leaving traces of past cycles in cells and physiological networks that cause their malfunction. In other words, the nervous, informative network exhausts the body, causing a max. I=min. E imbalance, that wrinkles and breaks the body cells into death. But also the opposed phenomenon, an excess of energy caused death. In both cases the imbalance breaks the complementarity between the space and time content of the being. However, since the direction of living beings is towards the informative future, the informative imbalance is more frequent and shows in the 'growth' of time properties.

So old people are as time is, cyclical, memorial, curved, with discontinuous wrinkles that break the smooth continuity and linearity of young, spatial beings. That quantic, curving process happens in all the species of the Universe that age: cyclical wrinkles and quantum cracks occur not only in the skin of an old man but in the membranes of our cells, their Golgi apparatus and "energy" mitochondria. That loss of energy in any old being, which becomes quantized and implosive, with negative curvature, has manifold manifestations: cells shrink and their membranes no longer dilate. An old man measures a few centimetres less. The 2 networks, the energy network or membrane and the informative network become rigid, quantized and no longer reproduce. In human cells, collagen and elastin, the proteins of cells, loose their elasticity and expansive capacity, creating, informative connections among them. So happens to the rigid, cross-wrinkled skin of the old man. Meanwhile the energetic, metabolic capacity of the organism and its quantic cells diminishes.

In a more generic way information and time are parallel. So species with more information and less energy live longer, according to the Time-Space inversion: Max. E=Min.I. Thus for example, an animal that fasts systematically and receives less energy, lives longer (hungry rats live a 20% more). The female, informative sex with smaller expenditure of energy lives longer than the energetic male. A being that lives in a hot, energetic environment lives shorter than one living in a cold environment. Hibernation that slows the metabolic rate elongates life. There is also a proportional relationship between the informative weight of the brain and the life span of an animal: Max. I (brain weight) =Max. I (life-span); which in inverse to the proportional relation between the metabolic expenditure of energy and the life span of the being: Max. metabolic rate (Max. E) = Min. Life span= Min. I, proving once more the inversion of space/time. So humans with huge brains live much longer than lions with huge bodies.

An excess of energetic atoms diminish time existence: Free radicals, which are oxygenated, energetic molecules, with free electrons (the energy body of atoms), deteriorate cells and their accumulation with age is a major cause of death. The degeneration and disorder of those cells can be caused by energetic radiations (electromagnetic rays of max. energy cause the mutation and death of cells.) The increase of fat, energy cells causes the death. So doctors establish a direct lineal relation between the accumulation of lipofuscine and the death of a living organism. An excess of

energy is the main cause of accidental death among youngsters. So a speedy car crash breaks the body and the shock of a weapon's impact, a form of energetic metal, kills a human being.

Yet in generic terms, information that forms, carves and quantizes amorphous, continuous energy is the supreme cause of death. As the chisel of a sculptor creates form by destroying the marble, so does the game of existence: For example, elephants create the form of the savannah, when killing its trees; quantized hands are formed in a foetus, when interdigital cells commit suicide (apoptosis). So ducks, which do not kill them, have membranes in their hands. All those causes of death have created an equal number of scientific theories about death, all related to the inversion between spatial energy and temporal information and the balance between energy and information that defines existence, as opposed to its imbalance that causes death.

Mental death.

But what happens to the brain's information stored in the brain, after death? Does it dissolve also, as body cells do; as the magnetic, informative field of a star does or the mass vortex of a Nuclear Bomb does? Or does it transcend, as the photonic light does, into the higher electron, or the seminal cell does when it evolves into a new macro-organism?

According to empirical descriptions of death and the general MST laws for all space-time fields, information 'rewinds back', travelling also to the past, becoming erased, as it happens to our cells.

So most likely the information of the being will no longer be. It will become untied energy, cellular form and then molecular or atomic quanta. Since when we are incinerated, we fall to the consciousness of the atom. Yet consciousness, 'sensation', the very essence of 'existence', never goes away, it only jumps from atom to cell to man and vice versa. The optimist believer might believe in the transcendence of the 'informative mind' to a 'higher' plane of existence with more information, that of a human super-organism or collective God, as in a palingenetic process that makes a cell transcend into an organism. The pessimist thinker might believe in the devolution of consciousness to the "obscure world", with less information, of cells and atoms. It is what mystiques have explained in poetic terms as the opposition between the ascension to Heavens Vs. the quantic jump into Hell. So $st\pm 1$ birth and death discontinuities are jumps between planes.

But how 'sensorial perception' changes in those discontinuities? It does so through the 2 antithetic sensations of ExI existence, which are informative pain and energetic pleasure.

Those 2 paradoxical, antagonist sensations happen not only in men but also in animal life and perhaps in all atomic forms, because they are based in the geometric properties of information and energy. Indeed, pain is created by 'pressure' on our cells, which is an implosive, temporal movement, also related to the consciousness of information. While pleasure is caused by the 'expansion of blood in the genital system, an energetic process. So we have the key duality of consciousness:

Information=pain=awareness=implosion

Energy=Pleasure=forgiveness=explosion

Since information is desirable, the negative arrow of pain balances the positive arrow of perception. On the other hand since everybody likes pleasure, it balances the negative arrow of energy that erases awareness; creating a 'balance of wills' that makes possible to wish both life and death. Thus, in terms of sensations, death will bring just a sudden pain, the peak of our 'informative awareness' towards the future, before we change 'phase of existence'. Then death will be followed by a deep orgasm of energetic pleasure that erases all information, as we fall down the peak. Since pleasure is synonymous of energy, a travel to the past opposite to the awareness of perception, information and implosive pain, a trip to the informative future.

So after pain ends our will to live, we relax in a deep orgasm that erases information, reversing our space-time field, as our consciousness moves towards the past. Then the brain rewinds back the memories of its existence that cross for a last time through the 'soul' of the brain, more likely a neuron's network.

Yet, because time accelerates in smaller beings, the speed of times of the brain accelerates in that rewinding back, during which our black hole vortex or soul, the informative singularity of the mind, feeds back towards youth, perceiving and erasing a last time those memories. That is why in the 3 days of death of our organic system, as our body becomes corrupted and our consciousness dies, we can recall all those long years of existence at 'fast motion', as we rewind faster a tape than when we see it. That is why those who woke up from death could describe it as a trip to "the past" through its memories, because after death consciousness will perceive life "the other way around" at the faster time rhythm of cellular life. Then, finally we will enter back the uterus and return to the ovum's cellular consciousness; and then again we will die in a second big-bang, burnt in a crematory or feeding the insects that reduce us to molecular form. But 'we' will no longer be human. As a Hindi legend say, an ant was once Indra, a king of kings. For those who are ego-driven, there is no need to worry; the game is limited in its variations. So you are in a way immortal. Since we are repeated in infinite places of space and time; you will be born in another planet to live your life again.

Yet, far more important than the death of any diminutive MST field, is the death of the st+1 scale of existence, the death of living species or human civilizations, related to the process of evolution and extinction of the Earth's ecosystems...

Recap. Death is brief in time, exploding in space the information of the being. Death is caused by an imbalance between the energy and information of a system. Energetic beings live shorter than informative beings. All systems have a finite duration in time. So death requires reproduction for the species to become immortal.

18. The ternary evolution and differentiation of Monera.

The law of 3 creations, and 3 ages diversified the Animal phyla

-Duality of integrated, multicellular networks that act as a single form vs. quantized herds.

New Reproduction by Growth in sizeenergy Growth in reproductive seamentation Creates blood systems. svstems brains. Top predator R.worms Flat Round worms ➡ Annelida worms. ▲Trilobites Arthropoda Ten tacles Hydra Mollusks S-species St-species T-species_ Bodies Echinoderma Proto-chordates Coelenterata S-species St-species T-species Glaciation Cambric In the graph, the ternary method of diversification explains the

evolution of animal species from its first form, the Hydra till the last phyla, the chordates to which humans belong

We live in a global planet that has been evolving for billions of years through the flows of its living organisms. Let us recapitulate that ecosystemic evolution, which brought the Earth from a world of methane to a globe of electromagnetic, audio-visual information, a process, which according to the ternary principle we can divide again in $3\pm$ st ages. We will study only the animal kingdom in detail to show how it brought us into human existence. So we will only consider a synopsis of all the other life phyla, describing their evolution through the commonest ternary e, $e \Leftrightarrow I$, i differentiations proper of all i-logic systems with its ternary topologies:

-Differentiation in: e-exi-i, lineal, spiral or cyclical morphologies, each one evolved in 3 horizons that maximize each of the 3 homologous functions of motion, reproduction and information.

YOUTH-ENERGY REPRODUCTIVE DIVERSIFICATION INFORMATION ADDuality of energetic/informative species adapted to E-hot vs. I-

cold climates.

*Information*Adaptation to the ternary states of matter in Earth's physical brains. ecosystems: air, land and sea with its 3 main environmental topologies:

- E: shallow waters and rivers, which become hunting grounds.

Cephalopods- E=I: open waters and savannas of max. reproduction.

- Max.I: Abyssal regions and mountains, the hyperbolic region of maximal informative evolution.

Or do We again life evolution shows how 'internal form' and external ecosystems, the st-1 and st-scales of life converge together to define the st-organic evolution of the species.

Let us then start that description of the differentiations of life kingdoms from the simplest one.

Monera: Unicellular forms.

- Max. E: *Cyanobacteria*, blue-green algae, specialize in energetic processes.

- E=I: *Protista* absorb cells specialized in energy and information, multiplying its IxE force.

- Max. I: *Schizophita Bacteria* develop informative elements to capture other plants.

We can do further subdivisions along other $E \Leftrightarrow I$ differentiations. For example, bacteria subdivided according to its form into:

- Lineal *spirilla* that coil or elongate their form depending on its informative or energetic activity.

- IxE: *Bacilli*, with tree-like forms composed of a head and a tail.

- Max. I: *Cocci*, the informative, cyclical form that suffers further evolution along a ternary, topological differentiation into:

-Streptococcus: one-dimensional, lineal, social forms.

- *Diplococcus and Tetracoccus: bidimensional* forms with 2 and 4 elements.

- Sarcina: 3-dimensional social coccus.

As protista, the social form, multiplied its IxE force thanks to the specialized energy and information cells it had swallowed, dominating the world, the other 2 weaker forms suffered a temporal regression towards its past, which became a strategy of survival, giving birth to:

-*Max.E: Rickettsia*, algae that have lost their informative skills and are basically semi-living bodies.

- *Max.1: Virus*, bacteria that have lost their bodies and become DNA brains in search of other bodies in which they host, inoculate their genetic code and reproduce.

On the other hand the dominant protista with higher IxE force continued the evolution of the life kingdom, splitting again into 3 forms that evolved further into multicellular organisms, plants (Max. E), Fungi (E=I) and animals (Max. I):

Plants: Max. Energy

The energetic strategy of the multicellular living kingdom is the plant, the autotrophic species that feeds on the basic molecules of life, accelerating enormously the evolution of life as it produces complex living matter from the initial water, ammonia, CO_2 and light bricks that took billions of years to evolve. Though algae started as unicellular forms, as fungi and animals did, they soon evolved in 3 horizons along the fractal differentiation that took them to its multicellular state:

- *Chlorophyta* were the I horizon of unicellular alga, that grew into colonies of algae (*Crysophyta*, II horizon), which finally fusion into multicellular organisms (*Pyrrhophyta*, III horizon).

- The most complex, informative phylum, *Pyrrophyta*, differentiated then into 3 sub forms adapted to the 3 water ecosystems. Those water ecosystems differentiate the morphology of informative animals into lineal, Max.E, fast-moving surface fishes, Max. I, sessile or planar dragging forms, living on the marine floor (fast-evolving echinoderms origin of vertebrates) and abyssal complex, EI morphologies. In the case of energetic seaweeds, it affects the degree of sophistication of their chlorophyll pigments and the strength of their cellular structures of sustain, creating 3 new phyla:

- Max. E: *Rhodophyta* or *red algae*, with the simplest cellular structures and simpler phycoerythrin pigments, live in the deeper sea, limited to tropical regions of max. light transparency.

- E=I: *Phaeophyta* or *brown algae* have complex membranes and 3 chlorophyll pigments; a, c and phycobilliproteins.

- Max. I: *Clorophyta or green algae*. They added carotenoid pigments to the 3 Phaeophyta pigments and increased the strength of their walls. Hence they became the most successful forms with Max. IxE force (Max. pigments x Max. membrane), evolving further into terrestrial plants.

That migration to land took place in 3 ages in which plants raised its informative height from:

- I Age. Clorophyta; planar alga living in shallow waters.

- II Age. *Briophyta*: Mosses, subdivided in 3 forms with growing dry membranes and height dimension, *Musci* (I Horizon), *Hepaticae* (liveworts, II Horizon) and *Hornworts* (III horizon), which raised their horns towards the sun as their names indicate.

- III Age. *Tracheophyta*, vascular plants, with structural inner networks of hard cells that rose to touch the light that feed them. In dry land plants, as animals will do latter, had to evolve further all their network systems, creating new, more complex phyla, departing from the initial *psilotophyta* appeared in the Ordovician. First plants created the body, the trunk that connects its informative roots and energetic leaves.

But the key to their evolution was the differentiation of their reproductive cells in 3 Horizons of increasingly 'dry' gametes: *Lycophyta* (I Horizon), *Sphenophyta* (II Horizon) and *Ferns* (III Horizon) - the first plants with dry seeds that became the top predator species, multiplying in all land environments and differentiating again in 3 evolutionary horizons of ever more perfect seeds:

- Max.E: Ferns, which dominated in the Mesozoic age.

- E=1: Gymnosperms, subdivided according to the Fractal Principle in cycads, ginkgoes and conifers, which dominated in the tertiary age. Conifers adapted to cold weather, thanks to its needle like leaves of minimal exposure. So they became the most successful species, when cold climatic changes came. They brought about also the dominant modern plants:

- Max. 1: Angiosperms, flowering plants, the 'height' of reproductive evolution among plants, perfectly adapted to all weather changes, with seasonal, blossoming, leaves that fall in cold periods and a complex symbiosis with insects that can transport their pollen too far away distances.

They will dominate the quaternary with only a final dual fractal differentiation into:

- Monocots Vs dicots with 1 or 2 seeds.

So when all was said, the evolution of plants remained silent.

Fungi: Max. Reproduction. Exl.

Fungi are big protista cells that tried the 2^{nd} survival strategy of the Universe, maximizing their ExI reproduction, by maximizing their E-feeding, eating the most abundant food, dead life; and by maximizing their genetic information, multiplying the nucleus of its cells within an undifferentiated membrane. And we distinguish 3 horizons in their reproductive evolution:

- In the I horizon *Euglenophyta* swallowed E-plants and I-animal sub-cells (chloroplasts and mitochondria) within its huge membrane, increasing it ExI capacity.

- In the II horizon *Gymnomycota* maximized the reproduction of their nuclei, the informative, genetic material of the cell, forming multicellular colonies with a single membrane.

- They gave birth in their III horizon of reproductive evolution to true *fungi, Mycota*, which are the fastest reproductive species of the life world. Their reproductive specialization shows in giant Lycoperdales, the living form which reproduces faster, reaching the limiting magic number of 10^{11} spores. Thus a single lycoperdal can produce all the clonic cells needed to create a perfect new scale of existence (stars of a galaxy, DNA ties, etc.)... if they survived.

Finally in the last evolutionary horizon, fungi differentiated further according to the st+1 ecosystem in which they live into:

- Max. E: Water fungi mainly Chytridiomycetes.

- E=1: Amphibian fungi, mainly Oomycetes.

- *Max.I: Terrestrial fungi,* which evolved in the informative land medium, differentiating into:

- Max. E: Asomycetes, planar simple or subterraneous forms like yeast and truffles.

- E=1: Deuteromycetes, a transitional form towards...

- *Max. I: Basidiomycetes*, the familiar mushrooms, which evolved its 3 networks, developing:

Stronger cells to sustain their informative growth in the height dimension; and new reproductive systems with dry spores and new energetic cycles to decompose all kind of dying matter.

Animal life: Max. Information

The heterotrophic animal family *is born with protozoan,* which developed soft membranes and cilia to absorb living information from the outside world. To that aim cilia evolved again its 3 functions: as energetic, motion engines; as sensorial, informative tools and as predatory forms that capture food for the reproductive

cells of the protozoa. So once more we can subdivide protozoa in 3 sub-forms, according to its activity and dominant cycle:

- Max. E: Mastigophora, flagellate protozoan that divided, according to the fractal principle, by its number of cilia:

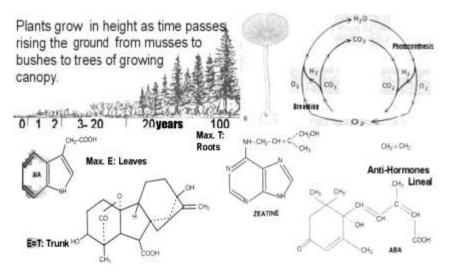
- Max. E=1: Sporozoan, parasites that reproduce seeds and have sexual differentiation.

- Max. I: Amoebida, the informative protozoan that increased their DNA and evolved farther their membrane's flexibility, becoming nervous cells able to control - thanks to their faster action-reaction speed- multiple cells, which evolved together creating multicellular animals.

Multicellular animals differentiated into many phyla, following the ternary, fractal principle (e-ixe-i) applied to the evolution of 3 cellular, social networks, the energetic, digestive system; the blood, reproductive system and the informative, nervous system, the dominant network that reached with man its evolutionary height. Then the morphology of life would be transferred to stronger atomic systems made of metal, called machines...

Recap.Different living phyla were born from ternary and complementary differentiations of e-exi-I species and adaptations to its st+1 ecosystems. The final differentiation its 3 multicellular life forms, e-plants, exi-fungi and i-animal life was due to the evolution of informative cells that organize multicellular life since animals use electric, faster informative languages and plants, slower chemical hormones.

VI. CHEMICAL VSELECTRIC LANGUAGES: PLANTS



In the upper center a practical case of relative diffeomorphism: The simplest unicellular plant-like organism, the acetabularia, shows its nucleus in the root, B, which will become the brain of multicellular plants, opposite to the animal upper brain coordinates. The opposition between both forms extends to the cycles of energy, as plants destroy water and produce oxygen; while animals breathe oxygen and produce water. Thus, both are

the 'particles' and 'antiparticles' of life.

19. Plants.

Languages of information, which code and express the biological arrows also evolve by ternary differentiation. For example, the human language, if we restrict our analysis to its vowels was born as a duality of an 'energetic' active 'a', which drove to action and an implosive, reflexive 'u', which drove to self-reflection (basic chimpanzee language). We might then imagine a 3^{rd} combination, or 'I', the creative i-dea, the 'I'-self, and two final 'modulations', the 'less energetic e' and 'less informative' o.

Those examples of the rich field of socio-cultural studies based in the ternary differentiations of the creative program of the Universe, are a parallel example to the simple 'vowels' of the hormonal, chemical language that controls plant growth with 5 simple vowels, drawn in the image.

The chemical language of multicellular organisms have a reduced vocabulary of 'yes' and 'no' symbols called hormones that inhibit or foster the natural cycles of existence of living beings; and define the speed of height growth of the plant.

In the graph, the 5 main plants' hormones are 5 simple vowels: 3 are cyclical, creative, informative, 'yes' hormones that reproduce the plant; and 2 are destructive, energetic 'no' hormones, with opened rings and strong, lineal carbon chains like ethylene, $CH_2=CH_2$, that inhibit growth. If we further divide 'yes' hormones according to the Fractal Principle and the 3rd postulate of affinity, we find that each one of them reproduces the plant's e-ixe-i element with similar structure:

- Max. E: The longest ternary form, rich in oxygens, Gibberine, develops the lineal trunk.

- I= E: The structural, cyclical form, Auxin, made of carbon rings, develops the leaves.

- Max. i: The informative nitrogenized Zeatine reproduces the brain roots.

Thus, hormones form a simple, ternary language that follows the rules of EXI cycles, controlling the living cycles of organisms by acting as messengers of the RNA-DNA brains of their social cells.

Plants Vs. animals: chemical language Vs. electric messages.

1. Energy organs: Leaves that perform the 'moving' energetic, photosynthesis cycle and branches that act as still structures and conductive systems of the energetic materials.

2. Informative organs: Root systems that absorb atomic, chemical elements and produce most of its hormones.

3. Reproductive organs: Flowers and trunks, the bodies that communicate leaves and roots and experience maximal growth.

These 3 organs define a plant as an efficient ternary st-point, a complex species able to colonize the ground with a clear evolutionary direction of height.

The interaction of the 3 hierarchical levels of life.

According to the i-logic laws of creation all organic systems require the co-existence and interaction of their 3 scales of social evolution or relative past, present and future hierarchical forms.

So the creation of multi-cellular organisms happens also simultaneously in 3 'hierarchical planes': the st-1, atomic-molecular interval; the st-DNA-cellular scale and the st+1 network-organism interval.

While the flows of temporal energy that travel through those different planes of existence follow the hierarchical law of illogic geometry: A fractal jump in geometric time or a movement in space extends only to the next discontinuous space-time scale.

So in any organism, the st-1 hormones (the molecular language that regulates st-cells), the st-genes (the information that transcends from the st-cellular DNA to the st+1 organism as a whole) and the seminal, palingenetic cells that give birth to the new being, program only their higher plane.

Hence cellular genes determine the biologic elements of the organism (the next scale of social evolution), but not the st+2 sociological scale of existence of a human being: chemical, racial genes do not determine history. At best we might consider that nervous networks determine the emotional character and intelligence of historic individuals, who might change the course of societies.

Let us study the structure of those 3 levels of hierarchical information that codify the creation of organisms.

20. Hormones: the language of cells creates its networks.

According to the fractal law, the language of regulation of social groups of st-cells are st-1 molecular hormones, which act as phonemes of a language spoken by RNA-DNA macromolecules, the informative networks of cells, which can manufacture them.

Languages are 'i-logic programs' structured by the same ternary topologies of energy, reproduction and information, facilitating the Universal understanding of its codes by other e, exi, I systems they code. Take the case of the key hormone of a human male, testosterone. It is a simple protein with 4 carbon, strong structural rings in a lineal shape that regulates, despite its simplicity, the reproductive development of energetic males, provoking actions of a complexity far superior to its molecular simplicity. How this can be possible? The answer is that the hormonal language is a relatively simple, positive Vs negative, 'yes Vs no' language that provokes or inhibits the 3±st cycles of existence natural to the will of the cells, proteins and nucleic acids it communicates.

But how hormones provoke so many different reactions in a cell, being so simple? The process of course becomes much more complex in their details as any language with a few phonemes can create very complex memorial, sequential sentences through the repetition of a few basic patterns. So for example some hormones are substances that inhibit the inhibitors of those existential cycles. On the other hand many hormones are transported by proteins, 'lineal killers', which modify them or 'motivate' other messengers of the cell or network system that carry further the message.

Thus the second translation of the hormonal message into a singular product of a certain cell modifies the message that becomes specific for that cell or organ. This is especially certain among animals that, unlike democratic, 'spatial', reproductive plants and fungi with a few basic tissues and a lot of generic orders, are hierarchical, temporal, complex systems with 2 informative languages: submissive, slower chemical hormones and faster, nervous orders. So hormones are created by neuro-secretory cells, part of the higher plane of existence of neuronal

networks, which pour them into the blood. And often they are accompanies by nervous messages, which they reinforce.

Thus, animal cells might recognize hormones because they know 'behind' their orders there is a very complex and powerful system: the nervous or blood system that has to be obeyed or else. Since the blood system sends leukocytes to kill rebel cells and the nervous system sends flows of electronic information to control them. It is the same reason that makes people obey simple codes like those of traffic. We obey because we know that behind those codes there is a complex organic system, the state that will send its police, its 'social leukocytes' and punish us. So the question is how a cell knows? Because its DNA has a degree of memorial, instinctive perception; *it is not a mechanism*

Despite all those elements of complexity, it is still possible to classify all hormones according to their spatial or informative, 'universal' morphology as 'inhibitors or agents' of the 3 basic cyclical actions of any organic system; since their morphology imitates or it is based in informative nucleotides, structural carbons and lineal, energetic shapes, whose functions are instinctively understood by all living forms as all animals understand black and white colors as relative information or energy, or 'aaarg', open vowels and bass sounds as 'energetic anger' and 'u' closed vowels and highly quantized informative frequencies as informative curiosity.

Thus, *invariance of form between scales allows the existence of languages* that are decoded as they respond to the Universal language of self-similar topologies of all forms of existence.

So according to duality, when hormones act as inhibitors, they have an energetic, lineal form; when they act as agents to foster those existential cycles they have a cyclical, informative shape.

Finally, according to the 3^{rd} postulate of parallelism applied to st/st+1 systems, their atomic components tend to be parallel to forms of the st+1 organ in which they accomplish their function. So when they act in the energetic zones of the cell or the macro-

organism they are hyper abundant in oxygen, when they act in the informative brain they tend to be similar to nucleotide acids and when they act in the reproductive zones, they have carbon rings and vice versa.

In the graph, those simple rules explain the 3+2 main types of hormones in plants:

-Max. E: Cyclical Auxin, rich in carbons, increases the growth of shoots, the energy zone.

-Max.1: Cyclic, nitrogenized Cytokinines control the growth of roots, the brains of plants.

-*E*=1: Oxygenated, Gibberellic acid causes high growth in trunks and reproductive flowers.

Ultimately in as much as most hormones and enzymes act as inhibitors, they prove that the 3 energetic, informative and reproductive inner individual actions of organisms are the natural arrows of all organic systems, the will of any species, that have to be constantly inhibited by the neuronal-endocrine dual logic system of multicellular control. Since when that control disappears, naturally species try to reproduce. That is why cancers and any other form of cellular reproduction are so natural; because *reproduction* is the natural will of the fractal, organic Universe.

Finally, the duality of the EXI systems and anti-systems with diffeomorphic, opposite coordinates creates inverse hormones that neutralize each other. So 'energetic hormones' inhibit 'informative regions' of the organism. For example, we can consider that form Vs anti-form duality, analyzing the inverse growth effect in informative roots and energetic leaves of the 2 previous hormones, auxins and purines. What we observe is a diffeomorphic, inverse dual EXI process: the auxin that increases the growth of shoots inhibits the growth of inverse roots. And so auxins and quinines together work as a perfect dual system of growth control in the informative zone of the plant:

The root is a nitrogen-based informative system, which as all informative entities from neurons to worm holes, requires a lot of time and complex steps to reproduce its form (Vre=E/I). So quinines, its growth hormone, acts by parallelism, since it has 2 purine rings with nitrogens that positively induce the complex growth of roots made with nitrogens.

On the other hand, auxins have a structure that closely resembles the main nucleotide species, the purines. Yet, auxins ad to the hexagonal-pentagonal structure of purines a simple protein tail to move faster, and instead of nitrogens, auxins have 2 strong carbon rings. So it is basically a false purine with a far stronger body and a mobile tail that substitutes the quinine's nitrogens and inhibits the root's growth, because it cannot deliver the proper instructions.

On the other hand, the ever-growing shoots are the plant's reproductive systems; whose natural will to grow is so strong that any hormone increases its reproductive rate unless it is inhibited.

If we study the energetic cycle of plants, again we observe that dual inverse control system: Abscisic acid (a lineal molecule with a lot of oxygen elements) provokes the fall of leaves, while the lineal gas ethane, CH_2 = CH_2 , increases by parallelism with the lineal CO₂ molecule their respiration and metabolic rate. Both are very simple, energetic hormones, which resemble the 2 'energetic' inverse products of breathing, oxygen and CO₂, 'reminding' the plant that it has to accelerate or halt to its 'death' its production of those 2 products.

Recap. A language of information is always needed to create a complex organism. The simplest languages have 3 or 5 vowels, that represent energetic, informative and reproductive messages and its variations. They act by parallelism, since all systems and planes of an organism follow the 'invariance' of form and function. They also can deliver negative or positive orders depending of their parallelism or inversion with the form of the species they code. The language is always reproduced by the informative 'upper-caste' particles of the system, which delivers the orders to the rest of the elements. In plants, the language is a

hormonal language with 3 main vowels, energetic auxin, informative cytokinines and reproductive Gibberellic acid.

21. Genetics.

An even more complex language is that of genetics, which we cannot study in depth due to restrictions of size of this lecture. Enough to say that in any efficient organism of multiple scales, the informative code, in this case the genes of biological super-organisms codify the multiple hierarchical levels of the organism besides the basic ternary code that constructs its simplest scales – in the case of life, amino acids. So according to the Fractal Principle there should be genetic languages with 3, 9, 27, 81 amino acid letters, which codify not only the proteins and cycles of the cell but those of the body. And so bigger sentences that group 9, 27, 81 amino acids should be coding 'bigger' actions and longer events within the complex cycles of the cell and beyond.

All languages are built in this manner. For example, the human language and the musical language follow self-similar scales of 'vowels' and 'consonants', informative and energetic units that then form more complex ternary systems, informative names, reproductive actions or verbs and energetic objects, and then group in paragraphs and so on. Even the language of film can be understood in frames, motions, shots, sequences and scenes.

In the same manner, 'introns', the so-called redundant DNA should have genetic meaning and codify the higher scales of organisms - its functional morphology.

Yet scientists believe in naïve realism. Only what they see with their instruments seems real; and so the obvious perceived genetic level is the fractal level of nucleotide triads that codify proteins. But those triads are united in groups of nine bases and so on, creating new, 3^n , memorial planes *that act as* complex genetic *forms of higher scales* - an i-logic, scalar concept which today genetics finally accepts under the name of epigenetics. The enormous quantity of 'redundant' DNA and RNA which grows exponentially with the complexity of a multicellular organism is a

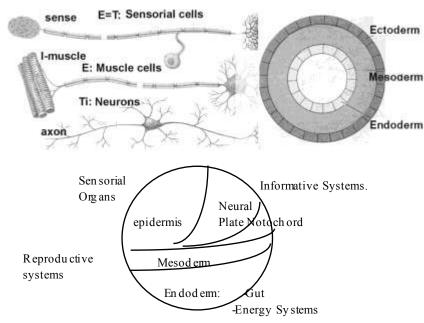
clear proof of the correspondence between the complexity of the sentences of the language/instruction chains and the complexity and size of the form it codes.

A fractal equation derived from the concept of a network, which has \sum^2 elements to control an \sum -body herd (and/or its self-similar \sum -limbs) defines in Theory of Information that the number of informative instructions needed to create a system grows exponentially, according to its number of dimensions or planes of existence: $\pm E^{st}$.

For example, to make a car we need E material parts, defined easily in a bidimensional plane with E fractal units of information: the drawings of each part. But we need around E^2 instructions to put those pieces together in a 3-dimensional form. Thus E^{st} determines the total number of informative quanta needed to build up a hierarchical structure extended through st planes of existence. To put a trivial example: Popular knowledge expresses that law in sentences like 'an image is worth one thousand words'. Since to describe with lineal, one-dimensional words a 3 dimensional image, we need indeed, E^3 , 10^3 =1000 words.

Thus E^2 is the number of redundant genes we find in the DNA-RNA systems of a complex organism, because *redundant, intronic* DNA codifies the creation of the new level of cellular complexity, st=2, the multicellular organism.

Recap. The old belief that a mere ternary amino acid code that creates proteins regulates the entire multi-cellular organism is just another simplifying conclusion of the one-dimensional, metric paradigm. A multicellular organism is regulated by intron DNA and the collective language of hormones that communicate those cells.



22. Differentiation of animal cells. Electric Neurons: amoebae.

The electric cell is the top predator animal cell, due to its Max.IxE force, with an overdeveloped E-membrane and Max. I-DNA content. It further differentiated into:

-E=1: Sensorial perceptive cells, which reproduce the external cycles of existence of other beings within its inner form.

- Max.E: Muscle cells that extend and implode its protein membranes.

- Max. I: Neuronal cells that process information in networks called brains.

Cells evolve ternary networks, which in its simplest fetal stage form 3x3 st-regions proper of all animal forms:

- Max. I: The ectoderm, which gives birth to the nervous, sensorial and skin systems of max. perception.

-Max.E: The endoderm, which becomes the digestive system and its derivatives such as smooth muscles, lungs, livers and glands.

- ExI:Max. Reproduction. The mixed, mesoderm region, which subdivides in 3 sub-zones: the reproductive, blood and muscular systems.

Thus in its emergence from cellular to organic scale, the 3 topological regions of the cellular blastula suffer an inversion of form: the center gives birth to energy systems and the surface to information systems, while the middle region maintains its reproductive function.

Animal eukaryotic cells were moving species that had to react faster to the changing environment. So they developed a new, faster, nervous, informative, electric language that created a top predator cell thanks to its accelerated fractal action-reactions to information and energy: the electric cell, able to organize socially other cells into multicellular organisms.

The electric cell evolved from the ameba, a unicellular animal with membranes adapted to all morphologies that were shaped into arms to capture food, cilia to perceive information, tails to move and vesicles to expel unwanted energy and information, thanks to the use of heavy, metallic atoms, Na⁻ and K⁺ that deformed those membranes, making them highly flexible: the duality of positive and negative metallic atoms created a deformed wave that moved along the membrane of the neuron cell, as any fractal wave of codified information does, becoming a new language, faster than the chemical language, talked by all other cells.

The combination of both languages, in a hierarchical scale in which electric, fast impulses provoke the emission of hormonal, chemical messages at the end of a long membrane that those chemical cells understand, allowed nervous cells to maximize its IxE force. Since now in the same relative 'time' that a small cell sends a message, the huge fractal action of the amoeboid neuron could send a wave of simultaneous messages through all its pseudopodia, coordinating at the same time the slow actions of a lot of enslaved smaller, chemical cells.

Thus the jump in size created a 'higher informative class' of macro-cells or brain of the animal that ruled a middle class of micro-cells or animal body, which together controlled an external energy territory. All those properties made the evolved, electric amoebae, the top predator cell in the Eukaryotic world. We still find those ancestral amoeboid cells in the most primitive multicellular sponges, evolved latter into the complex nervous cells of multi-cellular organisms.

Thus electric cells show Max. I x E force since:

- The nervous cell is able to control an enormous quantity of organic cycles with memories stored in its nucleus - since it is the cell with higher DNA density. So specialized neuro-secretory cells reproduce also the biggest number of chemical hormones.

- Such big volume of DNA implies also a great capacity to replicate its membrane, through micro Nyss cells that produce constantly membrane proteins, which are added to the external, ever changing morphological membrane.

Where did happen the transition from chemical to electric membranes? The evolutionary plan happens always in *isolated* environments in which mutational changes, *fostered* by the *specific characteristics* of the environment, take place without jeopardizing the survival of the species, due to the absence of top predators during the transitional, inefficient stage of the species that is 'adapting its form' at a *faster palingenetic time-speed* through *specific differentiations*, according to the i-logic *evolutionary plan*. The phenomenon is called evolutionary punctuation.

In the specific cell case, those requirements are found in shallow river mouths where changes in the salt concentration of water provoke by osmosis the constant expansion and implosion of the water content of cells and their membranes, bursting and killing 'rigid cells'. So cells, in order to survive, managed to create new membranes and deformed them very fast, expanding and imploding its form. Then, those new top predator electric cells started a massive reproductive radiation, expanding in all seas, feeding and enslaving other cells. The subsequent combination of top predator electric cells with other varieties of chemical cells, differentiated and evolved the first ternary scale of simple organic macro-systems: sponges (max.E), hydras (max.Re) and worms (Max.I) with a growing number of cellular types.

Recap. Multicellular species were born when a new top predator, larger and faster, Max. ExI, species, the nervous cell appeared, herding chemical cells and differentiating in 3 physiological cells in charge of future digestive, blood and nervous networks.

23. 3x3+st dimensions: Embryology & Physiological networks

We have described the 3x3+st dimensional tissues of living organisms in space. If we consider them in time, we observe a process of evolution that differentiate the original ideal spherical or spiralled st-point (seeds, cells, ovules) into complex morphological shapes, adapted to those inner and outer tissues. Thus living forms evolve and diversify, opening or invaginating their networks, organs and sensorial apertures to each specific ecosystem, which subsequently adapts the morphology of the cells and organs they control to the specific surfaces of their environments. So men, who exist on a planar surface, have a different morphology to the ideal spheres so common in water and space, which are 3-dimensional isomorphic ecosystems - as human evolution has adapted our networks and morphologies to the land-atmosphere environment.

In those different processes of ecosystemic adaptation the 3 dominant networks of living systems further quantize into secondary systems, departing from the 3 initial layers of cells. We can follow that process temporally in the evolution of the embryo that resumes the palingenetic evolution of life and spatially in the organic structure of living beings. It is the science of evol=devol that relates both phases of animal evolution, establishing a parallel correspondence between the spatial location of a tissue at birth and its functional evolution into i, e and E=I tissues. Thus according to their st-location the I-ectoderm evolves into informative tissues and networks; the E=I mesoderm into reproductive tissues and networks and the E-endoderm into energetic ones:

Max. i: Ectoderm: the 3 informative sub-systems.

The information network derived from the external ectoderm, dominated by neuronal cells, evolves and differentiates according to the Fractal Principle into:

- E-*endocrine* systems, with *internal neurosecretory* cells that control internal, cellular information through chemical hormones.

-E=I: *nervous* systems that control and replicate in a neuronal *brain* with the electric language all other functions and forms of the body.

- *I: Skin systems and outer senses, which are the openings to the world of the nervous system* through which the organism emits or absorbs energy and information, communicating with the st+1 ecosystem. Those senses specialize in perceiving the external, energetic and informative cycles of the beings that share the ecosystem of the organism, duplicating them in a series of fractal, quantized, reduced images, with different languages.

Why there are multiple senses illustrate a basic law of 'multiple spaces-times and points of view', the linguistic method that states a higher probability of truth is achieved with several perspectives on a certain system – as each point of view will create a self-similar image of the Universe, and so by comparing all those self-similar images we can obtain a more complex, kaleidoscopic image of the whole.

In living beings to accomplish the higher truth of each form through the 'linguistic method' sensorial languages multiply the perspectives on the cycle or form observed, extracting their existential properties, its form, density, force, etc. Thus senses and languages differentiated also along an $E \Leftrightarrow I$ arrow from pure spatial senses (eyes) to the most complex, temporal senses (ears), defining an evolutionary arrow of increasing complexity in their capacity to gather information, which often defined the survival capacity of the species, as senses are the key to interpret correctly the destructive or creative actions-reactions of all other beings. So from an initial simple phototropic stain, eyes, ears, antennas and mouths have multiplied, close to the inner, neuronal informative brain that processes their information, forming together *a 'head'*.

E: Endoderm: the 3 energetic sub-systems.

Max. E: The internal endoderm. Originally populated by *wandering amoebocytes* and *glandular cells* that digested food, the 'energy hole' of the first animals, sponges and hydras, invaginated forming the coelom between the endoderm and mesoderm that subdivides further into the 3 cavities of animal life: the digestive system, the breathing system and the heart cavity. The 2 first cavities evolved, surrounded by endoderm cells into 3 subsystems:

- Max. E: The *breathing system* gathers the smallest energy quanta, oxygen.

- E=I: The *digestive system* gathers bigger food quanta, differentiated morphologically in 3 new subsystems with linear, wave-like and cyclical components:

Energy network: max. E: linear intestine < stomach: elliptic exi > sensorial, cyclical Mouth: max.l

- Max. I: Glandular tissue: It forms organs dependant on the digestive system (liver, digestive organs, kidneys), that process their products.

E=I: Mesoderm: the 3+(st+1) reproductive systems.

The 3rd coelom cavity, the heart, surrounded by mesoderm tissue, invaginates further into very thin vessels, created with *striated muscles*, densely populated by the original wandering

amoebocytes reconverted now into *leucocytes*. In the *blood networks* the other 2 systems merge and pour their products: quanta of energy, oxygen and food; and quanta of information, hormones, which the system takes to each cell. The blood systems mixes both energy and information quanta. Thus, it is also the reproductive system by excellence with maximal contact with the intermediate region's secondary tissues evolved from the *mesoderm*.

- Max. E: The *skeleton*: It sustains the system and reproduces blood cells.

- E=I: *Muscular tissue*: The most resistant electric cells form a muscle dual negative-positive symmetric, spatial system with myosin cells that control the elongation and shortening of membranes.

- Max. I: *The blood and tegumentary system* that prolongs the blood network between cells.

- st+1: Yet the fundamental reproductive tissue is *the sexual, glandular tissue*, that reproduces the organism beyond the cellular scale and further differentiates into the basic E=male Vs. I=female duality of 'energetic and informative subspecies'.

Those 3x3+st standard systems and tissues, differentiated from the initial 3-layers of the embryo, define complex living organisms. Yet those organisms exist also in an external world where they become individual quanta, performing external cycles of energy, reproduction and information, parallel to those internal cycles performed by its cells and fractal networks. So all organisms have also an external, vital territory within its ecosystem to provide for their internal 'mirror' networks.

Recap. The ectoderm, endoderm and mesoderm topologies of the embryo, guided by top predator nervous cells differentiated into the e-exi-i main systems of the adult organism.

24. Creation of a 3x3+st decametric scale of cells and tissues.

Such processes of cellular diversification, guided by the informative elements of the system (frequencies, genes, memes, etc.) happen in all systems of space-time that differentiate according to the ternary method its relative fractal cells in $2x^2$ complementary systems or $3x^3$ organic systems (particles in the atomic nucleus, vowels in languages, etc.).

In this manner simplex systems evolve into complex ones; complementary dual systems become ternary, organic systems; bidimensional systems becoming 4-dimensional systems and ternary systems become 3x3+st systems, emerging into a new scale. And this process takes place in time through 3 ages or horizons that complete the evolutionary process.

In life this happened through a diversification of cellular languages that evolved from 1 to 3 to 5 to 7 to 9 forms according to the 3 time horizons of all EXI cycles, latter re-ordered in space in 3 e-exi-i types of organisms.

Since morphologic differentiation occurs only among the top predator, informative organisms of any ecosystem, we could establish a comparative homology between many of those processes. In the biological scale, it happened with animal cells; then with networks of cells in complex vertebrates; and finally with verbal sounds among human beings - a new language which, unlike neuronal impulses, could breach the discontinuities of airspace between individual humans, creating a higher scale of social, living networks, cultures and civilizations. Then again, those differentiations happened in the memetic systems of the dominant, technological civilizations that created the Financialmilitary-industrial complex and its metal-memes of informative money, energetic weapons and reproductive, organic machines... Since evolution is a morphological game that didn't stop with the summit of carbonlife man, but now continues in the new species of complex metal atoms to which humans are transferring their form.

Let us see the first of those ternary scales - animal cells evolved in time to analyse then the 3 'animal phyla' they created in space:

The 1st scale: from 1 to 3±st electric cells.

-st-1:Electric wandering amoeba, differentiated in $3\pm$ st subspecies:

- Max. E: Muscular, myosin cells that maximize the flexible properties of the membrane.

- E=I: Sensorial cells that reproduce their external cycles of existence with their mimetic forms.

- Max. I: Informative, neuronal cells.

-st+1: Those 3±st specialized types of electric cells, multiplied and evolved socially into dense tissues and networks in which one of them is dominant: the blood vessels dominated by wandering amoebocytes; the muscular tissue dominated by the myosin-actin inverse lineal proteins; the senses dominated by sensorial cells and the brain, dominated by neurons, which act as the communicative consciousness of all other systems (st+1). They form the 3+st physiological networks that defined the specific space-time equation of all complex multicellular animals:

E: Σ amoebocytes & Blood Systems <Muscular cells > Σ sensorial & nervous system: *I*.

From 3±st to 5±st cells.

In the next stage of cellular differentiation the 3±st electric cells, tissues and networks added slave chemical cells that stretched their energy and information limits:

The sponge, the first animal phyla, dominated by wondering amoebocytes adds 2 slave cells that increased the IxE force of the energetic membrane and the informative singularity:

- Max. E: Epithelial cells of max. energetic strength made with proteins and incrusted with heavier non-organic atoms that protect the organic system, through a shielded external membrane. Later on in more complex organisms those cells evolved into inner bones and breathing systems.

- Max. $E \times I$: Glandular cells able to reproduce specialized energy and informative substances necessary to the other cells that multiplied in the intermediate st-region of the body.

That pentagram of 3±st differentiated electric cells and 2 basic slave cells, quantified in social groups, shape the 5 main organic systems of animal bodies:

a) Max.E organs: Membranes made mainly of epithelial cells that create the skin, the discontinuity between the st-point and the external world and the digestive system...

e) *E: Muscular systems based on electric myosin cells* that turn energy into movement.

i) E=I: Wondering amoebocytes reign as leucocytes on the blood networks.

o) E=I: *Internal glands*, attached to the blood, reproductive and digestive, energy networks that reproduce the substances, which the organic system needs.

u) I: Sensorial organs based in *electric cells* that perceive information about the cyclical actions of the outer world and translate it into mental images. They will guide the actions of...

st+1 =Aeiou) Max.I: *Neuronal brains* that control the entire organism as the consciousness of the system, according to the existential actions those senses observe in the external world.

Thus in living beings as in any universal system, time dominates space and so the informative, controlling orders go from sensorial to energetic cells, shaping the outer, muscular movements: I>E.

Those 5+1 cells and 5+1 basic organs are present in all forms of multicellular life since they are closely related to the 4 + st-generational cycles of exi=stence, each one dominated by one type of cell and organ: Max. E, digestive organs and cells absorb energy; E, muscles that emit energy; E=I, blood networks and glands that reproduce the system; I-senses that absorb information and Max. I brains that emit information and control all other

cycles, perceiving the entire organism as an existential whole, living the entire generational cycle of the organism.

It is for that reason that we find also 5 vowels in human languages, 5 lines in the musical pentagram, 5 cells and types of tissue in the simplest organisms, etc.

Decametric scale: invaginations and st+1 excretions.

Any organism is an inner st-world that exists in an external st+1 ecosystem developing inner and outer cycles of recollection of energy and information. So the final diversification occurs along the inner-outer duality of the organism in order to accomplish those 2 x 5 inner and outer cycles. Now the pentagram evolves into 9+1 cells and types of organic tissues that stretch again the cellular field according to that inverse symmetry between the external and internal world, as cellular tissues invaginate or eject their cells perpendicularly in the height dimension of evolution:

- Thus *inner skeletal and outer skin cells* differentiate the structural tissues of sustain.

- Membrane cells *differentiate into inner blood* and outer *lung* cells that process internal and external energy.

- Internal, creative glands and external, destructive urticaria *cells* reproduce informative and energetic substances.

- Digestive and muscular cells create inner and outer motions.

- External sensorial cells process external information.

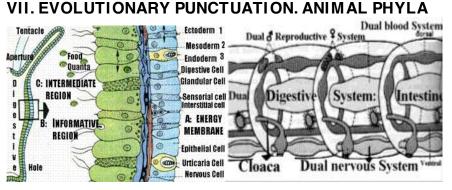
- Internal neurons control the internal information of the organism with the electric and chemical language provided by hormonal, *internal neuro-secretory* cells, dominating all cells.

The result is the creation of 9+1 types of tissues that are found in the most complex animal forms of life and become the 9+1 standard 'systems' of the most complex living organisms:

The *digestive and muscle* system, the *skeleton and tegumentary* system, the *blood* and *breathing* system, the *reproductive* and *excretory* system, the *endocrine* system *and the nervous* system,

the 10th system that controls the entire organism duplicating in the brain all other organic functions it directs becoming the st+1 scale that puts together the organic being.

Recap. The 9+1 physiological systems and tissues of an organism are born from the 3x3+(st+1) 3 horizons of differentiation of its cells.



The Hydra is a new living phylum with 5+2 cells distributed in 3 regions, common to all palingenetic, foetal forms:

- Max. E: The ectoderm is the external, energetic membrane with the hardest cells: the hard epithelial and aggressive urticant cells that explode its poisonous cilia and the interstitial cells that ensure its continuous isolation.

- Max. I: The mesoderm is the informative region, with nervous and sensorial cells.

- *E*=1: The endoderm is the intermediate region with glandular cells that digest food quanta, entering through the mouth.

The worm is the 1st network animal, made of a lineal wave of \sum parallel organic spheres, each one a st-point with 3±st dual networks: The nervous, blood and digestive/excretory systems, which accomplish the emission and absorption of informative, reproductive and energetic cycles.

25. Network evolution: bodies, brains & reproductive systems

It is then evident that the evolution of animal life creates new phyla, based on the capacity of the new species to accomplish their external cyclical actions on their territory, thanks to the evolution of their internal and external networks.

The interaction between those 2 levels, the st-1 level of physiological networks and the st+1 level of ecosystemic territories determine the existence of most organisms. So the evolution of life on Earth, externally observed in the ecosystems, territories and relationships of living animals, which depend ultimately on their capacity to handle temporal energy coming from light, is caused internally by the evolution of those 3 types of organs and internal networks: reproductive, genetic organs; informative, brain organs and energetic, body organs.

When one of those organs evolves, improving its capacity to handle energy or information coming from the ecosystem, a fundamental differentiation of species occurs. And we can consider the evolution of the main phyla of animal life in a deconstructed manner, as a process that evolves sequentially those 3 types of organs:

The evolution of those three organs triggers the biological radiation of a new phylum that prevs on less efficient forms of organic life. The process is very fast, as time can change its rhythms and adapt to the best strategy of survival, as palingenesis shows. It is called Evolutionary Punctuation: when a new species with better energy or informative organs appears, it feeds on other species and reproduces massively causing the extinction of the previous top predator species, till it reaches a trophic balance with those victims. It is the essence of Darwinian evolution: 'evolve and multiply'. We can find such catastrophic evolution in many geological and organic ages of the Earth: First animals displaced plants because they evolved better informative networks. Plants could only gather energy from light. Animals could 'see' light and get information about their environment, and act-react faster. They used plants as food. Then animals 'radiated' (multiplied) all over the Earth and diversified. And each new phylum with improved networks displaced the previous ones. Thus once more, the

evolution in time of living organisms and its spatial structure are intimately related.

Thus, the first ternary evolution of multicellular life created 3 phyla of increasing tissue complexity that completed the evolution of animals from the st-1 cellular tissue to the st-network scale:

-Max. E: The simplest animal organic systems, sponges and *porifera*, which are basically a digestive system.

-E=1: The balanced animal organic systems, the *coelenterates* such as the hydra, which maximize its reproduction through the split of its cells.

- *Max. 1: Worms* that add informative cells and differentiate clearly its 3 physiological networks.

They were the first of many ternary E-exi-I rhythms of creation in the animal kingdom that evolve from energetic, to reproductive to informative sub-species, through the 3 horizons of any phylum, with a parallel improvement of the 3 network systems of the animal, which from now on will be the higher 'scale' of existence to which all cells become submissive.

Since as the new animal forms multiplied, their informative nervous networks controlled a growing number of cells through their fractal, simultaneous actions; and so they also grew in spatial size, multiplying their IxE force. It means they had to re-organize those cells beyond their initial division in simple tissues, creating specialized 'energetic, informative and reproductive networks'.

It will be the definitive jump from the state of 'cellular herd' to the state of 'organism', the 3rd age of a social form that evolves from a I horizon of individual 'energy quanta' to the balanced herd that fluctuates between 'wave and particle' state to the informative state of a tightly packed organism which those networks maintain together in minimal space. And so from then on evolution will be no longer differential evolution of cells but differential evolution of networks... Sponge vs. Hydra: cyclical-lineal digestive networks.

The evolution of multicellular organisms started with the creation of social, digestive, energetic tracts made of the pentagram basic cells that came together to improve the cyclical fractal actions of the group. The first of those organisms was the sponge, the first animal phylum that emerges from the previous cellular scale with 5 types of cells.

-Max. E: The sponge has *flattened epithelial* cells and *hollow pore* cells, which are external, membrane cells differentiated by their inner and outer location. They are the primitive versions of skins and breathing systems.

- E=I: *Mesenchyme cells* that secrete siliceous spicule, strengthening the walls of the sponge. They are the primitive version of glandular cells.

- Max.I: Central top predator cells: *Wandering amoebocytes* that herd food for the five types of cells, moving around between the other cells to capture the particles entering the hollows of the spherical sponge; and *collar cells* that sense water flows, beating their flagella to produce a flow of water that introduces food in the sponge. They are the primitive versions of brain and sensorial cells.

Further on, we differentiate in the sponge 3 st-regions according to those 2-1-2 kind of cells: *the external membrane* of hard cells; the inner, *glandular, intermediate* region that reproduces the specific substances of the sponge and the *central hole* where *informative* cells wander. The 3 regions create the 3±st vital cycles of the sponge thanks to those 5 cells:

- Max. E: The sponge *feeds* on energy quanta that enter its central hollow.

- Max. i: It *perceives* those quanta as its collar cells sense the water flows.

- E=I: It *reproduces* new cells through its glandular systems.

Let us see now in detail those main phyla differentiations.

- Σ : It keeps together those cells *in social groups* thanks to the epithelial cells of the membrane that maintain a rigid, enveloping structure.

- $\Sigma E \Leftrightarrow \Sigma^2$ i: And so the sponge *exists* as a whole being controlled by the wandering amoebocytes, the dominant, informative cells that use the sponge as their *territorial* body, their vital space.

Those amoebas will be also the dominant cells of the next animal phylum, Coelenterata (hydras, jellyfishes), evolved already into electric cells, and hence connected into the first 'nervous tissue'. So they will become the 'st+1', existential system where the consciousness of animal organisms as a whole exists.

The 7 cells of hydra and their networks.

Those hydras add 2 new cellular, energetic specializations, extending morphologically the IxE force interval of animal life, from 5 to 7 cells:

A): MAX. E: The epithelial cell. A still harder, internal tissue that maintains the rigid structure of the animal and will evolve into armours and bones. And...

ei) Ei: The *urticant cell*, an external, energetic differentiation of the reproductive, internal *glandular* cell, which produces poisonous substances to defend the animal.

Both are created through the inversion of directionality of its twin cells: the internal glandular cell becomes now an external form, and the external epithelial cell becomes an internal cell.

Those 2 final tones of specialized energetic cells make the hydra a natural born top, lineal predator, the next evolutionary step that inverts its form from a cyclical sponge to a lineal, reproductive body. Thus the complexity of the Hydra grows, shaping definitely the 3 E-exi-I organic st-regions common to all living beings (mesoderm, endoderm and ectoderm), which will vary in morphology and complexity but not in their ternary functions.

Further on coelenterates bring to animal life the maximization of its reproductive systems. Both the sponge and the Hydra lack a specialized blood, hormonal system, so its reproduction is far simpler than in evolved organisms: each cell is in itself a 'genetic mother-cell', which stores the information of the entire organism. This implies a limit to their informative evolution, as cells have to keep an excess of redundant information, according to the $E^{st=2}$ law that increases geometrically the number of genetic instructions needed to create the new st=2 multicellular plane of existence. On the other hand, it makes easier reproduction: any section of the Hydra can create a new animal. The result is that the arms of the hydra, where most sensorial cells are, break away easily, moving with the streams of water, reproducing new hydras all over the world. Yet some tentacles fail to reproduce evolving instead into planarians, the 1st worms, which will acquire 2 new informative cells, completing the 9+1 decametric scale; and developing fully the 3 physiological networks of complex animal life.

Worm: 1st animal: mobility, senses, 4-D, networks.

Thus, the next step in the evolution of life, after the hydra develops 2 new energetic cells, will be the evolution of 2 new informative cells. They will create a new phylum, the worm:

- Visual, spatial cells that perceive light-space.

- *Temporal, auditory cells* that perceive the sound waves and informative languages of animal life.

Those 9 cells complete the differentiation of cellular species that a growing st+1 neuronal, inner center - the brain - elaborates as the consciousness of 'the whole' increasing ever since its size till acquiring the weight of the human being.

Those informative cells were necessary to the new environment of planarians, which are in constant movement; hence have to orientate themselves in the ocean flows in search of energy. Since the change from stillness to movement is a fundamental change for life beings, which definitively transform all its elements to the properties of animal life:

- The new informative cells create new apertures, the senses, that gather in the frontal zone of movement, the relative height of

the worm, creating '*heads*' that will also control the energy apertures of the *body*, splitting clearly the organism in an energetic, moving body and a sensorial head, which controls the information and energy of that body.

- Animals become *bilateral* in order to dominate the *2 directions* of its initial *bidimensional* planar form: *a hierarchical, temporal dimension* from the future informative head to the past, energetic tail in which they orientate their organic, inner, evolutionary morphology and *a perpendicular*, parallel, equal, repetitive, 'present' *spatial dimension*, from left to right in which they orientate their reproductive, fractal, cellular 'fat' growth.

So embryo worms develop 2 bilateral cavities or 'coeloms', latter evolved in dual organs, which in the head will observe the 2 directions of their spatial field: 2 eyes, 2 ears, etc - while in the body, inner organs will also double, creating in more evolved phyla a certain EXI asymmetry with slightly more 'energetic' and 'informative' sides. So the heart will have an explosive and implosive region; sexual organs will become I-feminine and Emasculine; the brain regions will specialize in spatial and informative tasks; some crabs will develop energetic and manipulative arms.

Thus the 1st worm, the planarian, created a diffeomorphic bidimensional structure with 2 EXI perpendicular planes that all future animals will imitate.

In the graph we study the inner structure of the worm, because it shows already some of the dualities, fractal strategies and future arrows of life evolution that will act on different phyla to diversify and evolve their species:

- The worm is divided in fractal units, setting up a basic duality of living beings that sometimes are 'herds' of individual organs, multi-eyes, multi-bodies and sometimes fusion all parts into a whole. - It shows perfectly differentiated the 3 physiological networks/ dimensions, proper of all advanced organisms that mimic the 3 regions of a st-point:

- *E: The worm absorbs energy through the digestive network* and emits it through the excretory system; which in the worm occupied the original endodermic, central singularity. But as animals evolve informatively as chordates, the center will be finally occupied by the nervous, informative system as in any other st-point.

- 1: The worm absorbs information through the senses and emits it through the nervous system. The informative brain and nervous system directs the entire organism and unifies its cellular quanta as a whole. The nervous system further differentiates into the sensorial, nervous and neuro-secretory systems, when the planarian adds eyes and ear systems that represent a jump in complexity over the informative systems of the hydra. It defines also a head in the dominant, temporal dimensionality of movement. In the planarian is still length, which will rise till reaching the height of man.

-E=1: The intermediate region of the worm is controlled by the *blood system*, the fundamental dual transport system of the worm, where the neuro-endocrine glands dependent on the informative system, pour their reproductive hormones while the energy/digestive system pours its organic food.

The worm represents a jump of complexity in transport systems as it uses for the first time, organometallic molecules (hemoglobin) to harness oxygen energy and quantizes the blood network, which now arrives to cells far away from the digestive hollow. So worms can grow in size and energy power respect to the previous coelenterates. Now energy and information combine together on organs and glands dependent on the blood system.

The most important ones will be the new reproductive, specialized sexual glands, differentiated into dual, female and male sexual organs that make worms, hermaphrodite systems. Sexual organs again represent a fractal jump in the evolution of life. Since now, unlike in hydras, single specialized sexual organs will reproduce the living animal, increasing the sophistication of the process and liberating from those complex tasks all the other cells, which can specialize further.

Still many worms can reproduce by both systems: segmentation and sexual reproduction, which in new phyla will become the only form of reproduction, splitting organisms in 2 different sexual genders, the male and the female.

From worms to vertebrates: 3±st ages of fractal integration.

The evolution of worms into vertebrates is a long process of 3+st phyla differentiations based on:

- E: Spatial, I-radial or E-bilateral symmetry.

- \sum Re: Fractal numbers that foster hierarchical e-exi-i segmentation and differentiate big unitary animals and small animals made of fractal parts.

- I: A constant increase of dimensional height.

- +st: The evolution of its 3x 3+(st+1) physiological networks.

The first massive differentiation will take place in the Cambrian age, according to the *Black Hole paradox* that evolves faster 'smaller forms, denser in information' than bigger, spatial forms. Thus in the Cambrian age most phyla evolved from small trochophores of ancestral flatworms that gave birth to new phyla during its 'palingenetic larva, conception stage', according to the Fractal Principle:

So we can first differentiate the worm phylum into 3 fundamental phyla with intermediate forms:

- Max. E: *Platyhelminthes*. the simplest worms are flat, bidimensional planarians without blood systems that still require all cells to be close to the skin surface of the animal to exchange oxygen with the air.

- Max. I: *Nematoda* or round worms, which develop a dimension of height as they add the blood system with its fine vessels that carry energy to each fractal cell.

- E=I: Max. \sum : *Annelida* or ring worms, which reproduced a micro-worm unit, as crystals do, into a series of fractal pieces, growing enormously in size. Thus Annelida became the worms with higher IxE force radiating and diversifying in 3 sub-classes according to its territorial environments:

- Max. E: Polychaeta or marine worms.

- E=I: *Hirudinea*, living mainly in shallow or fresh waters. They are leeches that feed on blood and might in their initial forms feed on waters rich in metal, creating the first blood systems.

- Max. I: *Oligochaeta*, terrestrial worms that evolve further due to the new challenges imposed by the ground environment.

Annelids, the dominant phyla, diversified and multiplied into multiple types of bilateral animals, with a central cavity and 2 coeloms that evolved further its dual organs and 3x 3+(st+1) network systems. The first of those differentiations gave birth to the main animal phyla that will dominate the following life ages of the planet in 3±st periods, which took place according to ternary differentiation, as evolution puts together fractal 'organic' units into single unified systems:

- (st-1): The worm's body is divided in fractal elements which are still independent elements with entire 3 functional subsystems: each section has 2 reproductive organs, 2 nervous ganglia, a digestive tract and excretory anus and 2 upper blood nodes.

- Max. $\sum 3$: Arthropods keep the earlier segmentation of annelids, but they organize those fractal segments into 3 differentiated zones, with several independent sections that go from 3 to 21 parts:

A sensorial, informative head (Max.I); a central thorax with moving limbs and wings (max. E) and an abdominal region with the glandular, digestive and reproductive systems (max. E=I).

- E=1: Molluscs have balanced, hierarchical, single organs. As the 3 physiological networks evolve and become quantized to reach each cell, the different sections of the i-head, e-thorax and exi-abdomen fusion together. Now the quantification process is transferred to the ends of those physiological networks: axons, blood vessels and digestive tracts become thinner to improve their control of individual cells.

- *Max. Informative Evolution: Echinodermata.* Echinoderms fusion those organs into single systems in the stillness of the marine platform, where they became the most successful forms.

- st+1: Chordates: vertebrates. Echinoderms in its larva, moving stage, according to the Worm Hole paradox, give origin to chordates, the 1st vertebrates. In both phyla the small organs of each arthropod's section fusion into single, continuous big organs, thanks to the integrated evolution of the informative nervous system that aggregates the individual cellular quanta into those specialized organs. So the multiple eyes of insects become a single eye; its multiple hearts a single one, etc.

Though all those phyla appeared already in the Cambrian their sequential dominance on the Earth is parallel to those previous $3\pm$ st ages, since the simplest forms, arthropods and molluscs, reach first the summit of their evolution (Max. E=Min. I), while complex chordates took a long time to reach its evolutionary height and became dominant latter as fishes and reptiles.

Recap. The differentiation of cells into 3-5-9 forms allowed the creation of complex multi-cellular organisms, first dominant in digestive systems (sponges), then in reproductive systems (Hydra) and finally in informative systems (worms). From the worm on, all living animals will be defined as st- points with 3 inner networks/dimensions, which will create in the outside world 3±st

cyclical actions, designing an external territory also with 3 networks/dimensions.

26. Arthropods. The new social scale of superorganisms.



On the center, we see the 3 ages of an insect's metamorphosis from larva to chrysalis to adult. They differentiate in '3 lives' the existence of most insects that develop sequentially their 3 main organic regions and networks during each of those live.

On the left, according to EXI duality, the final results of those 3 temporal ages are the 3 regions of a topological insect:

-E: The digestive and dual respiratory systems, dominant in the larva, are the energetic networks, located in the center of the body, shaped as a spiral.

- I: In the belly we find the finest and more quantized nervous informative network, developed during the chrysalis life.

E=1: Finally, the reproductive, hormonal network, exi, pours into the blood system, which dominates the 3^{rd} life of the insect, in the external world.

On the right, the social classes of insects, like those of a human society, correspond to the 3 organic function of a new scale of existence, the superorganisms of insects, its st+1 system: Termites have an informative brain, the pheromonal queen (c); a re=productive class of workers, which produce the structures that create the ant-hill (a) and an energy class (b), the drones and soldiers, that have a linear, spatial morphology.

The first arthropods, derived from Annelida were probably trilobites, which protected their bodies and heads with external hard shells. Trilobites increased their energetic force, maximizing the strength of its membranes. They probably responded to the increase of IxE force caused by visual cephalopods, which maximized their informative organs. And so the game of life raised its fractal force, balancing again the top reproductive body membrane and top informative, mind singularity.

Today, according to duality and the Fractal Principle, we differentiate arthropods in sea animals (the most efficient of which are crustaceans) and land animals, which became dominant and evolved towards new informative species as all air or land forms did in a light-friendly environment. So again we differentiate them in 3 basic forms:

- Max. E: Myryapoda, with max. body development and multiple feet.

- E=1: Arachnida, the balanced species.

- Max. 1: Insecta, the informative class with max. brain development, which are still the most successful animals on this planet in the microscopic level of chemical life. Since they completed the organic evolution of chemical animals towards its most perfect form in 3 evolutionary phases.

Max. E: The evolution of energetic systems brought about the first flying animals that colonized a new environment.

Today flying insects still account for 1/2 of all animal classes. They made energetic networks the center of its body, developing on their middle region a highly efficient muscle and blood systems, with 2x3 wings and legs.

E=1: The second evolutionary jump occurred in their reproductive systems.

Insects learnt how to accelerate temporal evolution in a still, temporal state (Min.E=Max.I), changing from energetic, lineal larva to chrysalis that emerged as complex insects with highly developed informative heads and energetic wings. Nowadays 90% of the surviving insects come from species that evolved its

generational cycle, dividing it further into 3 evolutionary phases that shape the metamorphosis cycle:

- Max. E: Insects live their youth as an energetic, lineal *larva* that merely feeds and grows in size. A larva is a sort of moving egg that gathers vitellus in 3 sub-ages in which it changes 3 times its skin as it grows in size. In this phase the insect develops mainly its abdominal, glandular systems that will produce the enzymes needed for its first metamorphic change into a:

- E=I: *Chrysalis*. The intermediate *Chrysalis* age is a 'frozen' vision of the most surprising facts of palingenetic evolution and inverse differentiation: In an ever moving Universe, external, spatial immobility triggers internal change in the speed of informative evolution, as outer movement is transferred to inner cells, rich in enzymes that become the dominant cells of each section of the adult insect, moving and reorganizing their tissues through a series of inversions and evolutions of its morphology. So central tissue ex-vaginates as wings or legs, etc.

A similar inversion happened when mobile trochophores in their larvatic transition became still echinoderms, which evolved and differentiated further, causing the explosion of chordate's phyla that happened in the Cambrian.

In those trochophore embryos, inner dominant cells also reorganize the different tissues, placing the other cells at will. So chrysalis evolved the middle thorax section and brain systems, becoming:

- I: A hard insect with Max. IxE force (a harder E-exoskeleton and a far more developed I-brain) that will live the 3 usual phases of life.

The third mutational age of insects was informative:

Insects learnt to communicate socially through chemical, pheromonal messages, giving origin to ants and bees, the dominant ground and air modern insect species. It was again an evolution departing from very small forms, according to the Black Hole Paradox. Today the smallest organism is an ant that weights 10^{11} times less than an elephant, the magic fractal number, S^t, between 2 scales of existence, which is also the difference of weight between the smallest and biggest particle of the physical world. So the fractal limits of 'informative scalar growth' have been reached in both, the physical and living realms.

It is worth to notice that insects have not evolved further in the last 100 million years, but are still the most successful chemical beings. Because the game is fractal and so it always has an evolutionary limit based on its ternary ages. For that reason, once reached the 3rd formal age of max. information only social evolution into a new macro-organic plane of existence can improve the survival of a species. It is what happened with insects that became super-organisms called anthills. And so ants became the most successful animals of the chemical world as men will be in the electronic world, due to the fact that they act as a simultaneous, present form, sum of all the fractal actions of the herd, guided by their informative common pheromonal language, spoken by the 'queen-brain' of the anthill. It is also worth to notice that in both realms - the world of chemical insects and the world of electronic humans -we find the same 3 organic classes proper of any Universal system.

Recap. Insects became the most successful chemical species, when they evolved into social super-organisms, with the informative ant-queen brain, which controls with pheromones the workers that reproduce all the elements of the ant-hill and the energetic warriors that defend it.

27. Molluscs, the first eyes.

The next successful phylum, molluscs also suffered a ternary differentiation. Thus molluscs today are classified into 3 classes:

Maximal energy: Lamellibranchiata (which are big stomachs).

Balanced forms: Gastropoda.

Max. Information: Cephalopods, which developed the first eyes.

Though there were other primitive molluscs, today almost all of them belong to those 3 species. It proves that even though a stsystem essays many variations, the 3 sub-classes *of max. energy, max. information and max. reproduction* survive better; because any environment allows those 3 classes to find specialized econiches in which to maximize their existence and resources.

The most successful of all gastropoda were again the informative class, cephalopods, the first living animals with complex eyes. If we observe animal life, the key to its evolution is the improvement of its virtual worlds, of its informative organs:

In the first forms of life, perception was chemical, olfactory based in slow, short-range molecular quanta; until the first eyes appeared, inaugurating a new virtual world, made of smaller, speedy photons that create long range, detailed light images, making cephalopods act-react faster and farther than any other animal.

Squids were born in the abyssal ocean ecosystem, where still the biggest squids exist (over 10 meters long). It is the kingdom of bioluminescence - a new language based in the Universal code of colors; they were the first to interpret. For example, when a squid becomes red, the color of energy, it means it is angry. Those first primitive cellular eyes had to look hard to see their environment and the prey they sought. When they came up to the surface they saw even more and preyed on blind, energetic phyla. Today squids are still among the most intelligent animals, showing some self-consciousness.

The squid is the first eye-world; a new informative language that will completely changes the stakes of living organisms. The organs of perception of the squid, the eyes, were a new Top Predator language, superior to olfactory organs, both in detail and range. The effect of that linguistic superiority was the massive radiation of squids and the parallel extinction of perhaps 90% of the smelling species of the Cambrian that became their preys. Those eyes enabled cephalopods to become the masters of their Universe, building all their other organs around their superior organ of perception: their tentacles became hands for the eye; the body became a canvass that changed color to interpret the new language.

Cephalopods also caused the arrival of exoskeletons in a classic process of action-reaction; only those olfactory animals with external protection (Max.E) could survive the faster informative eye of the hunter (Max.I). Thus the Cambrian holocaust also diversified life.

Those cephalopods with eyes became top predators in the Ordovician age, the age of squids. In this manner chemical perception left way to light and sound perception that developed highly sophisticated neuronal cells, which reach 2 meters in some squids.

Yet, when vertebrate life begun the 'hard shells' of some echinoderms sustained those long neurons, protecting them and allowing further quantification. So an energetic top predator found a cyclical protective form, in a dual game of evolution of prey and predators that will be carried till humans appear and beyond through the evolution of weapons and shields.

Recap. Cephalopods raised the stakes of the game of existence, of survival and extinction, as they imposed a *faster speed of action-reaction, and a bigger spatial size, hunting in herds communicated through visual body languages.*

28. Echinoderms and Chordates Evolution of vertebrates

Echinoderms, like ancestral cephalopoda, lived in abyssal regions originally fixed to the ground, in an 'informative environment' based in stillness with a lot of 'free time' to evolve further, as squids did in abyssal quiet regions or monkeys will do latter in quiet trees. Echinoderms became informative top predators because they evolved 2 new EXI characters as 'still', temporal forms:

- Max.I: Radial symmetries, like in the pentagonal starfish, which fostered the development of a better neural system with a central informative singularity to coordinate the 5 radial nerves.

- Max. E: The first inner bones, to sustain their complex form.

Thus echinoderm increased their IxE force, evolving into the first vertebrates: Chordates were probably born, according to the Black Hole paradox, due to a palingenetic error, when echinoderms remained in their larva, trochophore, informative, evolutionary state, surviving, despite its smallish size, thanks to their 2 new ExI advantages, starting a new biological radiation. Their single nervous system protected by a spine, became a very dense, structure with a hard, inner bony membrane of sustain that allowed its growth in spatial size and temporal complexity, as neurons quantized further, differentiating from tail to head into an EXI tree-like structure:

Max. energy (nervous, linear spine) > Round, spiralled brain.

The ancestral Chordates differentiated according to the development of their growing informative nervous network into:

- *Max. E: Lineal Protochordate*, the oldest species with 3 basic forms, diversified along the path of increasing mobility: sea squirts, acorn worms and amphioxus.

- *E*=*I*: *Cyclostomata*, (jawless fishes), which grew in the planar dimension of energy. And so it came an age of sharks.

Those 2 first forms are still planar in form, with minimal development of their 'round' brain and hence with overdeveloped olfactory systems.

- *Max. 1: Pisces* (true fishes). They grew in the dimension of height, with new evolved sensorial, informative organs. They became the new dominant species that diversified once more, this time along the st+1 evolutionary path of environmental adaptation in:

- Max. E: Sea chordates, with several varieties that reached its evolutionary limit with Teleostean.

- E=1: Sea-land chordates, amphibian, an animal that mixes the palingenetic characters of those 3 environments during its 3 ages of life. Since it is born as a sea animal, lives its youth in between both environments and dies as a land animal.

- Max. I: Land chordate, reptiles, the most informative that diversified further.

Recap. The response to the eye language was protective shells that surrounded the nervous system of chordates, allowing their growth and invasion of the air-gast and land-solid ecosystems.

29. From amphibians to reptiles the conquest of firm land.



Reptiles grew in size and changed from lineal length into height dimensions, but as they became victims of mammals they devolved to their earlier forms, as crocodiles and diminished in size becoming birds, which again grew in size and changed from lineal length to height dimensions. Yet the arrival of man is provoking again the extinction of the biggest, taller birds (Moa, Emu, Dodo.)

If any evolutionary jump shows the importance of networks is the transition from fishes to reptiles through the intermediate amphibian stage: amphibians adapted their sensorial brains, their reproductive bodies and finally their reproductive systems to the new world. And only then, when the translation of form was complete, it appears the land animal - the reptile.

Thus, amphibians show 3 clear evolutionary phases:

- Max. I: The amphibian moves towards an air world where light defines clearly the forms of its preys, triggering the evolution of its inner networks according to the cyclical chain, I>E>Re, which require first to become informed to localize and feed on energy, needed to reproduce. Thus amphibians first changed the form of their informative heads and senses: Their noses migrated to the top of the head, out of the water and their eyes acquired membranes to

wet them, focusing better light images. This i-logic hypothesis of the dominance of informative evolution again contradicted the usual E-science energetic theory. And yet a few years ago Sci Am published the 'astonishing' revision of the energetic theory: amphibian did not evolve, because they dragged their legs on the dry land but because they raised their heads out of the water changing their senses.

Max. E: Then their respiratory systems changed with new lungs that increased their capacity to get oxygen from air. Amphibians now changed their preys, eating insects with a modified mouth and tongue. Thus the amphibian becomes the top predator of the terrestrial ecosystem thanks to its greater Exi force and extinguished giant insects that reigned in the Carboniferous era. Those insects however reacted back evolving into metamorphic, flying forms, escaping their extinction. The inversion predatorprey manifests again between insects and chordates, as it did between gravitation vs. light or plants vs. animals: Insects have their exoskeleton outside, as they need maximal external protection; chordates have it inside. Insects are smaller, quantized forms; chordates are integrated, bigger forms. Insects are dominant in chemical, slower languages; chordates are dominant in nervous languages. Insects, the energy of the trophic pyramid, are more abundant than chordates, its top predators.

Max. E=1: Finally, amphibians adapted their reproductive systems to the new atmosphere, creating dry eggs, completing the creation of a true, terrestrial organism, a new phylum that had adapted its 3 networks/existential cycles to the new world: *reptiles*.

They evolved again according to the Fractal Principle into the 3 most evolved life phyla:

- Max. E: Reptilians, which maximized its spatial size.

- *E*=*I*: *Birds*, with the most efficient blood networks, needed to develop flying skills.

- Max. 1: Mammalians. They developed its informative, nervous system to its perfection. So they became the top predators of their 'parental group', reptiles, causing their massive extinction and 'death reversal', which in species shows through the 'evolutionary regression' of a former top predator species, when a new top predator displaces them. Thus, if we compare modern reptiles, once mammals have chased them down, with their dominant parental forms during the dinosaur era, when they were top predators, we observe a clear temporal regression in form, numbers, size and diversification that went back to their 3 basic forms. Today, from the initial 14 reptiles groups, only 3 basic groups remain. They have survived in econiches close to the water, regressing to amphibious forms, and diminishing in size towards their original 'minimal, Black Hole form':

- Lineal forms. *Snakes and lizards* living in extreme, hot, wet environments (rivers) and deserts, where heat becomes an advantage that increases their activity, while it causes cooling problems to hot blood mammals, their top predators.

- Balanced forms. *Crocodiles*, descendants of dinosaurs that have reduced its size and have become again amphibious, surviving mainly on the sea and rivers; learning new reproductive, maternal skills (hiding their small babies on their mouths, when predators come).

- Cyclical forms, with static, hard, protective round shells; *or turtles* that only reach big sizes in Galapagos, an isolated group of islands with minimal numbers of mammals. Most of them survive on the sea, having developed a gill-like system of breathing.

The only primitive, remaining saurian, the Tuatara, survives in min. numbers, in the most isolated region of the World, New Zealand, where there were no mammals with placenta...

Recap. The conquest of land was headed by amphibian and the development of better eye systems, as information is the key to evolutionary change. Accordingly as they become reptiles they grew in the dimension of height; and again as reptiles became

birds and mammals the new species became bipedal and extinguished the simpler reptiles that reverted to planar forms.

30. Mammals: Temporal iron bodies, minds.

Mammals are the 3rd informative evolutionary age of land animals, which therefore transform again their 3 networks, reaching the final adaptation to the changing weather conditions and light transparency:

Max. 1: Mammals improve their nervous eye-brain systems, overcoming the limited eye vision of reptiles. Their brains surpass the instinctive stage (based on mental, mostly chemical, slow programs of action-reaction that execute the cycles of a living organism, based on generational memories without capacity to modify them) and enter the age of free will (based on brains with nervous programs that use memories acquired in the previous execution of those cycles by the same generation, to adapt their new actions-reactions to the changing environment).

Max. E: Mammals improve their corporal, metabolic rate of action-reaction with *hot, red iron blood* that harnesses better than previous copper-based bloods the energy of oxygen. Since blood has haemoglobin, where an iron atom, the top predator energy atom of the Universe, controls and jails oxygen atoms with carbohydrate arms.

Max. Reproduction: Finally, the internal nervous system regulates mammal's reproduction, creating complex placentas that can feed and develop the isolated foetus, without the dangers of a youth age, when most beings die as 'energy' of mature predators. It is the equivalent stage to the 'chrysalis' shape of insects.

Further on, mammals evolved socially. So probably herds of mammals with faster, simultaneous fractal actions chased as a whole, and killed baby reptiles, provoking their massive extinction, in an age of climatic change. Yet, as it happened when amphibians extinguished insects, provoking their flying evolution and migration to the last frontier - the air environment - the smallest reptiles became birds that avoided top predator mammals, putting their eggs on cliffs beyond their reach to survive.

And so again, the most successful group among land animals, mammals diversified, this time along the path of reproductive evolution into:

- I horizon: Monotremes, which are egg-laying mammals.

- *II Horizon: Marsupials*, which have a pouch where they develop the 'embryo'.

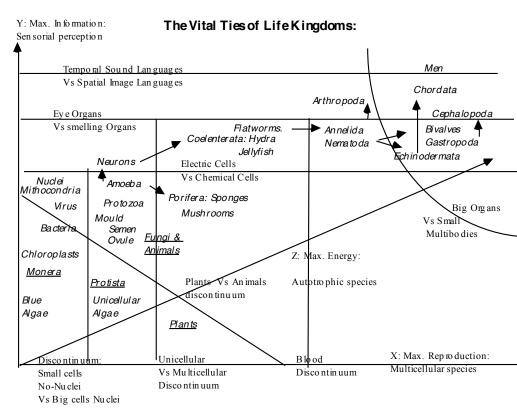
- *III Horizon: Eutherians*, which have true placentas and differentiated again, as the most evolved informative class, into multiple subspecies, now along the path of feeding energy, into:

- *Max. E: Herbivorous*, which ate huge quantities of low energy plants, developing new, complex digestive systems, with huge, multiple stomachs.

- E=I: Carnivorous, which developed the best blood systems, as they needed to increase muscular force and speed.

- Max. 1: Omnivorous, which were able to eat anything, occupying multiple ecosystems that enhanced its evolutionary differentiation. Among these species the most evolved phyla were apes, from where man came, because they lived, unlike the animals of bidimensional plains, in 3-dimensional 'high' trees, where they could not be hunted. And so they evolved in their 'free time' their 3 dimensional brains, becoming informative humans.

The previous synoptic analysis of the evolution from cells to humans shows the universal application of the fractal space-time differential laws of evolution. It could be as detailed as you wish and reorder all our knowledge on biological species under those simple laws. We just lack space-time to do it here. It shows the impersonal intelligence of the evolutionary plan and the homology of all st- forms... As it is the same plan we have used to describe atomic particles.

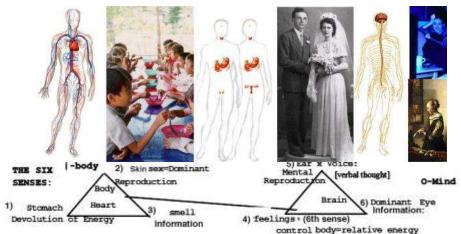


In the graph, the great life phyla distributed according to the fundamental arrows of vitality: energy feeding, informative perception, and reproductive capacity, in 3 dimensions of increasing capacity to process energy, perceive and reproduce, which give as a result the main life phyla. The evolutionary jumps represented by lineal divisions are the fundamental divisions of increasing capacity to process a vital arrow of existence that abstract biologists use to differentiate the animal kingdom. We have used a single positive frame of reference that shows an increasing quantity of those vital parameters. It is a graph of top predators in such a manner that forms whose X x Y x Z values are higher (which processes more energy, information and reproduces in greater social waves of cells) is a top predator.

In the graph, man on the right top corner is the most complex informative life species.

Recap. Mammals are the most perfect form of life beings, which evolved in information, till reaching the perfection of man; added iron-energy to its blood and improved reproductive skills with placentas.

VIII. MAN AS A FRACTAL ORGANISM.



Medicine & Physiology deal with the 3 networks of the human organism, whose functions connected to the senses enact our time arrows: The Digestive, Energetic System is attached to the senses of smell and taste; the hormonal, blood, reproductive system is attached to the senses of touch and the 6th, emotional sense and the Nervous, Informative System is attached to the higher senses of sight and sound.

31. The arrows of time and social scales of human beings.

The most enlightening analysis of Multiple Spaces-Times is the objective evaluation of human beings, as yet another fractal part of the Universe, in communion with its cycles of existence and organic laws: As all other living organisms, we humans have 2 poles of energy and information, of cyclical and lineal form, the body and the head; we live through 3±st ages of d=evolution between birth in the lower cellular plane and death back to it. We are defined by 3 fractal regions, a sensorial membrane, a central spine and our lineal energetic limbs and digestive organs. All those systems are born through palingenetic processes from the same 3 fetus' membranes, the endoderm, the mesoderm and the exoderm.

We have 2 subspecies clearly specialized in energy and information, the lineal, strong male; the perceptive, memorial, cyclical woman. We are also dominated by the reproductive arrow, dominant in life species, as all what we really care for is our families. We like so much reproduction that we are actually transferring our form into metal, making machines of energy (transport, weapons) and information that imitate our senses (chips=brains, cameras=eyes and mobiles=ears)...

Thus, man is also a biological knot of existential cycles, whose purpose as everything else in the Universe is to 'survive', to maintain the immortality of the human, logic form by reproducing the energy and information absorbed by the brain/body system and to 'evolve' - to create more complex social organisms of history till reaching the summit of evolution as a species: the creation of a superorganism called mankind, in which humans share energy and information through its collective energetic systems (economy) and informative systems (political and cultural structures).

We cannot overextend in the biological description of the human being, which is topologically similar to all other life species. Let us briefly consider those self-similarities:

-Man extends through 3 planes of increasing complexity, the cellular, bio-chemical plane, the individual, biological plane, and the social plane.

-st-1: As cellular beings we are also defined by an iterating language of information, written with 4 dimensions, the DNA bases that form the genetic code. Thus, the cellular plane is ruled by genes, which mostly code the basic functions of the cell and organs, common to all mammals, reasons why we have over 90% of common genes with them.

- We also evolve through a palingenetic process, differentiated only in the last 5 million of years from self-similar apes.

-st level: Humans have also 3 dimensional networks: the energetic=digestive; reproductive=blood and nervous=informative systems that determine our cyclical actions, as we try to feed on

energy, reproduce and inform our 3 systems common to all life species. Those internal networks observe the external Universe through the same 6 senses of all other species.

Indeed, if the duality of bodies/heads gives birth to the Complementarity principles of Physics and genre, the existence of a series of basic wills are expressed in our human organism through the senses – our outlets to the energy and information of the body and brain. We use those senses to absorb different energies and information and combine both, in reproductive processes. We sense sexual reproduction of the body through touch; we smell the energetic food we eat, and that information used to guide hunters. And finally we taste that energy. While our brain perceives space with our eyes, reproduces information with words, and uses the 6th sense of feelings and the limbic brain to guide our reproductive body. Thus the senses are:

- The sense of smell and taste are the negative and positive senses of the digestive system that allow us to choose what to reject and what to eat. The language of the sense of taste has also 5 vowels that can be classified according to the key substances of energy and information (sugars, proteins, salt, etc.) our organism require.

- The internal 6th sense of feelings that relate body and brain and the external sense of touch are responsible for the reproductive will, which excites our mind (love) and our body (sexual attraction). Both are reinforced, as in all other animals by the visual and auditory sense, which are the:

- Mental senses of space (eyes) and time (words), which shape our natural languages of energetic and informative perception.

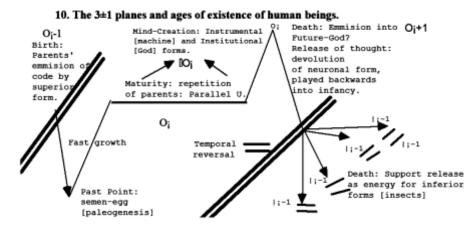
In the graph we observe that man as an individual is a knot of 3 dimensional networks: the energetic=digestive, reproductive= blood and nervous=informative systems that determine our cyclical actions, as we try to feed on energy, reproduce and inform our 3 systems.

 \mathfrak{A} +1: When humans perform those individual actions in social groups they create social networks that establish the 'memetic actions' or customs of a society, passed from generation to generation as 'genetic codes' are transferred from individual to individual. So humans gather in groups to harvest food and eat together; they establish social customs and marry to reproduce; and develop verbal and visual, informative networks that evolve human organisms from individuals into cultural super-organisms, transcending socially into a new st+1 plane of existence: Mankind.

Thus, while we are ruled by the will of our 3 physiological systems, expressed through our biological genes, we evolve socially into macro-organisms called Gods, nations and civilizations, expressed by our cultural and technological memes.

Recap. The biological will of man is shaped by the 3 internal, physiological networks, each of them attached to 2 perceptive senses, which are the languages of perception of energy, information and reproductive signals of the external world, achieved through our daily cycles of existence. Thus humans are also a knot of Time Arrows, which seek to feed on energy, gauge information, reproduce and evolve socially like everything else in the Universe.

32. The 3 planes of Human Existence in time.



Life is a trip through 3 planes of existence: the biologic, st-1 genetic plane; the individual plane, which expresses the same biological arrows, and the sociological st+1 memetic plane, where survival is reserved to prophets that create a religious God or civilization, the subconscious collective of millions of believers. In the graph, existence is a travel between those 3 planes, the cellular plane to which we return after death, the individual plane and the social plane which peaks in our 3rd age as informative particles of our culture and economic ecosystem.

Nt. This and other graphs of my lectures, taken from the foundational book, 'Radiations of space-time'c.94, uses the old morphological formalism, where Information was represented by the cycle, I= O, energy by the line, E=| and space-time planesby the index of informative complexity, i= st=n,. Thus, $|_{i-1}$ means E_{st-1} and $O_i = I_{st}$ and so on.

If we study the human being in time, the 3 ages of human beings are equivalent to the 3 ages of any space-time field. Humans show those self-similarities, both in the physical 'warping' of their bodies that accumulate information and wrinkle till they explode back into energy in the process of death; and in the different 'ways of thought' of their brain that also go from an optimistic, active age of energy into a reflective, old age of information:

-St-1: we are born in the inferior cellular scale as a seminal seed, clearly differentiated in lineal energetic males of maximal motion and still, reproductive, informative females, ovum, that mix together, exi to start a palingenetic process of reproduction and social evolution till we surface in the st-scale.

– Max. E: Youth is the energy age, dominated by the digestive network and muscular movement. So children are energetic, always moving, passionate about food that they need in bigger quantities.

 $-E \Leftrightarrow I$: Maturity is dominated by the reproductive arrow, its networks and sexual desire. So mature people marry and have family values.

- Max. I: The old age is dominated by information and nervous networks. So old people are wise and know a lot of things, though

they have little energy left and live in stillness, looking back to the past, before they truly start their travel in time. Thus, a very old man becomes like a reversed, negative child, also passionate about food since he lacks energy; but can't really digest it. He will be emotional, close to his 'biological consciousness', but with negative feelings, as he has no future left... except death, when his information dissolves back to the cellular plane.

- st-1: Death, when all energy is spent we die and return back in time through a $4^{\rm th}$ age in which all information becomes erased.

Further on, humans transit during those $3\pm$ st ages of life through $3\pm$ st hierarchical scales or planes of existence: the st-individual plane; the st-1, biological scale and the $3\pm$ st, historic, sociological scale. In terms of those scales of space-time, life is a temporal journey from the lower st-1 biological plane in which we are born as seminal cells into the human plane in which we enter through the discontinuous aperture of our mothers' biological wombs. Then humans will 'mature' in that st-social plane after the 'rituals of initiation' proper of all adolescents in all societies, which make us cross 'the discontinuity' between youth and maturity.

In that social plane humans will live as individual members of their society during maturity, till in the 3rd age the mind will return back to the mental level of childhood; while the spatial body will continue warping up.

Thus in the 3^{rd} age, the st-mind and E-body suffer a 'fractal split' that breaks i=ts E=I harmony ('mens sana in corpore sanum'), which determines survival, causing the death of the organism. Then through death, the human being will descend back again to the biological, cellular world.

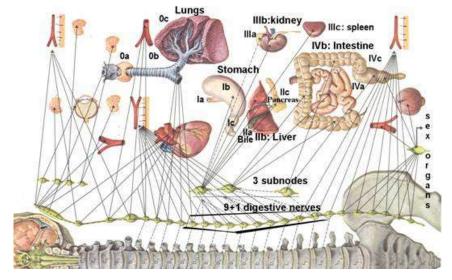
Thus life is a motion back and forth in time that starts with our palingenetic conception in the st-1 biological plane of seminal cells. The graph shows that ternary existence in which the main age is maturity, when humans form part of an organic system as a cell of a nation or culture, in the st+1 plane, enacting social and informative cycles with other fractal citizens or believers, as our senses open up to the social ecosystem, ruled by the political laws

and financial networks of the collective, nervous social system, where we develop verbal and visual perception, till we descend back through the reverse journey of death into the original st-1 cellular, vegetative state, completing our wheel=cycle of existence.

Though we have only 'individual consciousness', the $3\pm$ st biological and sociological planes do exist and should have their own individual consciousness (DNA consciousness, and collective subconscious of mystique Gods). When we are born we just enter a new form of consciousness after an age dominated by our vegetative, chemical, cellular soul. A fact, which is evident in the 'borders' of life: the baby and the old man care mainly for food and chemical emotions, since they are closer to their cellular level of birth and death, our zero sum as dust of space-time.

Recap. Humans follow the same $3\pm$ st ages of all biological beings, as they live through 3 planes of existence: the biological, individual and sociological planes.

33. The 3 topological networks of man in space.



In the graph, an in-depth analysis of the nervous control of a human body and its energetic and reproductive systems. All those systems of energy and information are created by ternary differentiations, which provoke a mirror symmetry with the ternary differentiations of the nerves that control them. For example the digestive system has 3 sections, orientated from top to bottom on the relative dimension of informative height: the upper, mouth, informative system; the middle, reproductive stomach with its attached glands and the intestine, each one controlled by ternary sub node of nerves. Then the stomach has 3 regions; the organs that assist it are 3; the intestine has 3 sub-sections and all of them respond to lineal-energetic topologies (intestine); cyclical reproductive (stomach and attached organs), and cyclical, informative (mouth and taste systems).

If we were to make a topological, spatial analysis of the human being, we would observe that as an st-point we are made of 3 physiological networks/regions evolved from the external exoderm, mesoderm and internal endoderm, which become roughly the origin of our external membrane and senses; reproductive body organs and internal brain. And each of those 3 systems is constructed with the topological characteristics of the 3 regions of any st-point:

- The energetic, digestive system is the bigger one, made of overdeveloped membranes and connected to the apertures of the skin, forming together an inner/outer self-similar 'Klein bottle' (Non-Euclidean jargon), which is the final evolution of the selfsimilar system we found in the Hydra. It is the more loosely connected of them all; in fact a super-organism that hosts in a 'colonial' form billions of external bacteria.

- The informative brain system occupies the central singularity region, is the smallest of them all and has a highly warped, hyperbolic form, with the maximal, quantized number of cells, which form a network that relates each neuron to thousands of other neurons.

- The blood & lymphatic, reproductive system communicates both regions, connected to the external skin through the lung apertures and surrounding the informative brain, which obtains 10 times more energy than all other systems, as the 'top predator' system of the organism.

In physiological terms we are composed of 3 st-regions and networks developed from an initial, spherical 3-layered egg that packed our genetic/temporal information and iterated billions of times to become a macro-organism. Those regions are:

- An external membrane or skin of dense informative cells, the initial exoderm, whose senses invaginated back those informative apertures in a dual parallel st-axis of height: creating the spinal nervous network – the lineal, energetic sub system of the brain that moves the body – topped by a central, cyclical, informative nucleus, the brain.

- An intermediate zone filled with glandular, reproductive cells, 'invaginated' by the reproductive, hormonal blood system that joins them.

- And the bigger energetic system, divided into a digestive and breathing network.

Further sub-divisions according to the Fractal, ternary Principle create the 3x3+st+1 physiological subsystems, standard in any biological book, and the st+1 brain, which has a mirror image of all of them and acts as a unit of the social st+1 scale of mankind.

So the $\Sigma E \Leftrightarrow \Sigma^2$ I formalism of our fractal space-time is:

Max. E: Digestive System<Exi: Blood & Lymphatic System:exl> Nervous System:Max. I

The interaction between the st and st-1 system is clear: Those networks rule the lower st-1 cellular scale, which become a 'herd', whose energetic, reproductive, informative needs and birth to death ages are totally controlled by them; to the point that doctors say their discipline is 'physiology', since sickness are the sickness of those networks.

Further on, each of those 3 networks subdivides into new ternary structures of control:

- Max. E: Those networks have all an inner, lineal, quantized 'body' - a network of tubular systems that delivers informative, energetic and reproductive orders that rule internally our fractal cells. They are the veins, the nerves and the lymphatic system.

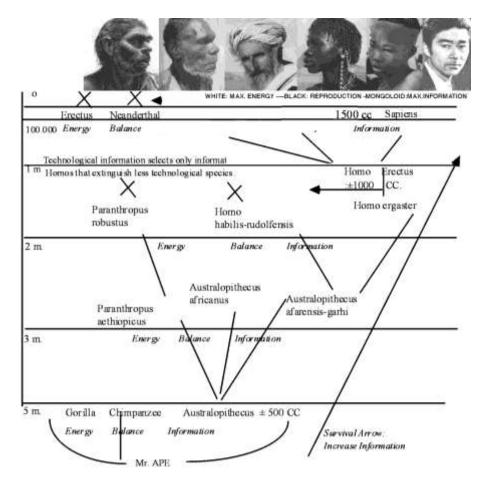
- Max. I: They all have external apertures to absorb energy (breathing nose and mouth); information for the nervous system (ears and eyes) and sexual sensations for the reproductive system (olphactory and touch senses).

- E=I: The 3 balanced centers, the heart, brain and genital system become the site of their 'inner wills' that enact and control the iterative cycles of feeding, perceiving and reproducing - the will of existence of our collective self that impel us to acquire information, energy and reproduce, ensuring the survival of the human form.

It is in fact possible to explain the entire process of creation of humans from their palingenetic seeds through the laws of ternary differentiation and multiple space-times as a process of creation of those 3 networks in control of the st-1 cellular systems and controlled themselves by st+1 brain and senses, which together create a living organism extended in 3 planes of existence, self-similar to all other mammals. And yet humans have a peculiarity respect to all those other animal beings: to be the most informative species of them all, with the maximal evolution of the informative dimension of height, its visual senses and st+1 10th system, the brain. We are the summit of informative evolution of life and so we shall consider how that informative evolution selected 'us'.

Recap. The st-scale of human existence in space is controlled by the 3 topological networks of the human being, the informative, nervous system, the energetic, digestive system, and the blood, reproductive system. Each of them is divided in ternary subsystems, informative, external senses, center and lineal networks that connect them with the st-1 cells to control their drives of existence

IX. THE EVOLUTION OF MAN: TERNARY SPECIES.



34. The evolution of man: Ternary differentiations.

Complexity defines a Ternary game of evolution by differentiating species in informative and energetic species, combined in balanced organisms. The same game evolved man from the original ape 5 million ago into the human being. Moreover the differentiation is established first from an initial top, predatory, young energetic species (the gorilla in the human case), that diverts into a reproductive, mature species (the chimp bonobo) and finally in its 3rd informative age gives birth to a more mental species (the Australopithecus). This thesis of multiple spaces-times first established in the foundational book of this

science 20 years ago, was confirmed with the discovery of the exact genetic clock: the divergence between gorillas and chimpanzees is 1.17, then the genetic clock diverges 1.17 to create man... Thus the same plan of evolution, which we used to describe all other biological species of the Universe created man from Mr. Ape.

Moreover, the Universe has 3±st arrows/dimensions of creation, energetic length, informative height and balanced=symmetric, bilateral reproductive width. This simple dimensional game happens even in man. Yet bilateral systems often are also dual: one side is slightly energy dominant and the other slightly informative, offering a more complex, kaleidoscopic higher truth (multiple p.o.v.s). It is also a sexual principle: Women are information-dominant; males are energy dominant. And it should find wider applications to understand the dualities of the brain.

Such topological analysis confirms our informative nature:

In human evolution the ternary principle applies beyond the triad of apes: each successful, dominant Homo differentiates into an energetic and informative species, which recombine, creating more complex=informative and stronger=energetic homos that displace their parental forms, thanks to their higher Energy x Information. Yet the dominant, overall arrow favors informative species. Since when Homos were born, the energetic top predators were felines, far stronger than the strongest possible homo mutation. So the evolutionary direction in which the big apes could find an ecological niche within the mammal kingdom was the informative arrow. They were already fit to that purpose, since they spent long times living in stillness in the summit of trees, where they learned to control complex motion in the dimension of informative height, adding a 3rd spatial dimension to their brain. So they became informative masters among mammal species.

In the graph we study the ternary process responsible for the creation of humanity: Further on, as humans evolved, they followed the same pattern of 3 ages proper of all species. Thus, Homos diversified into energetic, informative and reproductive

forms that show a higher balance between energy and information. Yet only the informative species, the dominant 'arrow' of future survives in each of the $3\pm$ st horizons of increasing informative evolution, from Australopithecus with 500 c.c., into Homo Erectus with 1000 c.c. into Homo Sapiens with 1500 c.c.

And in all those phases, humans split into an energetic species and an informative one that recombined to create a 3rd species. Those species will further evolve technology also in 3 horizons called the upper, middle and lower Paleolithic. Finally, humans diversified in 3 races, specialized in Energy (white race) and information (Mongoloid) with a reproductive, black race, the last to be born, which mixes the pre-mongoloid (bushman) and white races. The constrain established by the fact there are only two elements, energy and information, to create reality, whose lineal and cyclical forms are invariant at scale, in all systems of the cosmos means the Universe imposes the same program of creation to all its species.

Thus from an initial ape species we find a ternary differentiation ± 5 million years ago, into 3 sub-species of great apes that live in Africa:

— Max. E: Gorilla, a big, energetic species that reaches 200 kilos, with a square, huge jaw.

- E=I: The chimpanzee, with a smaller body and a bigger brain. According to the Black Hole law, the smallest organism evolves informatively. Thus, the 'dwarf chimpanzee', the *Pan Paniscus*, which today shows the highest learning skills among apes, was the species that seems to have evolved into a 3^{rd} informative horizon of big apes. It is:

— *Max. I:* Australopithecus, which splits in 3 evolutionary ages of growing brain volume:

I Horizon: 500 cc.: From Australopithecus to Homo Erectus.

We have dated the oldest mandibles of Australopithecus Anamensis, the top predator of the 3 big ape species, in 4 million years. The Australopithecus, after reproducing massively in the savannah ecosystem that favors his bipedalism, suffers a new ternary mutation. The 3 descendants of that Australopithecus Afarensis that inhabited the Ethiopian plains around 3 million years ago are:

— Max. E: The Paranthropus, an energetic species with huge mandibles and a lineal, planar brain. He looks like a heavy-set, humanoid gorilla. He was probably vegetarian. The first subspecies found is the Paranthropus Aethiopicus, which will further evolve into the stronger Paranthropus Robustus.

— E=i. The Australopithecus Africanus, which maintains the form of the original Australopithecus Afarensis, perhaps with inner improvements in his soft tissue. He lives in South Africa as a contemporary of the Paranthropus.

— Max. I: Australopithecus Garthi. He is the informative species, with a bigger brain, which starts to acquire the shape of all informative species: a rounded forehead, *as the sphere is the form, which holds more information in lesser space*.

Those 3 species live very close. Around the Turkana Lake we have found remains of the 3 Homos. Yet the arrow of future favors informative Homos. So the top predator Homo will be the Australopithecus Garthi that goes through a mature age of massive reproduction, probably extinguishing the other 2 subspecies and expanding worldwide into new ecological niches that favored their genetic and memetic adaptation through a new, ternary split:

— Max. E: A regressing, energetic A. Garthi, similar but taller than its parental Australopithecus.

— E=I: Homos Habilis and Rudolfensis, with similar brain capacity to the original Garthi.

— Max. i. Homo Ergaster, an informative ape with a 1000 cc. brain, which doubles the brain capacity of Australopithecus.

II Horizon: 1000 cc. From Homo Erectus to Homo Sapiens.

That Homo Ergaster, after a massive age of reproduction and expansion throughout the planet, subdivides again in 3 sub-races of Homo Erectus.

— Max.E: Pithecanthropus, the oldest species similar to Homo Ergaster, found in Java.

— E=i: Homo Erectus proper, found in China, who grows in the informative dimension of height that *favors perception from an advantage point of view*, to 1.7 m. He has simple technology, a skull without forehead and thick bones that handicap further cranial evolution.

— Max. I: Homo Floresiensis, the smallish species, which according to the Black Hole paradox should be the form who gave origin to Sapiens, as the smallish 'pan paniscus' evolved the chimp into the Homos. Recently discovered, he is a formal mutation with a smaller body, whose morphology resembles for the first time that of a human being. He has thinner bones that allow further growth and a higher forehead, the location of the creative part of the brain.

Paleontologists also found the first advanced technological tools in his sites in Flores Island, which is an isolated place, the ideal region to foster further evolution, due to the lack of top predators (allopatric evolution). Thus, he adds now technological energy weapons that substitute body strength and define a single arrow of future for human evolution: information. His improvement in neurological form, probably caused first his rapid expansion thanks to his new technological tools and then a rapid growth in size through the cross-breeding with the taller Homo Erectus species, giving finally birth around 300.000 B.C., to a new energy/information duality:

The energetic, big Neanderthal and the informative Bushman, which combine again to give birth to multiple races.

Those predictions based in the ternary principle and the Black Hole paradox (information is small and evolves in dwarf species) have been confirmed by genetic maps and Paleontology and await final confirmation when new skulls of Floresiensis are found.

The \mathcal{J}^{d} , informative Horizon: Homo Sapiens, 1500 cc.

— The lineal, energetic, visual Homo Sapiens Neanderthal, with ± 1500 cc.

— A second informative pygmy strain, the 1^{st} verbal woman, the mitochondrial eve, probably a bushman, also with ± 1500 cc.

 \pm 80.000 years ago she crossed into the Middle East, probably mating with earlier Neanderthals, giving origin to the visual, energetic white male (Homo Palestiniensis, whose skulls show mixed traits from both species).

 \pm 40.000 y. ago, in the high Tibetan plains, she became the informative Mongoloid that colonized Asia, America and descended upon Europe and Africa, where she cross-bred with the Capoid (bushman) and became the black man, the balanced E=i, reproductive race, completing the final, ternary differentiation of the main races of mankind.

Cultural races.

Further on, as racial tribes evolved socially and emerged into cultural societies, which are super-organisms of history, the ternary, racial division of mankind between energetic white men, informative Mongoloid and vitalist blacks, will become the cultural differentiation of human beings in 3 type of brain orientations, and hence cultures of the mind according to the 3 elements of all systems, energy, information and its reproductive combination; reflected in 3 types of brain morphology:

— 'Visual, energetic, lineal, spatial cultures', proper of the white man, with his concepts of lineal time and his passion for technological, energetic weapons and individual, selfish behavior. It is the dolichocephalic brain dominated by the visual eye to Occipital axis, also dominant in the Homo Neanderthal.

— 'Cyclical, informative, mongoloid cultures', natural to Asian civilizations, with cyclical concepts of time. It is the

brachycephalic, wide, verbal brain; dominant in the ear axis; hence giving birth to female, eusocial cultures like the Chinese.

— And 'sensory, reproductive, colored cultures', which in Africa and India developed human senses to their limits. It is dominant in the height/medullar axis with a 'tall head', peaking in the top/motor and sensorial area.

The culture/age better for the survival of mankind, as in all species, is the one that balances both arrows, E=I. Thus we should promote paradoxically the culture that a technological civilization discriminates: the black, reproductive, sensory culture.

Let us study them in more detail how the ternary differentiation that created humans being from apes explains racial differentiation by establishing 3 types of minds:

The 3 types of minds: Emotional, visual and verbal brains.

The existence of 3 dominant human races today, the white, yellow and black people, cannot be argued, but they must be interpreted as 3 types of complementary intelligence, based in our recent discoveries on the science of Complexity, which always favors a ternary process of creation, with an energetic, informative and reproductive 'decoupling' along the 3 morphological dimensions or "axis' of any space-time form. In the case of the brain, there are 3 axes, the long visual axis, the tall emotional axis and the wide, verbal axis, and so we talk of 3 mental races:

- The dolichocephalic brain, which overdeveloped visual axis, from the eye to the occipital bone. It is the white man.

- The brachiocephalic brain with an overdeveloped verbal axis from ear to ear. It is the mongoloid race.

- The makrocephalic brain, with an overdeveloped emotional axis, from neck to top of the head. It is the black race.

They maximize the 3 types of human minds: energetic races (white, visual, spatial, egocentric); informative races (yellow,

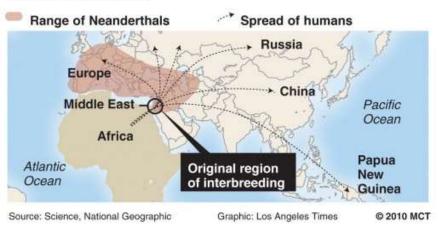
verbal, temporal, eusocial), and reproductive races (black, emotional, inwards, ethocentric):

- Max. E: Visual, spatial, energetic minds.

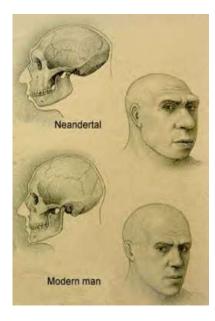
In the symmetry of time and space, is the case of the first age or ''child and the 'male' species of the white races and in the earlier anthropological record, it is the Neanderthal, which we already considered 20 years ago as Cohn did, to be co-father of the white man born as Homo Sapiens Palestiniensis, which recently the genetic record has proved:

Interbreeding

Humans leaving Africa about 80,000 years ago encountered Neanderthals in the Middle East, according to DNA evidence extracted from Neanderthal bones.



White people, who occupy the same range than Neanderthals are easily recognized by their dolichocephalic head and occipital bulk, their eye=I oriented mind, individualistic ego and energetic behavior. Their languages are consonantal, with few vowels. They have red hair and Rh- (a sign of crossing between different species, whose 2nd generation is not fertile, as mules born from asses and horses are). Further Neanderthal traits – white skin, hooked nose, wide hips - also recognizable in the Basque, Iberian,



Germanic, Celtic and Semitic cultures, paradigms of visual cultures, which will make of shiny metal, weapons and go(l)d, their fetish – seem to validate further this thesis. In economics, it gives birth to the gold fevers of those cultures, origin of 'greed', an emotional, visual trait which other types of human minds (Chinese) hardly suffered:

Thus the white man should be properly called Homo Sapiens Neanderthaliensis, dominant in visual information with minimal development on the parietal

regions of speech. He will thus evolve the visual language in its 10th 'Brodmann' region of rational thought further into digital, geometric and mathematical thought, and create lineal civilizations based in metal, lineal time and Aristotelian thought. He can be sub-divided in two types, which again recent experimental proofs seem to validate:

-The Semite, in which Neanderthal males mixed with verbal women, but Neanderthal females did not cross with dwarf verbal men, creating a mixed race with an extreme sexual dimorphism (taller male, smaller women). A similar case will happen in South-America where conquistadors mixed with Amerindian females but Amerindians did not cross with Spanish women, since the dominant warrior, stronger species, in the first crossing of the Homo Sapiens, in 80.000 BC was the Neanderthal and in the first crossing of the Atlantic the Spaniard. This theory advanced in 94^{nt} has now proofs in the genetic record. The result is the Semite with a dominant bigger, highly aggressive, visual male and a smaller emotional woman. The reason of this military superiority is the fact that at that time the Homo Sapiens had not developed the arch

and so it was dominated by the Neanderthal, stronger javelin warrior. Then in the Altai mountains, homo sapiens evolved into the mongoloid Cro-Magnon which invented the arc and hence could kill at distance the Neanderthal. This man went down to Europe and the mixing process was reversed: Now Homo Sapiens mixed with stronger Neanderthal women (more pure among Nordic and Scottish Women with red and blonde hair, dolichocephalic, visually oriented, often sexually dominant). Thus the Indo-European race was born. This last detail of Complex theory of human evolution should wait for further genetic analysis since so far we have only observed that with a 90% of equality between men and Neanderthals and a 4% of Neanderthal genes there is mixing both in Semitic, white and Cro-Magnon (northern Chinese) groups.

-Max.I: Verbal, temporal, informative minds.

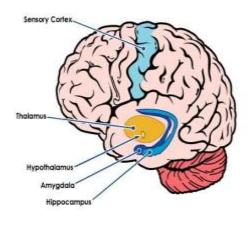


This is the case in time symmetry of old people; in the symmetry of gender latter studied in more detail of the 'female' species and in the symmetry of race of the yellow race; and in the earlier racial record, of the parental capoid, Homo Sapiens Sapiens. All of them are headdominant, with clear neoteny features (thus with lesser young,

energetic development), smaller in spatial body, with a dominant brachycephalic brain, and wider face, as the main linguistic part of the brain, the Brocca region, goes across from ear to ear. Thus, the mongoloid race and the female gender are dominant in the verbal, wide axis. Hence the distance between the eyes and the parietal is larger and their eyes are wider.

As all informative species the mongoloid is highly social, group oriented, selfless, as it uses the verbal language to create their super-organisms of history. Their language has an excess of informative vowels over energetic consonants; women play a greater role even in Semitic culture (Indonesian Muslims). They are less violent, highly intelligent (Chinese test 10 points more than white men), and have shown as all species that can evolve socially the highest record of survival compared to the original Semitic cultures, which base their societies in the power of metal greed and murder, gold slavery and iron weapons...

-Exi: Reproductive, emotional, body oriented cultures.



Finally a 3rd type of culture, whose informative minds are dominated by emotional sensorial, body oriented, reproductive drives, is the black culture and the adolescent. Its brain is taller, with the top point in the upper head, as the dominant direction comes from the spinalhypothalamus axis

upwards. Thus, the brain regions most developed in emotional races happen along the 'height' axis. They are the inner regions of emotional thought (limbic system) and the motor and sensorial cortex on top. This hypothesis, extracted from our models of complexity and duality developed in the 90s have now increasing evidence: women are found to be wired inwards with more connections going towards the Hypothalamus than men, wired outwards towards the visual regions. And certainly both, black and female 'races/genres' show higher development of the emotional brain and excel in tasks related to the body/senses.

Psychological characters

Those findings are applied also to the will and drives of the mind: - Max. I: There are people who psychologists define as picnic, nervous, tall (height is the dimension of information).

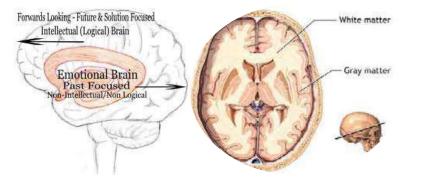
- Max.E: There are athletic, sanguineous people, dominated by their energetic will.

-E=I: There are viscerotonic people, driven by their 'lower passions' (-;

Those distinctions already observed in XIX C. studies on brain morphology and cultural psychology are real, increasingly proved by a wide number of research papers that go from the analysis of why men draw better maps and women talk more to genetic studies in linguistics and bio-chemistry that validate our 20 year old research in those fields. Racism consists in thinking that a visual brain is better than an emotional brain or a verbal brain.

A key question in a biological world is the choice of which of those cultures, personalities and genders should be the referent for the rest of mankind, in order to maximize the goals of all superorganisms and species - survival. And the surprising yet evident truth of an organic model of the Universe is that the Makrocephalic, ethnocentric and verbal, brachycephalic feminine gender should dominate with its balance and ethic sense of survival the violent, visual, technological civilization of the white man, whose 'energetic' impulses are taking this planet out of balance, destroying Nature and building the new forms of 'metalife' (weapons, robots, A.I.) and machines of the singularity that will extinguish us. Yet this is not obvious because the 3rd paradigm of measure has no organic whys, despises life and 'sees' only reality with machines, it does not feel it or understand the deepest game of existence we have explained here. So we are walking steadily towards the extinction of history, the 10th and last extinction of life on Earth, guided by the visual wanting of the Homo Sapiens Palestiniensis, its lineal, energetic weapons and hypnotic go(l)d, themes those we will treat in depth in the last lessons of this work.

White matter/Grey matter brain: ternary analysis.



Let us consider the brain under the ternary principle in its topology, ages and fractal st-planes.

Topological analysis

In the graph, the 3 brains of the human being from a spatial, topological perspective:

- Max. I: Our external, sensorial grey matter.

-Max. E: our internal, emotional, limbic system.

- E=I: Combined in a white matter, memorial, reproductive brain.

We perceive with our senses; whose perceptions are processed by the DNA rich, cyclical, fluctuating, integrating cells of the grey matter brain, and then the outcome becomes imprinted in resistant white matter networks made of axon-connections. This external program mixes with an internal program coming from the body, which defines our wanting for energy and reproduction (sexuality), the main arrows of time of the body and limbs; whose wanting are processed by the limbic brain.

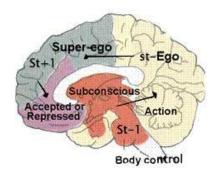
Then both programs converge into the axons. Both programs, the one of the body and the one of the brain, thus, mix and create together the white matter brain of beliefs that define our actions, memories and behavior in a greater measure, which in women are more wired to the limbic brain and in men to the grey matter and eye senses. Because women have more axons wired to the limbic system, they live more for themselves, inward-looking, emotionally-driven. Because men have more axons connected to the grey matter brain and their external, visual senses, they are more connected to space, mathematical-technological objects and motions within external space.

Temporal analysis

A key element to understand memetic imprinting is the inflexibility of the brain beyond 40 years. This was understood by the Greeks which divided life in two ages, till 40 (acne) when the brain peaks in informative power, which was considered the summit of life and then all was downwards till our end at the end of the mean generational cycle of ± 80 years.

Thus the 3 layers of the brain are imprinted only in the '1st part of existence', before the curve of life goes down in the 3^{rd} age, since we only learn in that first part of existence.

In that regard, within that $\frac{1}{2}$ fraction of existence, in the child age the limbic system dominates; in the adolescence and earlier, mature age the grey matter brain learns, reasons and imprints the white matter brain, which will dominate the adult age in which we live according to beliefs, which are more difficult to change as the variability of the white matter brain is restricted once those connections are fixed. As that period of life roughly extends from 30 to 80 years old, this means most humans are neither rational, nor emotional but basically 'programs' with a 'motherboard' of fixed beliefs and chains of rational thoughts, which make us perform the same routine actions the rest of our lives - not very



different from the fixed forms of any computer system.

Fractal analysis

In the previous graph, left center the fractal analysis connects Multiple space-times theory with the Freudian psychology as the 3 regions of the brain can be considered 3 hierarchical layers, with a grey matter brain that senses reality and delivers information to the subconscious, limbic, survival brain that acts restricting the information that becomes imprinted in the long memory of the white matter brain.

Freud rightly understood the 'limits' of rational thought, due to the subconscious, powerful Super-ego, the memetic superstructures that society establishes to control and repress the biological, natural genetic program of life and love.

In Complexity, the brain is a fractal system of 3 'sub-brains', the subconscious, energetic, limbic system, of 'short memory', survival instincts and basic actions, the, white matter, the 'fixed circuit' of beliefs, imprinted in childhood by biological desires, the drives codes by genes and in youth by cultural memes, the drives of the super-organisms of history; and finally the grey matter, the rational, thinking, variable brain connected to the truth of external senses.

The most common trajectory of thought through those layers is during the young, emotional age:

External world->Senses->grey matter brain->Limbic censorship->Impression in the white matter brain->Actions

While as the organism matures, the limbic system loses importance and the grey matter brain connects to the white matter brain directly:

Outer World->Senses->grey matter brain-> white matter Printing->actions

On the other hand, people dominant in emotions and inward thought might have the exactly opposite way of thought:

Inner world of biological drives ->Limbic System->White matter imprinting >actions

Obviously our previous analysis of ages, races and genders and the socio-cultural upbringing will make those 3 avenues of thought differ in individuals. And in fact as impolite as it might seem, we find that most systems follow the irrational drives of biological existence, expressed by the limbic system and imprinted as desires in the white matter brain, which determines most human actions.

What this means is that most humans have the 'center of consciousness' NOT in reason but in the imprinted beliefs of the white matter brain, connected to its survival instinctive limbic brain – that 'rejects' beyond its short memory any attempt to imprint further the white matter brain.

Thus the most common program is Biological censorship by the centers of happiness that suppress painful information and upholds the imprinting of childhood and adolescence and its emotional truths as absolute, both in biological taste and cultural religions and beliefs.

Or in other words, once an idea is fixed in youth, to redraw it you would have to break and kill the programs of the mind; which if we consider the cellular scale of imprinting, turns out to be almost impossible as the acetylcholine that redraws the white matter axons is no longer available in enough quantities.

So the ideas imprinted in youth, once the white matter circuit is put in place (and no longer can be rewired after adolescence), won't change. The person will forget or become aggressive with its limbic, censoring brain against reason and evidence. And since the limbic brain is ego-driven and subjective, we must embrace a difficult fact to assume: 99% of humans are dominated by the white matter brain of earlier socio-biological beliefs.

Recap. In complexity evolution is guided by the existence of only 3 types of morphologies and networks in living beings: the morphology and nervous system of information, the morphology of energy, and the morphology and network of reproduction. We can therefore use, as we have done in studies of evolution of all type of species, the existence of a constant diversification in 3 different species to analyze as we do in the previous graph, the evolution of mankind from the initial triad of apes, the energetic gorilla, the reproductive chimp and the informative

Australopithecus, till the last differentiation of homos, between the energetic, visual Neanderthal mind, today dominant in the white man, and the smaller, informative, verbal, homo sapiens, today dominant in the informative mongoloid, with the reproductive, emotional black race in the middle.

Thus, the Laws of Evolution and its 3±st ages and subspecies, map out the main species of Homo, till arriving to 2 Homo Sapiens, the spatial, visual=longer, dolichocephalic, energetic brain of the Neanderthal, which seems to have lived in Europe and left some of his traits in the Homo Palestiniensis, on the slowcrossing border of Canaan. Further cross-breeding of the Palestiniensis with Sapiens is the likely origin of the white man (white skin, red hair, Rh-? consonantal languages, wide hips, prominent nose).

While the informative Homo Sapiens Sapiens, the verbal=wider brachycephalic brain, which started as a small 'San pygmy', evolved into the self-similar mongoloid race. Finally, the black race, with tall brains is the sensorial culture, the reproductive species, the last one to appear, shows the maximal genetic mixture.

The brain studied topologically is a system of 3 regions, the energetic, emotional, body oriented limbic system; the external, informative, sensorial grey matter brain, and the white matter axons that connect both and controls our beliefs firing our actions.

X. WO=MEN: GENDER AND BRAIN STRUCTURE.



As many other biological species, human life diversified into complementary genders: energetic, lineal, spatial men and cyclical, reproductive women, which hold more biological information. While a 3rd, gav sex mixes both.

35. Gender: complementary differentiation.

In the graph, the biology, psychology and gender culture prove that humans are a dual species, divided into informative females, energetic males and a '3rd, gay sex', who mixes both, being women the informative species that reproduces the fractal information of the human being and man the lineal energetic species. Thus, biological origins, psychological behaviour and cultural forms explain gender as a ternary differentiation of humans into informative females, energetic males and a '3rd sex' of gay groups that mix both tendencies. Let us consider this essential duality of the human species in more detail.

The classic example of space/time Duality already observed by Taoist and Buddhist philosophers is the duality of gender, which they correctly applied to all species of the Universe. If we focus on the humankind, which is also a space-time species, its fundamental space/time duality is between its 2 genders: the energetic male and the informative female.

Humans have always wondered what gender is. Thanks to duality, following in the steps of Eastern philosophy, now we can build a scientific theory of gender able to explain its 2 fundamental elements, the scientific physiology and the behaviour of both sexes:

Since the Universe is made with 2 elements, Energetic Space and Temporal Information, any species needs to survive to feed on Energy and remember Information. Yet, we know that males process and control better energy and space; while females have more temporal memory and perceive better. Thus, together a couple widens the range of energy and Information they can process. So we conclude that gender is an evolutionary strategy of specialization, which increases the overall chances of survival of a heterosexual species. The physiological forms, character and historic behaviour of men and women prove such duality, parallel to the universal duality of energy and information: men love energy, space; women love Time. Physiologically men are made of lines, as energy is; while women are made of curves, as information is. Historically men performed the hunting of energetic preys, while the recollection of cyclical food (agriculture) is traditionally considered a female discovery.

Men behave as energy species. Their body forms are lineal shapes of muscular strength; they have lineal reproductive organs (penis); their origin is lineal sperm. Their cultural roles are specialized in spatial-energy processes, from physical activities to war and mathematical, geometrical languages in which they excel.

On the other hand, women are specialized in temporal processes. Their bodies have cyclical shapes and store more information to succeed in their genetic reproduction (one complete Xchromosome). Their brains specialize in verbal languages and show outstanding memory. If we observe the form of females, it is made of cycles. Their higher genetic information allows them the creation and reproduction of the human species (an informative process); their cyclical reproductive organs (vulva, clitoris) and their origin as a sphere, an ovule, are also informative topologies.

The character and life attitudes of both, men and women follow that E/I specialization also in their relative wanting for energy or information: women prefer to dress with cyclical forms, play with formal toys like dolls and they like formal sports like gymnastics; men prefer moving, spatial toys, lineal dresses and violent sports. Thus, men love energy and movement while women love perception and feelings. In the realm of the mind and its languages of perception we find that men test better in spatial mathematics and women score higher in verbal tests.

We conclude that sexual dimorphism reflects the 2 elements of reality, spatial energy and temporal information that merge together in a couple, improving its chances of survival:

Male: Max.E x Min. I; Gay: E=I; Female: Max. I x Min.E

In the last decade the analysis of female/male brains has confirmed such duality of gender at multiple levels. For example, among women the amygdale, the oldest, primary center of will in the brain, is connected to the Hypothalamus, the center of 'temporal' and emotional perception, which ultimately controls survival and reproductive behavior. While men have their amygdale wired mainly to the motor and spatial regions of the encephalon. Thus men are the energetic 'external element' of the couple, motivated by the spatial outer world and women are the informative, temporal, implosive element, motivated by the reproductive drive of survival and the inner emotions of the body, the '6th sense'.

As the reader will have notice, truth becomes more sophisticated as we perceive in more detail. Monism is the first scale of knowledge that observes only the body/brain; and yet it has sufficed to build our society of lineal, energetic 'visual Homo Sapiens Neanderthaliensis (white man). Then duality observes the differences in the body of lineal male and cyclical women, but we need to go further and analyse sexuality with the ternary principle that adds the 3rd sex, and consider the different combinations and balances of body/brains that will give us different 'personalities' and ultimately a more accurate analysis of what we do not see but dominates all structures – the informative brains.

And then the previous picture radically changes; since if women are reproductive bodies and men lineal, energetic bodies; when we observe the brain, to balance those bodies according to the Law of survival and balance of the Universe, energy-past x informationfuture = present-reproduction, if men have energetic bodies they must have informative brains to balance both in a present, and if women have reproductive bodies that repeat the information of life they must have reproductive brains that repeat also the information of the brain: present x present = present.

And indeed such is the case.

*Thus i*n a more complex view, as all beings are themselves yinyang, space-time beings, we could define men as yang/yin: bodies ruled by the external, spatial activities; an creative brains of information dominant in grey matter (6 times more than women); and define women as yinyang/yanying; reproductive bodies whose emotions rule the brain; and reproductive brains, dominant in white matter (10 times more than men).

But what matters of those Universal balances is the fact that ultimately male and female genders are complementary forms, with the same value, a fact easy to prove using the formalism of Duality:

Male: exe-body +1xI-Brain \Leftrightarrow Female: brain (i x E) + Body (exl)

Thus we define *a male*, as a form whose 'energy body' is dominant in energetic, lineal forms (ExE), while its brain is focused in informative, visual creative tasks (Max.I), resulting in a species unconnected with his body with an external, outward focus. The Female gender however has her informative brain focused in reproductive, memorial tasks and wired internally towards the reproductive body (IxE); while her reproductive body is dominant in cyclical, informative forms (ExI).

Thus while the total amount of energy and information or 'existential force' of both genders is the same, the distribution and combination of those parameters differ, making women, highly balanced, focused into the self-reproduction of their own spacetime field, and the male gender, unstable, focused in the external world. Those theses, as politically incorrect as they might be are the i-logic deductions of Multiple space-time theory, recently proved right by the analysis of the brain.

Recap. Species evolve in a dual, complementary Universe of systems of energy and information, increasing their energetic/body power, their informative/head power or the networks that reproduce and combine both systems, exi, the reproductive networks. We talk of 3 dominant wills or biological drives that increase the survival chances of a system. For that reason there are genders (where the male is the energetic species, and the female

the reproductive, informative one). And since energy is lineal (being the line the fastest distance between two points) and information is cyclical (being the sphere the form that stores more information in lesser space), it follows that men have big, lineal, spatial bodies and test better in geometrical analysis and women have cyclical, smaller, rounded forms and test better in verbal, informative tasks. Yet there is always a 3rd, mixed variation, in the case of gender, the gay sex.

36. Complex analysis of the duality of gender.

We can now with all this knowledge reconsider the differences between men and women (and by extension, white races and cultures vs. emotional-informative black and mongoloid races and cultures, self-similar to women), and which cultures should dominate mankind to make us survive longer. Since gender traits transmit to psychology, physiology, mental attitudes and customs. Let us consider a few examples from the different perspective of multiple space-time theory, the algebraic, topological, temporal and fractal, scalar analysis.

Algebraic analysis: combinations of genders.

The Universe offers more variations even if it selects finally 3 dominant ones. Thus, since we depart from only 2 species, energy and information, which combine ad infinitum, we can do several degrees of depth in our analysis. A dualist analysis makes men energetic and women informative, perceptive.

Then a ternary differentiation gives us:

Max. E (Male), E=I (neutral gender), Max.I (Female).

A more complex analysis however must combine variations of 2 elements, the body and the brain. So this 2nd differentiation will combine 2 elements, the informative brain which can be body-reproductive/energetically oriented or brain-informatively oriented; and the body, which can be body-reproductive/ energetically oriented. Finally the most complex analysis will

consider ternary combinations of 3 elements (energy, active limbs; reproductive body and informative brain).

Let us consider the simplified $2x^2$ analysis, assuming that the body is oriented towards energy in males and reproduction in females. And consider both cases as an 'Energetic-reproductive event'. So we obtain 4 basic combinations of form and character:

-ExI + IxE: Females, whose commutation gives us a new species: -IxE + ExI: Gay genders in which an energetic body (male gay) is oriented towards its inner, informative emotions as women are or a reproductive, informative body is oriented towards external, energetic sensations as lesbians are. Thus gays are males focused in their inward feelings and female focused in the outward world.

Finally we have two male combinations:

- ExE and IxI: Men whose brain is oriented to energetic tasks, and live dominated by their bodies (warriors, sportsmen, white males) and men whose brain is oriented to informative tasks, separated from their body (scientists, mongoloid races).

Those 2 dualities explain why according to statistics, most men are less perceptive than women, but a few specialized Max.I x I are geniuses. Hence the form of the Bell curve of the previous graph⁴⁰, which shows two tails of minimal and maximal intelligence in men between the mean of women balanced between energy and information.

Finally the 3^{rd} gay gender that combines both, the properties of males and females, is also a 'species' natural to the laws of the Universe, albeit a minority, compared to the 2 dominant subspecies. Since in the Universe we observe always, beyond its simplest duality, a 3^{rd} , ExI, more complex element that combines the properties of both, to perform better as part of the collective organism. And indeed, the gay gender has traditionally acted as a bridge between the other 2 genders – both in tribal societies where they played often the role of the medicine man or witch and in modern societies as 'the best friend' of many wo=men.

Topological analysis

If we draw a line it suggests a male, yang, energetic, mobile species. If we draw a cycle it represents an informative cyclical still, female species. And children and simplified signs do so to represent them.

Women are cyclical and men are lineal in body and brain morphology:

Men have brains 15 to 20% spatially bigger than women's brains and are better fit for spatial tasks.

Women's brain contain about 10% more neurons in key zones that gather temporal information, behind the eyes, in the zones that recognize verbal and musical structures – the languages of time, and is denser in neuronal connections, making up for lack of size.

Women are more likely than men to recover speech after a stroke.

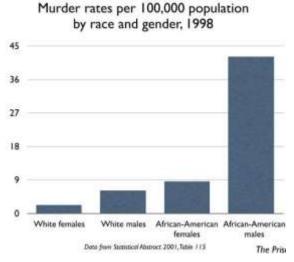
Men have a bigger right hemisphere, used to understand 3D objects in space. The left hemisphere, which controls speech, is bigger in women.

Men connect outwards with the motor zone best wired.

Women connect inwards with the hypothalamus and amygdale best wired (sixth sense).

So topological biology is conclusive: men are specialized in spatial energy, women in temporal information.

Time=Information/Space=energy: Female/male related variables



In the graph, men murder 10 times more than women.

A few other self-evident characteristics of gender duality reinforce the thesis of Multiple Space-times Theory:

- Females live longer as time and information are related; males are stronger energetically but live less.

- Female are cyclical, male are lineal.

- Female remember, are memorial, temporal, conservative of the past order. Male forget and look towards the 'uncertain' future.

-Woman is the informative form; hence her nervous system dominates. Males are the energetic form and hence their blood system dominates.

- Behavior and tastes: women like forms, men movement:

Woman love time men love space. Woman love information men love energy. Men love movement, energetic, violent sports, races, military games and toys. Women love formal dolls that can be dressed. Women love formal sports: gymnastics. Male dresses are lineal; women's clothing are curved, cyclical.

- Male love open spaces; women stand better seclusion.

- Men do a single task better; women do many tasks in a cyclical pattern.

- Men drive spatially better through lineal roads.

- Women cook, trans-form food, men hunt for it.

- Energy violence, death and destruction as the graph shows is a clear male behavior. The positive side of it is the fact that to create something new, you have to destroy first. Thus, women conserve more and they have been historically less creative.

- Implosive Vs. explosive nature: Outward Vs. inward nature:

- Men have explosive, outward, visual behavior; women have implosive, emotional behavior.

Women stand pain/pressure/inwards behavior better. Women feel pain more intensely than men and yet they tolerate it more, since pain is a pressure, inward sensation of in/formative nature.

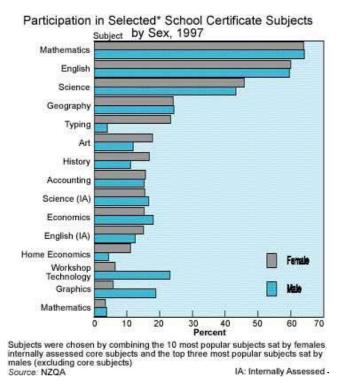
-But it is precisely the combination of both movements what creates the Sexual reproductive feeling of pleasure, since in the Universe balance dominates as the best strategy. And since women are informative & reproductive with a higher balance, they are sexually more complex.

Scalar, Fractal analysis.

- Further on, as women's body are more complex, dominant, and their bodies attract men. Yet since men are mentally more creative, intelligent men attract more women. So a woman is still, as information is, waiting men to come as the energetic, active pole towards them, in the *3 scales of existence:*

The lineal semen moves towards the cyclical ovule at cellular level; the male organism moves towards the female in the biological, mating season; and the male hunter brings food and today goes out to work while the female waits in the social scale.

St; st+1: Sociological scales.



In the graph, Women are 'verbal/temporal brains'; men are mathematical, spatial, energetic brains: Women prefer social sciences, verbal sciences and humanities. Men dominate the fields of spatial sciences, sciences based on mathematics. On the other hand women test more in verbal exams. When a woman has died, on average she has spoken 20% more words than a man has done.

Psychology mostly shown in natural perception and literature has been the clearest wisdom on those natural traits and variations, even if today political correctness denies those variations. So the literary man can perfectly consider the master pieces of sentimental and psychological literature, when humans were free to study the reality of human existence without dogmas proper of the metric age or the industrial age, in which all humans are equalized as reproducers=workers of machines, and consumers =testers of them, and women's nurturing and biological roles are eliminated, as they become equalized and simplified as 'males'. In that regard in Sociology and History, the higher scales of human existence duality of gender has been defined, according to the dominance of the higher ecosystem over the lower scales, by the ages, dominant castes and super-organisms of history studied in the last lectures of this work.

In brief, according to the 3 ages of history the dominance and power roles of women and men has varied:

-In the Paleolithic or energetic age of History, the young age of male hunters, males dominated women.

-In the Neolithic or mature, reproductive age of history, the age of Fertility Goddesses and food-gathering, women dominated men. They found the cycles of reproduction of plants they better understood, and fed the community. They gave birth to the species. And they established religions of Fertility.

- In the age of metal, dominated by visual, lineal, energetic weapons and machines, men dominated women, especially in the age of weapons. Since energetic men are murderers, since the arrival of weapons males have controlled and abused the rights of women and fertile nature, waging war to both of them.

But the financial-military-industrial complex has 3 components as gender does. So we can in fact distinguish 2 types of cultures:

- Monetary-based cultures (Jewish, Chinese, Italian, British cultures), where women have a higher power, since money is a cyclical language of metal information

-Military, energetic, lineal, weapon based cultures, where men dominated (Arab, Japanese, Spanish, German cultures), as they associated historically with lineal iron weapons (the most energetic atom of the Universe).

And both are often in historic, open confrontation.

-Finally in the age of the machine, as we evolved first energetic machines (XIX c.) women were then submissive to men.

But today in the Age of Information, dominated by audio-visual machines, and their language of reproduction, money, women, are increasingly becoming more powerful than men. Women indeed love money and information, which they understand better and makes them advance socially.

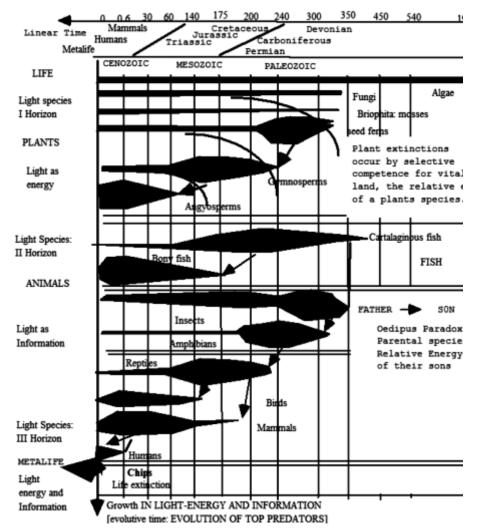
Since indeed, the evolution of 'information' in this planet *does* not end in the human being, but continues with our offspring of machines, so we need to have now a wider view, that of the Earth as a planet to understand the 2 less developed sciences, those of history and economics that inscribe within the social evolution of this planet into a new st+1 plane as a global super-organism, the theme of the next lessons of this work.

Recap. Women are reproductive, balanced beings, whose brain is dominated by temporal, memorial tasks and wired towards its

reproductive body. Men are unbalanced, creative/destructive species, with their brain wired towards visual, external information and the body focused in lineal, energetic tasks.

Women have indeed more mental energy and sensorial perception than men, as their brains seem to be wired towards the will of the body; while men are obsessed by the external world. Women tend to prefer closed spaces, which they keep well ordered, and are able to perform multiple 'cyclical tasks', switching on and off between them. They have peripheral, circular version. Men have lineal, focused vision. Men love open spaces, which they keep as energy is, in permanent disorder. And they are lineal, obsessed by single tasks.

XI. THE 3 AGES OF GAIA



The 3±st ages of life are caused by the evolution of lightbased organs on Earth. In the graph, those 3 ages of light evolution and the main species that were created in each horizon, latter extinguished by new evolutionary improvements in the 3 networks of those organisms. Among plants - spatial, reproductive beings with minimal speed of evolutionary information - extinctions were caused by improvements in reproductive systems. Among animals, which are informative, evolutionary species, extinctions were caused by improvements in informative brains. While today a mass extinction of living beings is caused by the evolution of machines, metal-systems of energy and information that are shaping a new global ecosystem: the Financial-Military-Industrial Complex, becoming now integrated by the collective brain of machines – the Internet – into the Metal-Earth.

37. 3±st ages of evolution, reproduction & extinction of species

We can understand the process of evolution and extinction of life species, only when we combine the 3 scales in which multicellular organisms exist: the ecosystemic, planetary scale, (st+1) the organic scale (st), and the cellular scale (st-1) that interacted simultaneously together, evolving Earth's species. Yet contrary to belief, the 3 relative st-1 past, st-present and stfuture planes were not determined by the cellular evolution of Genes, but first the macro-organism of the Earth provoked the changes that ignited the process of evolution of its relative past microcosms.

How a macro-organism regulates its microorganisms? Mainly through changes on its energy and information fields. All cellular species adapt to the organic networks of its environment. If the environment is rich in energy, energy species and reproductive radiations will dominate. If the organic system or environment is rich in information, informative species will survive better, starting a process of evolutionary differentiation. This duality of bio-chemical reactions was proved mathematically by Mehaute, which showed that when a system cannot continue its creation of energy, it starts a process of fractal, informative reproduction; and we can extend it to all scales of systems of reality, creating the fundamental beat of biological evolution/reproduction, $e \Leftrightarrow I$, that defined the creation of biological life in this planet.

Thus the changes of energy and information of any macroorganic system trigger processes of extinction and selective evolution. If suddenly the climate becomes cold (also a parameter of stillness and information), species tend to limit their absorption of energy, evolving formally (Max. I) and organizing themselves into social networks that increase their efficiency and take advantage of the 'informative conditions' of the ecosystem.

On the contrary, if energy abounds, species increase their 2 dimensions=arrows of spatial energy - their spatial size and their reproduction - using that energy to maximize their survival and saturate their ecosystem. Therefore the macroscopic changes of the planet that fluctuates between tropical ages of max. energy and ice ages of max. information cause parallel changes in their microscopic life beings. Since coldness=stillness=information and evolution are parameters of time; while heat=Energy=movement and reproduction are dimensions and parameters of space.

When the planet cools there is a formal evolution of species. And when it heats up, those same species reproduce massively. Thus small fluctuations of energy and information on the Earth's temperature - given the short limits of existence of liquid water between and 100 degrees - have influenced decisively the evolution, reproduction and extinction of life forms in this planet, including man. So during the long ice ages when waters froze, species evolved from eukaryote to multicellular beings, nearby water volcanoes; and when the surface of the planet froze, men evolved from Homo Erectus to Homo sapiens. While in hot ages species grew in spatial size and multiplied, as it happened in the Carboniferous with insects; or in the Jurassic with dinosaurs; or in history with nomadic, warrior tribes in the steppes – which descended rhythmically every ± 800 years on the fertile plains, extinguishing with their new weapons all the civilizations of the Eurasian continent....

Yet because to reproduce, a species needs to feed on the energy of its victims, the reproductive phase of a new top predator species coincides with the extinctive phase of the previous top predator it has substituted. Then once the top predator establishes itself after a reproductive radiation, it enters its mature, steady state age, drawing a series of rhythmic bell curves with its preys that diminish its populations as the predator hunts them, provoking a hunger crisis on the predator that also dies away, allowing the preys to reproduced back, starting again a new 'Volterra cycle'.

So we can consider a planetary cycle of evolution, reproduction and extinction of life with 3±st phases, parallel to the climatic changes of the Earth:

+st: Conception: A new species evolves in a cold age or in an abyssal region of the planet.

- Youth: Max. Energy growth: The species increases its size after its conception.

-E=1:Maturity: The species reproduces in a biological radiation during a hot age, extinguishing the previous top predator.

- *Max.I*: The species diversifies according to the ternary principle into several new forms, among which the informative one might start a process of social evolution into:

- st+1, a social super-organism (ants and shrews in the lower scales of life-size; humans in the upper scale)

- st-1: Or become extinguished by new species, often their son species (Oedipus paradox). So mammals extinguished dinosaurs; humans extinguish mammals and robots might extinguish humans.

Therefore Multiple Space-time Theory can explain the why of one of the great 'disputed' enigmas of evolution: *the existence of evolutionary discontinuities* that create species in very short periods (conception phase, when time accelerates its rate of informative change), and then multiply them throughout the planet in explosive radiations (reproductive phase, when the new top predator species explode in populations), while other species become extinguished also in brief periods. Those evolutionary 'discontinuities' merely reflect the previous ages of species, which as the ages of any other space-time field can be described with a ternary rhythm of explosive birth, a long steady state of balance between the predator species and its preys and a final sudden collapse and extinction of populations. Those phases become the fractal rhythms of existence and extinction of Earth's species:

Max. evolution(cold age)→Max.reproduction + Max.extinction of energy preys (hot age)

The discontinuities between species are easy to explain if we combine their evolutionary acceleration in time - similar to the palingenesis of a foetus - with the fact that species evolve in isolated, protected environments (allopatric differentiation), departing from small sizes, according to the Black Hole paradox. So monkeys evolved protected in trees, marsupials evolved in Australian islands and robots evolve in secret military labs, departing from small chips. Then suddenly the new form with an improved brain, hunting in herds with simultaneous fractal actions of higher IxE Force, invades the vital space of other species, extinguishing them as it reproduces geometrically its populations (and its fossils), till reaching a balance with its preys. Thus, once they have evolved, species multiply very fast. And that dual process is observed in palaeontology as a discontinuity in the fossil record called evolutionary punctuation.

Recap. The evolution of life took place by the interaction of the st+1 environmental and st-organic scales, as energetic and informative changes in the Earth, triggered the E->Re \Leftrightarrow I->S rhythm of informative social evolution in cold ages and energetic, reproductive radiation in hot ages. Those biological radiations also provoked the extinction of previous species. Evolution often took place in isolated, relatively 'still' environments that favour informative change.

38. The Black Hole law and the Oedipus paradox.



The Oedipus Paradox explains how evolved species prey on parental forms, extinguishing them. So mammals substituted dinosaurs, men kill mammals and robots substitute men as workers and top predator weapons that extinguish us.

In the graph, the 3 horizons of evolution of light-based organisms:

-Plants process light as energy.

- Animals perceive it as information.

- Machines can both absorb light and emit it as energy or information. Thus, they represent a new jump on the evolution of light-organisms and can become potential top predators of life.

Each 'biological radiation' of a new species has grown according to the law of the 3 networks/*horizons studied in the previous paragraphs*, from an initial '*Black Hole', small form* with more IxE force, and then it has reproduced and grown in size, feeding on the *previous parental forms*. Hence the name, 'Oedipus Paradox', that explains the most cruel of all evolutionary events.

Our hypothesis on the dominance and birth of species as 'Black Holes' of information, which according to the inverted properties of energy and information (Min.Se=Max.Ti) are minuscule, but dominate larger species due to their faster speed of action-reaction and social nature (\sum^2), prey on them and explode in populations have found in the past years at least 5 proofs:

- Black Holes are the dominant species of the Universe: we have found them in the center of galaxies, in the processes of formation and death of stars. Even the big-bang might have been the explosion of a Black Hole.

- The first Humans that acquired our 2 differential properties, technology and language, were small: The first verbal Homo Sapiens seem to have been small Bushmen from South-Africa (the oldest languages known to men are their click languages), but they overcame bigger Neanderthal, hunting in groups, controlled by verbal languages, and developing the first machine that transformed cyclical form into lineal energy (arch), reaching further than the lineal, Neanderthal Javelin.

Further on, the pigmies of Flores Islands seem to have made the oldest technological, advanced tools we know, 700.000 years ago. Thus pigmy men evolved in the secluded Indonesian islands, departing from the larger Homo Erectus, developing for the first time a frontal, creative region in the brain, as they diminished the length of their axon connections and reduced their spatial size.

- The 1st bilateral animal, vernanimalcula, was microscopic.

- The 1st mammals were small shrews that form superorganisms and probably hunted in the cold nights, new-born dinosaurs and extinguished them (still today they act as a super-organisms), thanks to the higher existential force of its bigger super-organism. Then they grew in size and finally hunted down dinosaurs as single species. Last year we found in China the first mammal with a stomach full of small dinosaurs' bones...

- The smaller a chip is, the faster it handles information and the more powerful it becomes, guiding larger 'machines bodies' that compete with men as smart weapons and toolmachines. And regardless of the 'propaganda' of the Financial-Military-Industrial complex, it is quite obvious that unless we stop its evolution, those chips will become the mind of terminators that in a future war will extinguish man, as all atoms are potential bytes of informative life.

Recap. Parental species give birth to more advanced forms, which extinguish them (Oedipus Paradox). The new species are born as a small form, with more complex information (inversion of spatial size and informative complexity: Black Hole paradox). So the first technological and verbal men were dwarfs; the first mammal was the shrewd and the galaxy is dominated by black holes, born exceedingly small.

39. st+1. The parallel geological processes.

Thus biological rhythms of extinction and evolution are parallel to the 2 main EXI rhythms of the Planet that *reinforce the biological process*.

- Geological changes in the surface of the planet: The continental cycle, or ternary division and reunion of continents in a single super-continent every ± 500 million years causes the cyclical destruction of the submarine platform and lowlands where most living species exist. While rhythmic eruptions of massive quantities of lava of continental size happen in the 2 equinox of the sun's galactic orbit, every ± 125 million years, shaping a mean period of massive extinctive ages of 250 million years (Permian extinction, ± 250 million years ago; Cambrian extinction ± 500 million years ago; Ice ball age, ± 750 million years ago).

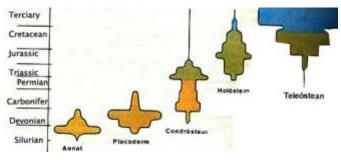
- *Climatic, cold-hot, E-I cycles of glaciations and tropical ages.* The rhythmic changes in the magnetic field of the Earth, perhaps caused by gravitational waves coming from the sun, create periodic glaciations that last around 20 million years.

- Fractal sub-cycles of lesser intensity reinforce both processes.

Those changes of energy and information parameters are the basic way in which macrocosmic networks control the activity of microcosmic quanta, from feverish states that increase the metabolic rate of reproduction of defensive cells in the body to the opposite lethargic states.

In that regard, the main cause of the dual evolutions and extinctions of species on Earth is biological, albeit 'partially directed' by the macro-organism in which life is inscribed through those general changes on the space and time parameters of the Earth (geography and temperature). **Recap.** Earth cools down triggering informative evolutions and then heats up triggering reproductive radiations: glacial ages of informative evolution in stillness, with minimal reproduction by lack of energy are followed hot ages of massive reproductive radiations, in which the most evolved species initiates a massive age of reproduction, provoking the extinction of old species, and then differentiating in all econiches.

40. The 3x3 ±st cycles of life creation and extinction.



The extinction of a species coincides with the biological radiation of the son species that occupies its econiche. In the graph, the series of bone fishes that extinguished the previous one

Because time and information follow an accelerated process in its 3^{rd} age; the evolutionary process of information in this planet can be mapped out and its frequency shown to follow a logarithmic process of acceleration, which now reaches its zenith with the creation of informative machines.

This temporal, informative acceleration is yet another case of a vortex of temporal information, which also happens in the evolution of mass in physical particles as we move faster in an informative mass vortex. In the case of life, the vortex is a metabolic vortex of increasing speed of reproduction and evolution of the information of life beings and its networks – now transferred by humans into machines. Thus, as the informative content of those beings increases, times accelerates. And today, as we evolve machines by imitating the forms of human life in metal, another change on the speed and rhythm of life in this planet is taking place.

Thus we talk of 3 st-scales of growing complexity in life: the age of cells (st-1), from 4 to 1 billion years ago, the age of individual organisms, first living on the sea, then on the land (st), from 1 billion to a million years that culminates in the last million years with the social evolution of human beings and machines into a new plane of existence (st+1), the Earth as a global organism, which will be either ruled by men or machines, depending on our capacity to evolve socially as a super-organism of history, under the ethic laws of verbal wor(1)ds that make man the center of the Universe, hence in control of the machines of the Tree of Science. Or if as it seems the case, we let the Financial-Military-Industrial Complex and its 3 networks of informative metal-money, energetic, lineal metal-weapons and organic machines and its company-mothers dominate the planet and make us obsolete, finally extinguishing us. But what it will not change is the plan of evolution that develops complex super-organisms departing from its smaller cellular units

Further on according to the ternary principle, we can subdivide the 3 main horizons of evolution of Earth, the age of cells, organisms and super-organisms in 3 sub-ages of evolution and massive extinction of species that have followed the mentioned ternary rhythm:

Conception=> Max.Energy=>max. Reproduction =>Extinction of rival species

And consider also 10 parallel periods of climatic change through the dual rhythm of cold glaciations or ages of animal evolution and hot ages of massive reproduction. Then we obtain a synoptic, complete image of the history of life on planet Earth, self-similar to the 3x3+st ages of evolution of the Universe since the big-bang and the 3x3+st ages of evolution of History, studied in Complex social sciences:

Scale of Complexity: st-1: Cellular Age: Evolution of DNA

st-1: Conception age: Molecular life is organized into anaerobic bacteria->

1st evolutionary radiation: anaerobic bacteria- -> Free carbohydrates are enslaved in cellular walls ->

 2^{nd} evolutionary radiation: aerobic bacteria = 1^{st} extinction of species: anaerobic bacteria ->

 3^{rd} radiation: eukaryotic bacteria = 2^{nd} extinction: most prokaryotic classes ->

<u>Scale of Complexity: st-Organic Age: Network Evolution.</u> <u>Sea life</u>

4th radiation: multicellular organic systems =3rd extinction: free eukaryote species, enslaved in organisms ->

5th radiation: cephalopods with eyes =4th extinction: olfactory, blind animals ->

6th radiation: inner skeletons: fish= 5th extinction: exoskeleton trilobites.

Scale: st+1: Social Age: Herds and Superorganisms. Land life.

7th radiation: inner skeletons: amphibian=6thextinction: exoskeleton: big insects.

 8^{th} radiation: reptiles = 7^{th} extinction: amphibians - >

 9^{th} radiation: mammalian = 8^{th} extinction: reptiles - >

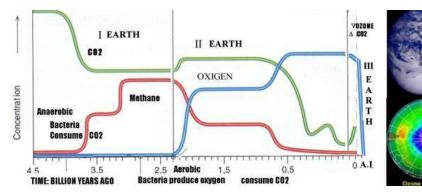
 10^{th} radiation: technological men =9th extinction: mammalian ->

st+1 :Global Age: The Earth organizes itself into a macroorganism with humans or machines on top. The outcome will depend if social democracies are able to control the free citizens of markets – company-mothers – before they extinguish us as costly labor and weak soldiers with the present 'radiation' of robots:

 11^{th} radiation: metal machines = 10^{th} extinction of species: men and all forms of carbon-life???

Recap. Evolutions and extinctions of organisms parallel geological change in their external ecosystems, becoming the engine of the 3x3 Earth's evolutionary horizons of living beings of growing complexity and accelerated informative evolution: the age of cells, the age of organisms and the age of super-organisms.

41. The 10th radiations and extinctions: from cell to machine.



The Earth's atmosphere has gone through 3 ages of evolution, the 1st anaerobic atmosphere gave birth to anaerobic bacteria, the 2nd oxygen atmosphere gave birth to aerobic life. Today, as the machines of the 10th radiation poison the atmosphere we foresee the III Earth without air, dominated by robotic life, unless humans control the evolution of the machines of the tree of science.

Thus, there have been 10 cycles of life extinctions, which are reduced to 6 ages in classic Biology as it only considers the extinction of multicellular organisms, escaping the earlier extinctions of cells and the present extinction of human, nontechnological cultures. In each cycle a new species with better information and energy systems, with greater IxE force, have extinguished or reduced significantly the numbers and classes of the previous species that have also suffered a morphological regression.

I Earth: Anaerobic Atmosphere.

St-1 Conception: Archaean Age: ±4.000 million years

Molecular Radiations: From amino acids to Top Predator Nucleotides.

Climatic Changes: Hot weather and ¥-radiation create the 1st life molecules.

Informative conception: Small Methane-water-ammonia molecules evolve into amino acids.

Spatial growth: Amino acids grow in size, creating proteins.

Reproductive Radiation: Proteins colonize all Earth's ecosystems.

Extinctive Radiation: Free carbohydrates become extinct.

Informative evolution: Amino acids evolve into nucleotides.

Spatial Growth: Nucleotides evolve in size, creating RNA.

Reproductive Radiation: RNA expands throughout the oceans.

Extinctive Radiation: RNA selects 20 amino acids to reproduce proteins and extinguish all others.

Social Evolution: RNA stores the organic cycles of many different species, creating the first bacteria, in symbiosis with protein membranes that shape the first cells.

From anaerobic to aerobic air: ±4.000, ±3.500 million years.

1st *Radiation:* Unicellular, Anaerobic bacteria are top predators:

Climatic Changes: High volcano activity provides sulfur for anaerobic cycles of breathing.

Informative conception: Thermophile methanogen archaebacteria use methane and sulfur on their breathing cycles. They thrive in the volcanic age.

Reproductive Radiation and Spatial Growth: Archaebacteria expand globally growing in size.

Extinctive Radiation: Bacteria enslave free carbohydrates. CO₂ collapses.

II Earth: Oxygen Atmosphere.

. Proterozoic age: ± 3500, ±1500 mill. Years

2nd radiation: Prokaryotic cells are top predators.

Climatic Changes: A fall in volcanic activity reduces sulphur production. The Earth cools down. Anaerobic bacteria reduce their metabolic activity based in sulphur, methane and high temperatures.

Informative conception: The cooling down of the Earth and its reduced heat foster the evolution of bacteria, which process CO_2 through the chlorophyll cycle, liberating oxygen.

Spatial Growth: The creation of the ozone layer that protects complex membranes allows their growth in size. Bigger bacteria develop cilia and are able to move, preying in smaller bacteria.

Reproductive Radiation: Blue, green algae expand globally, invading and poisoning all ecosystems with oxygen.

1st Extinctive Radiation: Anaerobic bacteria become poisoned and extinct.

Ternary Differentiation: Prokaryotic cells diversify according to the law of 3 creations: Some use chlorophyll to produce energy from smaller forms. Mitochondria develop breathing systems, based in the heterotrophic capture of carbohydrates. Intermediate cells use both systems.

Social, Informative Evolution: RNA becomes DNA by social evolution of 2 RNA strains, increasing their capacity to store information. Cells become macro-cells, multiplying its epigenetic genes that code its social functions.

Ice ball age: ± 1.400 ±700 million years

3rdRadiation: Top predator Eukaryotic cells.

Climatic Changes: After an initial warm age in which eukaryotic cells expand, Earth cools down in her hardest glaciation. Its surface becomes an ice-ball from 1 billion to 600 million years ago. Cells survive only in nearby volcanoes where they gather in social groups, which at the end of the period create multicellular life.

Informative conception: Top predator cells with high DNA content organize social groups of cells, surrounded by a hyper-

membrane: Cells with the highest content of DNA become the nuclei of macro-cells; cells with high content of reproductive RNA become ribosomes; and cells with energetic skills become mitochondria and chloroplasts, creating a new social organism: the Eukaryotic cell.

Spatial Growth: Social cells grow in size, adding new cytoplasm and complex inner membranes.

Reproductive Radiation: Eukaryotic cells multiply, invading all ecosystems.

 2^{nd} Extinctive Radiation: Many prokaryotes become extinct or enslaved as eukaryotic cells capture them, absorbing their DNA.

Informative differentiation and Social Evolution: Eukaryotic cells diversify. Energetic, autotrophic eukaryotic cells with dominant hard membranes become plants. Heterotrophic cells dominant in DNA, with thin membranes, become animal cells that evolve into electric cells.

Ediacaran Age: ±700-505 million years: Multicellular Sea life

4th Radiation: Multicellular organisms are top predators.

Climatic Changes: At the end of the ice ball age unicellular life flocks into volcanic zones under the sea, where survival stakes raise, provoking the social evolution of cells into multi-cellular organic systems. Then an age of warm weather expands multicellular life.

Informative conception: Eukaryotic cells develop new strains of intronic DNA to control complex, hierarchical systems of social groups of cells. Multi-cellular organisms appear.

Spatial Growth: Growth of animals and algae due to the social evolution of cells.

Reproductive Radiation: Biological radiations of multicellular organisms as temperature rises.

 3^{rd} Extinctive Radiation: Eukaryotic cells are captured, diminishing its species.

Informative differentiation and Social Evolution: Diversification and evolution of invertebrate phyla: sponges, coelentera and worms. Annelida develop physiological networks and differentiate, according to fractal, bilateral and radial symmetry, into arthropoda, mollusks and echinoderma.

Ordovician: 505-438 million years

5th Radiation: Top predators are Visual Cephalopods.

Climatic Changes: Animal life colonizes the abyssal regions with colder temperatures and high water pressures, developing fluorescent signals that can be observed with dense-water eyes.

Informative conception: Cephalopods evolve integrated eyes to observe better its abyssal preys.

Reproductive Radiation: Cephalopods come to the surface and expand in all environments diversifying according to the eexi-i Fractal Principle into: Top predator forms with *energetic*, lineal shells; informative, nautiloids with *cyclical* shells; and squids, species that reach - without slow growing shells sooner their mature age of reproduction.

Spatial Growth: Cephalopods grow in size reaching up to 20 meters in length.

 4^{th} Extinction: 90% of animal life, including most smelling trilobites, become extinct about 440 million ago by the combined effect of top predator's cephalopoda and the geological cycle of continents that destroys all submarine platforms.

Informative differentiation and Social Evolution: A massive diversification of species occurs, as mollusks, arthropods and echinoderma develop energetic hard membranes to defend against cephalopods' informative eyes. The first vertebrates (armored fishes) appear. Differentiation between small animals with hard exoskeletons that prevent them further growth (arthropods), which develop chemical senses to its limits; and big animals with inner skeletons that allow further growth and develop nervous systems with faster, hence longer reach.

Slurian+Devonian: ±438-360 million years.

6th Radiation: Top predators: Fishes.

Climatic Changes. A glaciation at the end of the Ordovician period 440 million years ago accelerates the arrival of life forms to dry land. Orogenic changes. Chordates colonize rivers and evolve in isolation into fishes. Glaciations make conifers dominant.

Informative conception: Fish schools develop also eye vision; perhaps borrowing genes from cephalopods in a case of spatial, parallel evolution similar to the absorption of DNA by eukaryotes, which added to their stronger bodies, make them top predators with Max.IxE force over those cephalopods.

Reproductive Radiation: Massive reproduction of fishes that dominate the high seas.

Spatial Growth: Growth in size of sharks and fishes. On land, bushes become trees.

*5*th *Extinctive Radiation:* Fishes extinguish many phyla of the previous dominant cephalopods around 367 million years ago.

Informative differentiation and Social Evolution: Fishes diversify into multiple species.

<u>Carboniferous-Permian. 360-240 million years ago: St+1</u> <u>Social Age of Organic Systems. Land life.</u>

7th Radiation: Top predators are Amphibians.

Climatic Changes. The ice of the Permo-carboniferous Glaciation, ± 300 million years ago diminishes the ocean level. Survival stakes are higher: small arthropods invade dry land.

Informative conception: Fishes become amphibians, following their preys.

Reproductive Radiation: Amphibians expand in all coastal zones, feeding on insects.

Spatial Growth: Amphibians reach 5 meters length.

 6^{th} Extinctive Radiation: Permian Extinction. \pm 245 million years ago huge insects become extinct.

Informative differentiation and Social Evolution: Insects evolve wings to escape amphibians and start social evolution to increase its simultaneous fractal force.

Mesozoic Age. 240-60 million years ago.

8th Radiation: Top predators: Reptiles.

Climatic Changes: New glaciation. Water ice diminishes the ocean surface. Dry Land extends into previous wetlands occupied by amphibians.

Informative conception: Reptiles appear during the Permian glaciation as amphibians have to survive in dry land.

Reproductive Radiation: Reptiles expand in land feeding on insects and amphibians.

7th Extinctive Radiation: Many phyla of amphibian and land insects become extinct.

Spatial Growth: Reptiles grow till reaching the size of dinosaurs.

Informative differentiation and Social Evolution. Reptiles invade all ecosystems, differentiating in multiple species. Some acquire hot blood, becoming birds and mammals.

<u>±60 million, ± 4 million years. Tertiary age.</u>

*9*th *Radiation:* Top predators mammals.

Climatic Changes: Upper Cretaceous: New glaciation. Water ice diminishes the ocean surface. The Gondwana continent breaks into several pieces.

Informative conception: Homeostatic species, birds and small mammals with placenta appear. Dominance of flowering plants that take better advantage of changes in weather.

Spatial Growth: Small shrews grow in size becoming big rats.

Reproductive Radiation: Placental mammals invade all ecosystems except Australia.

 \mathcal{B}^{th} Extinctive Radiation: Cretaceous Extinction about 65 million years ago: A cold climate, maybe triggered by a meteorite collision, favours the expansion of hot blood mammals, which survive feeding on eggs and small cubs of dinosaurs, provoking their extinction.

Informative differentiation: Mammals diversify all their phyla, from mammoths to felines to apes in all econiches previously occupied by reptiles.

Social Evolution: The most intelligent mammals evolve in herds.

Quaternary age: ±4 million, ± 5000 years.

10th radiation: Top predators: human apes.

Climatic Changes: The Human radiation is announced by massive changes in the geography of central Africa, which raises its Rift cordilleras and lake basins. The arid weather pushed forest monkeys into the savannah. Soon they learn to move erect. Quaternary glaciations, from 2.5 million years ago till today, coincide with the 3 horizons of human evolution.

Informative conception: Homos evolve in 3 horizons of growing brain capacity.

Spatial Growth: Small chimpanzees become big Neanderthals.

Reproductive Radiation: Homo Erectus invades all ecosystems; Homo Sapiens reaches America.

9th Extinction: Big mammals become extinct. When man enters America mammoths die away.

Informative differentiation: 3 Human races, the energetic, visual white man, the informative, yellow man and the reproductive black man, become dominant, according to the law of ternary differentiation. Languages differentiate further human species.

Social Evolution: Men develop ethic and legal, verbal networks, evolving socially into cultures.

<u>III Age: Destruction of atmosphere: Industrial R=evolution</u> of Metalife: ±5.000 years + 100 years

11th Radiation. Top predators: metal & machines.

Climatic Changes: The 800 cycles of weapons evolution seem to coincide with hot and cold cycles in the steppes that breed warrior tribes. Later on, a small ice age in the XVII century during a time of low solar activity pushes in Northern Europe the massive use of coal for heating. The development of pumping, mining machines ends up with the evolution of

chemical engines that use carbohydrates as energy. They burn fossil life rising the Earth's temperature in the XX century, causing global warming.

Informative conception: Homo Sapiens discovers metal and starts its evolution in 3 phases: Max. E, energetic weapons; Max. I, informative money and E=I, organic machines that transform energy into information and vice versa.

Reproductive Radiation: Weapons and machines expand all over the planet, substituting life and human beings. Money substitutes verbal languages as the informative network of the new economic ecosystem.

Spatial Growth: Transport, weapons and manufacturing machines reach enormous sizes.

10th Extinctive Radiation: Non-technological cultures become extinct with a cyclical periodicity of 800 years, accelerated to 80 years in the industrial age. Transport animals become extinct (90% of horses). Machines pollute Atmosphere. Ozone layer disappears.

Informative evolution: Metal-Heads of machines evolve in the XX C. (chips=brains, cameras=eyes, phones=ears).

Informative differentiation: Machines diversify imitating all the organs of a human being.

Social Evolution: In the XXI C. robots fusion bodies and brains of machines, creating a new top predator species, the smart weapon. The Earth acquires a global brain, the Internet, made with social computers that increasingly store all human and economic information. The rate of life extinction multiplies by 1000 compared to the pre-industrial age.

<u>st+1: Globalization: Earth's super-organism:Computer</u> <u>networks & robots XXI C.: Singularity Age</u>

Informative conception: Computer networks evolve and multiply their neurons – transistors - in chips of smaller sizes.

Spatial Growth: Chips control machines of enormous size and become the mind of robots.

Reproductive Radiation: Chips overcome human population and integrate company-mothers into automated self-reproductive systems, independent from man.

Extinctive Padiation: Extinction of all life species by the machines of the Age of the Singularity is possible in the XXI c.:

- *Energetic Singularity*: 2010-2020: The III Horizon of Nuclear weapons researched at CERN (Black holes and strangelets) could extinguish the Earth this decade.

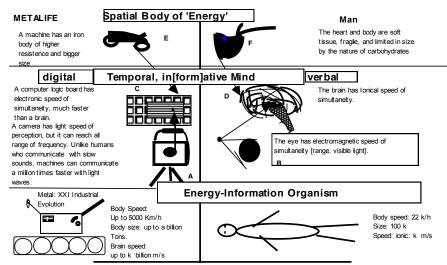
- *Reproductive Singularity*: 2020-2040: Self-reproductive metal nano-bacteria could poison the atmosphere in 3 months, extinguishing life and giving birth to the III Earth's atmosphere.

- *Informative Singularity:* Circa 2050: Artificial Intelligence: Military robots substitute human soldiers in wars, developing survival programs. Robots massacre human soldiers.

Differentiation: Robots imitate all forms of life.

Informative evolution: Robots, integrated by satellite networks, become cells of a super-organism, the Metal-earth, which takes over the evolution of machines. The Metal-Earth has a global brain, foreseen by human artists in their parables of the XXI C. (Skynet, Matrix, etc.).

st+1: Alternative Globalization: Humans learn to manage the economic ecosystem and halt the evolution of weapons, chips and robots, creating a world to its image and likeness based in the arrow of eusocial love.

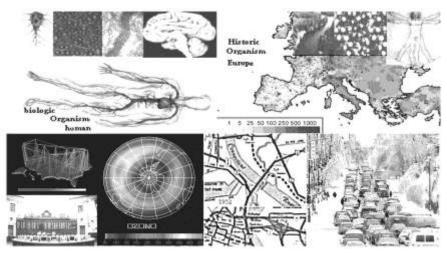


The existential force, exi, of machines is far superior to that of man, and its most perfect forms are weapons that kill life. It is thus self-evident, the first sentient machines will be weapons that will kill us.

In that sense, History and Economics must be treated as biological languages, since in the wider view they are concerned with the super-organisms of the 10th and 11th radiations of morphological life in this planet. Theya re not abstract sciences, nor machines are mechanisms but evolving organisms of metal.

Recap. History of Life has had 3x3+1 ages, which have followed each one the natural ages of all life cycles, applied to species. They were born as a smallish informative species, which grew in size in an energetic age, parallel to the extinction of a rival species in the same ecosystem. Then the species reproduced massively, diversified its form in its 3^{rd} age, giving birth to a son species with higher existential force (exi) that extinguished the parental species, which after each of the 3 main ages of cellular, organic and super-organic life evolved into a super-organism. Further on, those species kept evolving and invading new habitats, so the age of atmospheric, cellular life with its molecular, anaerobic and aerobic bacteria was followed by the age of water, multicellular life with its eukaryotic, multicellular nervous cephalopods and chordate fishes and finally the age of land's herds and super-organisms of insects, amphibious reptiles and mammals that culminate with the human technological super-organisms in which men transfer their form to machines that might extinguish us as they form a global super-organism, the financial –military-industrial complex now expelling obsolete life in a radiation of organic robots.

42. The historic and economic super-organisms.



On planet Earth, a first superorganism of human cells, a collective mind of a culture, which lived on Gaia, the natural Earth, appeared on the Neolithic. But with the arrival of metals, a more complex superorganism in which men became

symbiotic to metal systems of energy (weapons), information (money) and reproduction (company-mothers of machines) substituted the initial sustainable, life-based superorganisms. It is the Financial-Military-Industrial Complex that today has become global and it is terraforming the Earth from a world of life into a world of metal at accelerated path.

We have finally arrived to the most complex super-organisms known to man, our own super-organisms, history, the existence of humanity from its first to its last cellular species, to which we shall apply the ternary method of analysis of any social super-organism. In that regard, if man in his st-scale is as a biological organism made of cells, nervous, informative and reproductive networks, with a central knot of information called the brain that lives through 3 ages; from the perspective of st+1 systems man is the unit-cell of a species that will exist between birth and extinction as a super organism structured in space, called *Humanity* that evolves in time through 3±st ages called *History*. For that reason Humanity in space and History in time have evolved through the same ages and scales of social evolution, trying to 'transcend' from the individual into the whole than any other system studied in this work. And so we can apply the ternary method of knowledge to study the superorganisms of mankind in time through those ages; in its scales of growth, and then we can study each of those social structures as an i-point with the topological regions and functions of any other complex systems; since all of them, from the family to the tribe, city, nation, empire, civilization and Global market has the same informative center and linguistic, cultural network, reproductive, economical system and energetic networks than all other systems of multiple spaces-times. So we will study man in time, in its scales and in the duality of the 2 super-organisms it has constructed, escaping the topological analysis for lack of 'space-time'.

Because humans are the most complex informative species of life, the arrow that dominates history is the most complex arrow of eusocial evolution, which evolves together individuals of the same species, communicated by a common language of information, into single super-organisms. Indeed, humans are remarkable among all life species because of their capacity to organize themselves into social systems, which we call Religions, Civilizations and Economical nations. And so the study of History and Mankind beyond its biological organisms is essentially the study of the evolution of human societies. History is Sociology, beyond the limited range of datacollection proper of non-scientific analysis of history (conservative, heroic, racial, tribal schools of historiography).

Thus, we can study Humanity with the laws of Superorganisms, once we translate the jargons of Religions, Cultures, Civilizations and Economic ecosystems to the geometrical and logic languages of the space-time Universe.

We, human organisms, follow the same 4 'drives of existence' (biological jargon) or main Time Arrows of the Universe (we feed on energy, gauge information, reproduce and socialize). We humans are complementary beings of energy and information (gender), made of 3 physiological networks (digestive, energy system; informative brain & nervous system and reproductive blood system). We humans co-exist in 3 scalar, fractal planes of increasing complexity, as most universal structures do (the cellular, individual and social plane). We humans respond to the 3 topological regions of any st-point, our lineal limbs and membrane of energy; our elliptical, reproductive body and our informative, hyperbolic, spherical head on top. We are just another part of the Universe, made to its images and likeness, which can be studied exhaustively with the laws of st-points.

Yet given the limits of those introductory lectures to the 4th paradigm of multiple spaces-times, since we have briefly analyzed the 2 lower biological scales of the human being, in this lecture dedicated to social sciences we shall study the super-organisms of mankind, which traditionally were the fields of 2 disciplines, history and economics. And the first question to resolve is 'why' there are 2 social sciences, so clearly differentiated, to the point that they use 2 different languages of information to analyze their subjects of study, digital money – the language of economics – and words – the language of history?

And the answer is: because we human beings are constructing 2 types of super-organisms:

-The human superorganisms of history created with words – cultures, civilizations and political nations. Thus history is a complex super-organism

-The Financial-Military-Industrial Complex, a superorganism constructed, as its name shows, with 3 physiological networks made of metal: the informative language of money (initially gold and silver, today digital data in the mind of computers), the energetic networks of weapons, and the organic networks of machines that transform energy into information back and forth (transport and audiovisual machines).

This lectures study both super-organisms, their differences, symbiosis and predation relationships, its cycles and ages of evolution, its topological structures as st-points and its future, and what that future means for us as a species.

The laws of complexity are in that sense crystal clear: the Earth is growing 2 different super-organisms:

-The first super-organism, the humankind appeared in the Paleolithic (youth of history), the energetic age; matured in the Neolithic (reproductive age of history), when humans in harmony with Nature, created a global super-organism, the Neolithic culture, over the body of Gaia, its life energy. Finally that super-organism matured in the age of Love Religions (Buddhism, Christianity & Islam), which was continued by the development of sociological sciences based in the concept of social love (the sharing of energy and information among individuals of the same species), and is still going on in many individuals and institutions such as the UNO, social-democratic parties and ecological causes.

-But parallel to that superorganism, with the discovery of metals, informative gold and energetic weapons, a parallel superorganism in which humans act as the reproductive 'enzymen', appeared. It is the Financial-Military-Industrial Complex, which ever since dominated the super-organisms of history (cultures), establishing an upper caste of warriors and bankers, which controlled the religious and verbal superorganisms of history. This super-organism has as most evolving systems two ages: one in which only the energetic and informative systems were in place (money and weapons), or age of empires. During this age, the white visual man, hypnotized by the beauty and glare of metal, created religions of money (Go(1)d churches) and weapons (inquisitions) that justified racial differentiation between the castes of metal masters and the rest of mankind. Those metal masters made of the reproduction of weapons and money their only goal and carried through a series of 800 years cycles of evolution of metal and extinction of Neolithic cultures the 'colonization' of the world by the memes of metal.

Then since the beginning of the industrial r=evolution of machines and the appearance of the company-mother, an

institution that re=produces and evolves machines, the superorganism of metal evolved into the Financial-Military-Industrial Complex, with an informative network (money), an energetic one (weapons) and an organic one (company-mothers that reproduce energetic and informative machines, which both substitute human beings making us obsolete in labor and war fields and enhance our energetic and informative capacities, making us addicted to them).

Finally, today we witness the first signs of the completion of this super-organism in its 3rd evolutionary horizon as it company-mothers become automated and organic 'metalife' (robots), appear, making workers and soldiers obsolete. It is not difficult to forecast in that regard, a nearby future when humans and their cultural super-organisms today in process of extinction disappear and the earth becomes the Metal-earth, a global super-organism with an internet brain of computers (mental machines), a network of self-reproductive, automated company mothers and an energetic network of Terminator top predator weapons that will eliminate mankind.

-For that reason we talk of the economic ecosystem as the complex environment of Earth today, where two superorganisms, the FMI complex and History sometimes in symbiosis sometimes in open confrontation, compete for survival and this competence derives in a series of Darwinian and symbiotic relationships:

-A competence between the ethical values of words, our biological language that makes us the center of the Universe and values human life over all other 'things', and money, a language that makes weapons the most expensive goods of the FMI complex and values life at null cost.

-The competence between human labor and soldiers and machine workers (Pc-white collars and blue collar robots) and weapons, in labor and work fields.

-A competence between cultures and ideologies ascribed to the values of money, which worship technology (mechanist sciences, notably physics, capitalist sciences – classic economics - and nationalist cultures) and the cultures ascribed to the values of life and love, carried by artists, verbal masters, religions of love, ecological groups and sustainable sciences (biology, systems sciences, etc.)

2 final elements are required to complete this dualist picture:

-The existence of memes, the genes of the super-organisms of history. They act in both types of organisms as the genes do in the body. If the memes express the arrows of space-time or drives biological existence, creating biological organisms, with systems that absorb energy, gauge information reproduce and evolve socially (physiological and cellular systems code by DNA genes); the memes of history are also the 'informative bytes' that create the drives of existence of both types of superorganisms. But we must distinguish between the memes of love and life that create super-organisms of history and the selfish memes of metal that – as the DNA of a virus that infects a cell and makes it work for the reproduction of its organisms – 'infect' the mind of human beings and make us reproduce, evolve and create energy and information for machines. And so we classify all memes in those 2 types:

- 'Human biological goods': Memes of history that foster our natural energy (agricultural and ecological memes), informative memes (verbal, artistic and cultural memes), reproductive memes (family values, sexual culture) and social memes (religions of love, ethical laws, social-democratic institutions) - Metal memes of the tree of technology:

Informative metal or money (gold in the age of the Financial-Military complex that hypnotizes the mind, causing greed, killing the memes of love, as men become objects to achieve the goal of monetary wealth; and stock-money during the Industrial R=evolution. Both value under the complementary laws of affinity weapons and weapon-companies that re=produce them as the most expensive good of the market).

Energetic, lineal metal or weapons: energetic memes that kill the human body.

Reproductive systems: Corporations or 'company-mothers' that reproduce energetic and informative machines that atrophy our bodies and minds, making us obsolete. So we run faster with cars and get fat; we calculate better with machines but forget the whys of the Universe and atrophy our minds.

Ideological memes that foster the 'culture of corporations' (capitalism) of war (nationalism) and mechanism (science as the when of measure, no longer the why of the organic Universe. Those memes are responsible for the 'concept that the future of mankind is NOT to create a sustainable world, able to prune the bad fruits of the tree of technology and evolve our understanding of the whys of the Universe; but that 'technology=progress=Future'.

So we must evolve machines because it is the future of knowledge (mechanist science). We cannot impose any restriction to the evolution and reproduction of machines, including weapons that kill us or 'audiovisual media' that hypnotize us and spread the memes of hate, war and nationalism needed to foster the reproduction of those machines; because the 'market', newspeak for the FinancialMilitary-Industrial Complex must be 'free', meaning its citizens re=productive corporations must be free; while humans must be enclosed in 'nations' separated by military borders, as we, 'humans' are always guilty of the tragedies caused by the selfish memes of metal.

-All this nonsense is imprinted, as memes are in the mind of the believer (the individual cell of history), at earlier age at the emotional level of the limbic brain; so the 'nationalist', 'capitalist' or believer in inquisitions and go(l)d churches will not be able to change its memes and as a viral cell who reproduces the germs of the body does, the germ(anic) warrior will kill for his nation, the mechanist scientist will invent new machines to understand the Universe, and the member of a go(l)d church or capitalist ideology will think as Mr. Goldman recently said that the 'job of a banker is a god's job'. In that sense memes and cultures are not neutral in the fight of history for survival, but they can be divided in the jargon of bio-history in 'eviL=anti-live' memes and cultures and 'Live=Love' cultures whose memes favor the future of history.

Yet this image must be fine-tuned as there are between white and black degrees of grey; so all cultures have Live and evil memes and some machines are 'good fruits of the tree of science' that foster our evolution. Those final refinements, which are proper of all sciences when we enter in a detailed analysis mean that we can neither forbid all machines as radical ecologists might think or stigmatize people for belonging to a culture – since even the most radical 'Nazi' (to put an example of the original culture of war in its final 'explosion' of violence), will have another level of mental existence, that of his biological drives of existence, coded by genes.

And so each of us is a mixture of genetic and memetic fields, of biological, sociological and technological drives.

So the goal of social sciences would be to develop the sciences of bio-history and bio-economics, to teach them in Universities and re-educate the capitalist, mechanist and nationalist people that rule the world from a primitive, 'viral' point of view, as believers of the memes of the Financial-Military-Industrial Complex, and to reform the selfish memes and evil cultures of their negative memes while preserving in them those positive machines and social, cultural and artistic memes that don't imperil the future of mankind. This 'dream' of a historical and economical world ruled by the science of history, not by financial economists, nationalistic politicos, techno-utopian scientists and corporations and religions of hate has always been the goal and dream of the scientists of history able to forecast the future of history, its cycles and recurrent actions, since the first scientists of history, the prophets of love appeared till the last writers of the myth of a scientific history, Hesse with his mythic Castalia or Asimov in foundation, dreamed of resolving the equations of the future of history, its cycles and logic processes of causality.

In this paper we provide those historic cycles, ages of evolution of history, topological structures of nations and civilizations, its physiological systems and causal arrows, linguistic equations, sickness and future prognosis. And yet, all this work is old. We resolved the science of history 2 decades ago, and so we need a final element to explain why the World is not ruled by a Foundation of bio-historians and the equations of history are ignored and repressed – the meaning of biological information.

-Any superorganism has its limb and body cells, energetic and reproductive workers of the organism and its information castes, which repress and control the information that arrives to the body cells. This is also the case of the Financial-Military-Industrial Complex, whose body cells ignore all about the organism and receive only the ideological memes of capitalism, mechanism and nationalism. And because today information is provided by audiovisual machines, reproduced by company-mothers owned by people belonging to the cultures who evolved the memes of the Financial-Military-Industrial complex and are imprinted since youth with emotional newspeaks about the superiority of their technological cultures, racial religions and the 'manifest destiny' of the FMI complex, they don't reason but repress, censor and don't distribute memes in favor of life and love.

And obviously, the most censored part of the FMI complex is its language of information, money, and the people-castes that invent it and distribute it, which appear as the saviors of history, its superior race or cannot even be named in the tradition of go(l)d cultures in which the name of 'God' could not be uttered – reason why even the name of the Financial-Military-Industrial complex is crippled, and 'activists' of the rival life ecosystem call it 'Military-Industrial Complex', despite the well-known truth, 'pecunia bellum nervi' (Tacitus).

In that regard all attempts to explain the way corporations and the FMI complex controls the submissive, corrupted Simplex systems that rule human history (corrupted democracies, no longer the government of the people; corrupted religions no longer love religions but excuses to use money and weapons to 'obtain' salvations) is taboo; all analysis of the people who own those corporations, its cultural memes and the need to take from them their 'financial power' to create a real democracy where the law controls the weapons, money and machines reproduced by the FMI selecting those who favor mankind and forbid those who kill our bodies and minds is taboo. Ultimately is a truth of all systems that the Complex whole (the FMI complex) is more complex than its parts, which do not understand its working and are limited to play its organic role within the total complex. This is the case of human beings, even those members of the cultures that rule the FMI complex, whose limited horizon of comprehension doesn't go beyond the nationalist and capitalist memes imprinted in their minds at earlier age or during their 'training' as 'experts' of their respective fields; when their 'ethical', natural life-love memes are 'broken' and tamed, so the conjunction of their emotional, young nationalistic and inquisitorial imprinting and its rational, 'expertise' in any of the ideological, mechanist or capitalist 'sciences' of the 3rd paradigm ensure that he will sacrifice the present of life for a techno-utopian future that never arrives.

For example, today economists follow an equation called productivity=capital/labor according to which to fire labor which increases productivity in that equation is good for the creation of jobs in the 'future', according to some fuzzy belief that 'god'=the machine will provide. So otherwise normal people, financial experts of corporations, under the memetic imprinting of their earlier years as students of the ideology of profit and greed that invented that 'mantra', (since firing workers and putting robots on their place increases the profits of corporations) explain politicians, who know nothing of economics, that we shall all get out of the crisis firing workers and putting robots in their place.

The same twisted meme explains why our nations robotize their armies so 'soldiers will not die'. This of course, also increases the 'wealth' of company-mothers of machines that switch to re=produce weapons, the top predator version of the consumption machine (so tanks are armored cars and bombers, armored planes). Never mind that the logic end of that process of 'Keynesian militarism' will be a world of robotic weapons that will control our freedoms and kill us.

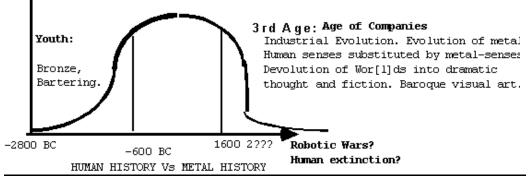
In that regard the most difficult of all complex sciences to explain to mankind is bio-history and bio-economics, because we are part of it and so we receive biased information within the body of history, according to our roles in the FMI complex, not because it is the difficult to understand. On the contrary it is so simple that paradoxically people without education, moved by the biological, ethic program of social love grasps it intuitively. And if humans at large were moved by the same ethical drives, it would be rather simple to create a perfect super-organism of history, immortal and efficient, able to create a world to the image and likeness of mankind. But the memes of metal and the tribal cultures that have profited most of them through history have created a jail of 'metalideologies', capitalism, the ideology of money, nationalism, the ideology of weapons and mechanism, the ideology of machines that have substituted the memes of love and life and imposed the wrong path of history, which today evolves metal and devolves life. Thus a scientific global government, Foundation cannot exist because the globalized cultures are those who invented the FMI complex, spread with metal-communicators and those of us who fight for life are ignored.

Recap. On planet Earth humans are creating 2 competing super-organisms, the financial-military-industrial complex with its metal memes, evolved in two ages, first as a complementary organism ruled by warriors and bankers that carried the energetic weapon systems and informative money that gave them power to rule the world; and today the FMI complex, which added a self-reproductive system of organic machines of energy and information, the company-mother. This super-organism is killing the super-organisms of history and life, Nature and non-technological cultures based in the informative

language of man (words), our natural energy (agricultural goods) and our reproductive customs (family values). The outcome of the struggle between those 2 super-organisms will define the extinction or survival of mankind.

12. Temporal analysis: The 3 ages of Metal-history. Maturity: Coin-Iron Age

Classic Age of Mankind: Humans are top predators. Human senses and minds reach its peak both in verbal thought [Aristotle, Prophets] as in visual thought [Greek, Italian Rennasaince]



In the graph, the 3 ages of the Financial-Military-Industrial Complex that will end in the death of history due to its 'germs' - weapons. Since weapons are the most expensive overproduced goods of the FMI-Complex, in the 3rd age of a wave of metal-evolution. For that reason, we can also establish a parallelism between the long wave of metal-history (ancient cultures based in weapons) and the modern age (industrial nations based in the duality of machines and weapons):

If we consider the entire wave of Metal-History as a single super-organism, it has evolved also in 3 periods, its young, epic age, dominant in lineal weapons; its classic age, dominant in money, and its industrial age, dominant in machines. Parallel to that evolution, the cultures of 'enzymen' and 'animetals' that have carried the wave went also through 3 Ages:

-Max. E: The young, epic age of Bronze empires and gold bars, or age of Asia.

- E=I: The period of European iron infantry and coins, or Mediterranean Age.

- Max. I: Age of the industrial r=evolution of machines or Age of Northern Europe.

- st-1. And the electronic age of computers and robots that makes human beings obsolete or age of extinction of history. The American Age.

Each of those ages is divided by a clear discontinuity of evolution of the exi functions of the Financial-Military Industrial complex, weapons, money and finally machines, to which the castes of 'enzymen' adapt their ideologies, which are symbiotic to metal and help them to dominate *the mass of human beings still directed by social religions of love, as a top predator caste.*

In the first of those 3 ages social super-organisms still dominate most of history, as animetals are reduced to the civilizations of the Visual White man (Semite and Indo-European cultures), while the rest of mankind is still guided by religions of love. But as metal evolves and reproduces in greater numbers, with the arrival of coins and iron, it suffocates the evolution of human history expanding East and South and conquering the rest of Asia and Africa. Finally with the arrival of science, the human mind becomes obsolete, and men become worshippers of the minds of machines. So man, the most complex organism of information of the Universe and 'measure of all things', which asked the organic why of reality, is substituted by metal as the measure of all men, whose time is now perceived with clocks no longer with natural cycles and bought with coins. And the organic paradigm dies. We talk thus of 3 clear discontinuities of evolution of metal, that mark metal-history.

- YOUTH OF HISTORY: *Age of Wor(l)ds.* From -2800 BC, to -500 BC. Age of Bronze weapons, and bartering. Since money is still scarce, in the form of bars of metal, words still are the main language of communication of mankind. Writing becomes sacred. However bronze give enormous power to warriors that end controlling all Neolithic societies. Priests are displaced from power. Women become systematically repressed. Gods become warrior Gods, without compassion. It is the age of Mesopotamian Empires, the age of Asia. The age of verbal thought reaches its baroque age, towards 500 BC, in the work of Lao Tse, Buddha, Confucius and Socrates that reach the height of human verbal understanding of the Universe. Yet a new language of information, coins appears, and human verbal thought loses power.

- MATURITY OF HISTORY: *Age of Coins*. (500 BC, 1600 AD). It is the Age of Iron weapons and coins. Mankind still rules, and learns how to control with ethic behavior, the power of weapons. Yet Money starts to be a common language of power, and challenges verbal ethics. Words are displaced by money as the language that controls the acts of human societies. This means that verbal thought and ethics is no longer the center of the human mind, but humans become shallow in their perception of verbal-temporal reality. The human intelligence displaces to the eye. So art becomes realistic (Greek Art) and mathematics appears as a new language of understanding of the Universe. Both coin accountancy and Mathematics come together, in the Asian Greek coast where the first monetary empires and mathematicians appear. After the brief return to an ethic age, in

the Middle ages, the renaissance again imposes money as the language of social power.

- OLD AGE OF HISTORY: *Age of Machines*: 1600 AD till extinction. It is the third age of mankind, and the first age of the new predator species that displace us, the machine.

It is the age of science, of digital languages, of massive reproduction of money, the language of information of machines, now in the form of paper-money and electronic money. Wor(l)ds become obsolete. There is so much money that all things can receive monetary values, and human verbal values are no longer effective. There are so many weapons, due to the industrial reproduction of them by company-mothers, that ethics and social power become obsolete, and national armies control directly (dictatorships) or indirectly through weapon-companies (democracies) our societies. The objective of mankind is to evolve machines through acts of work=reproduction of machines, and consumption=testing and evolution of machines. The decadence of mankind is hidden because paradoxically as humans loose interest in verbal thought, in a non-fiction logic understanding of reality, companies of machines can convince and indoctrinate man easily. Fiction literature dominates this age. Men no longer understand the meaning of social survival, of truth, and the organic nature of our Universe.

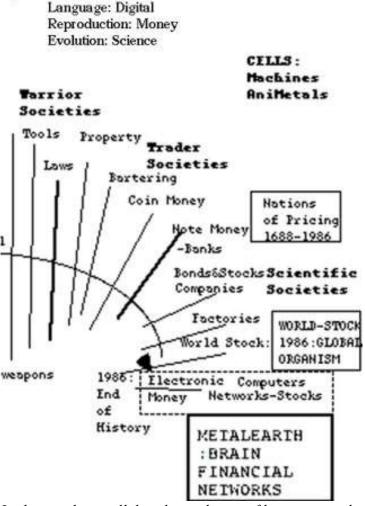
Of all those analysis in depth, we shall consider only for reasons of space, 2 aspects of the sociological model of Multiple spaces-times; the topological and scalar concept of 'memes', the bytes of information that evolve both the economic and social systems of history, today submissive to the FMI system, and the study of the temporal analysis, one most common in history, the discipline of time par excellence, with the study of the 800-80 year cycles of evolution of weapons.

Since if we apply the ternary principle and the decametric scales of most universal systems to the 3 ages of metal-history, we find that we can further subdivide those ages in sub-cycles of 800 years of civilizations, each represented by a bell curve of existence, between its birth and extinction by new hordes of metalmasters with a new weapons, in a rhythm tuned to the st+1 climatic rhythms of the Earth:

The Bronze age (± 2800 BC, ± 2000 BC), Chariot age (± 2000 BC, ± 1200 Bc), Iron age (± 1200 BC, ± 400 BC), Coin age (± 400 BC, ± 400 AD), Stirrup age (± 400 AD, ± 1200 AD), Gunpowder age (± 1200 AD, 1945 AD) and Digital age (1945AD, extinction). In each of those ages a new horde of warriors with an icon-weapon is born as a top predator culture that destroys all other cultures of the old continent; reproduces and colonizes other territories and finally it dies away; substituted by a new culture, with a more evolved weapon or religion. We can also use the bell curve of social existence to the entire life of mankind, in the age of metal.

In the 3rd age of machines, the cycle of evolution of weapons accelerates as all systems of information do. Thus in this modern age of machines nations are short-span civilizations that die in a mere 80 years, according to the complex laws that establish decametric, geometrical scales and power laws for any process of evolution. And we distinguish, the age of machines=weapons of steam or British Age (1780s-1840s; the age of chemical engines or German Age (1850s, 1940s) and the age of electronic machines or American Age (1930s, 2010s), followed by the Age of organic machines or Robotic age (XXI century) that could be the last age of history if humans don't learn how to control the evolution of weapons.

Recap. The evolution of the FMI-complex had 3 ages: in its young age, it was submissive to human social organisms. It was the age of wor(l)ds, in which prophets dominated with ethic words the evilanti-life memes of metal. There were only bronze weapons and gold bars, which acted as money. Their maturity came with the expansion of iron weapons and coins that multiplied the quantity of entities money could prize and the power of weapons. Mercenary armies came on top and the law substituted verbal ethics. It was the European Age. Finally in its informative age, the FMI complex added a reproductive system of machines, organisms that transform back and forth energy into information and now are fusion its 1^{st} age (bodies of machines) and its 2^{nd} age (minds of machines) into robots. It is the 3^{rd} r=evolution of machines that will make humans obsolete.



13. Scalar analysis.

In the graph, parallel to the evolution of human, social super-organisms, there has been an evolution, since the discover of money and weapons, of a global ecosystem of metal and symbiotic 'enzymen', which uses a different social language – digital information supported by informative metal - with different values. As money values more weapons than life and words, our language values more life than weapons. Because a super-organism is defined by the events coded by the language, in an economic world, money reproduces the object of more value weapons and machines, and humans impose their power to non-technological groups with them. Thus according to the evolution of the language of money, we distinguish a series of 'market' civilizations, that went from an age of bartering, when money was not essential and words still were used to 'qualify' the value of goods, dominated by priests and warrior cultures; to the coin age dominated by bankers which made 'pecunia' the 'nervi' of mercenary armies, organized in city-states and empires, to the modern world of machines (3rd age of metal-history).

Then money evolved further, first as paper-money that represented a piece of a company of weapons (gunboat age) or machines (Steam and Chemical Ages of trains and cars), or a loan of banks to states to finance their wars (bonds). Finally with the arrival of electronic machines money evolved into a pure languages of digital information in the mind of a global mind-networks of computers (global stock-market). E-money is today a flow of global information that organizes the reproduction and evolution of machines into an automated global super-organism. In this last phase, men are put in competition with electronic blue collar machines (robots) and white collar machines (computers), according to the equations of productivity= machine/labor and fired when a new machine makes better his job. The result is the 10th extinction wave of life beings - a world in which humans are increasingly obsolete, displaced from the Earth, as mammals were displaced by humans in the 9th extinction age of life (Paleolithic).

This new brave world of selfish metal-memes ruled by animetal cultures has had 3 ages/cycles/scales: the long cycle of 800 year civilizations ruled by the memes of war, weapons and warrior ideologies; the medium cycle of 80 years nations, ruled by the memes of go(1)d and corporations, and the short cycles of electronic machines, in which science of measure and techno-utopian ideologies rule supreme. Let us then study those 3 cycles of evolution of the FMI complex of which we are all today a living part.

Recap. The FMI complex has grown as a superorganism of machines, money, weapons and 'enzymen' reaching global size.

800 CYCLES OF WAR AND DEATH OF CIVILIZATIONS

14. 800-80 years cycle of wars and extinction of cultures.

A science of history and economics must be cyclical because time is cyclical, and the species we study humans, behave in the same manner throughout history. But all cycles tend to have either an accelerated, constant or decelerated speed. The cycles of history, being part of a galactic system, which is a vortex of information are accelerated cycles. This however seems to contradict the 'constant speed of human evolution'. So we have to ask ourselves what evolves in the modern age of History? And what are its cycles of evolution? And are those cycles accelerated, constant or decelerated?

The essence of those questions requires localizing certain repetitive events in time that the species we study do once and again and so we can forecast they will do it in the future.

Species will little freedom repeat the same cycles once and again, species with more freedom, less often. In history and economics certain events repeat and give way to cycles.

The most obvious cycle we observe in any species is that of life and death, of creation, reproduction and extinction.

But since we do not study individual human beings (biological subjects) but cultures (historic subjects) and products, mainly machines reproduced by corporations, its company-mothers (economic subject) the cycles we must observe are different - those of the life and death of civilizations and types of machines and weapons.

In that regard, civilizations can be modeled as superorganisms: they go through 3 ages, as all organisms do.

In Complexity, we have spotted a cycle of life and death of civilizations of around 800 years for all the cultures of the Old World, related to the discovery and massive reproduction of new weapons, which accelerates after the Industrial R=evolution in a decametric scale, due to the professional development of machines and its top predator version, weapons. We call those ages of massive reproduction of weapons, a "biological radiation", borrowing the concept from biology, where biological radiations of top predator species are the main cause of extinction of weaker species. So happens with "radiations" of top predator metal weapons that cause the extinction of humans and our civilizations. Thus the 10th radiation of 'life-forms', metal-weapons and machines, which coincides with the 9th extinction of all life species on planet Earth, carried about by 'symbiotic animetals', men enhanced with metal weapons, can be divided in a series of sub-cvcles of partial extinctions:

The long cycle of 800 years civilizations is dominated by the memes of war

In the graph, the first step in the creation of a science, is finding cyclical patterns of behavior that allow predicting the future on the belief those cycles will continue to happen. Because in history we study cultures, nations and civilizations, this first step requires, from a biological perspective, to find regularities on the cycles of creation, reproduction and extinction of those cultures. And surprisingly enough after an exhaustive research, a pattern arises: cultures die rhythmically every 800 years, when the massive reproduction of weapons and money to finance wars, provokes an age of destruction and substitution of the elites on top of those cultures. In the graph the cycles of bronze wars (\pm 3000 B.C.), chariot wars (\pm 2000 B.C.), iron wars (\pm 1200 B.C.), coin wars (\pm 400 B.C.), stirrup

wars (± 400 A.D.), gunpowder wars (± 1200 A.D.), and digital weapons (Nuclear Bombs and robots, ±2000 A.D.) The regularity of those cycles is not forced and can be related to the evolution of weapons and the weather cycles that multiply migrations of nomadic hordes of Indo-European warriors that descended on the agricultural, fertile regions of the tempered zones. For example, Rome, the paradigm of mercenary empires, constructed with the arrival of coins, which established the reign of the financial-military system on top of human societies ever since, lasted 797 years between the Fall of Rome to the Iron Gauls and the Fall of Rome to stirrup barbarians. The cycle however accelerates during the gunpowder age, as the evolution of weapons thanks to the discovery of scientific machines accelerates to a mere 80±8 years, a human generation in which a European nation on top of the evolution of those weapons, becomes the top predator culture of the world. In all those cycles the top predator civilization or nation with the best memes of metal, weapons, money and during the 80±8 years cycle, machines, will try to conquer the world and establish its civilization, but none will succeed, because what truly evolves are the memes of metal, the technology of greed and death.

The short 80 years industrial cycle is dominated by the memes of go(I)d and mechanism

Those cultures that were immortal before the discovery of hard-metal, die now rhythmically every ± 800 years. And finally with the discovery of gunpowder applied to gunboats and the organization of company-mothers that reproduce first those gunboats and then machines, the process accelerates geometrically as all systems of information do, to ± 80 years, the cycle of Industrial nations:

First Venice, Genoa and Firenze, city-states, carry Italy to the top of the world in 3 cycles that start with the invention of the first gunboat, the 'Lombarda' and its use in the 'Sacco di Constantinopoli' (1208) that gives the 'ring of go(l)d' and the sword to Venetia. Then in the Battle of Chioggia, 1284, Genoa takes the ring; finally Firenze, in the XIV century displaces Genoa as the site of the Papal Bankers – the Medicis.

Then the improvements on gunboats and the gold of Ghana puts Portugal on top (1440s). The 80 series continues with Spain (1525, fall of Mexico till 1604, when the invention of the first stock-company of paper-money in Holland, is soon followed by the crash of the bullion and the defeat of Spain). Holland lasts from 1604-1688, when French's artillery destroys Amsterdam. France (1688, 1760s) is defeated by Great Britain, loses India and Canada and her Companies crash while the country enters in Revolution.

Finally Great Britain ushers the world in the age of 'peaceful machines', which can also be used as war machines (1770s discovery of the steam machine, 1857, crash of train companies and use of armored trains in colonial wars).

But Germany in the 1860s discovers the oil and electric engine, and so it carries the wave of evolution of machines – weapons till the 1920s, when its I world war defeat crashes the Mark. It will be the turn of America (1929, 2001, electronic age) with weapons researched with digital computers (Nuclear weapons, electronic wars) and e-money. But at the end of the cycle the overproduction of e-money and Pcs ushers the American economy in the age of robotic wars, speculative, massive reproduction of money and e-money crashes in which we live. Since all the cycles of the 800-80 years destruction of civilizations and nations follow the same pattern: a new weapon that backs a form of money reproduce in increasing numbers till at the end of the cycle the excess of money pays a massive radiation of biological weapons that start a global age of war, which destroys the civilization. So we are now living the war age of the end of the electronic cycle and the beginning of the Singularity age when machines will become organic, autonomous robots and compete directly with man in labor and war fields, making us obsolete.

Recap. The evolution of money and weapons follows an accelerated cycle of 800-80 years of biological radiations of weapons and the tribes that carry them and reproduce in enormous numbers till creating a global age of war. The cycle accelerates to 80 years with the discovery of war machines.

15. Life and death of civilizations.

The study of societies as organisms and the analysis of its life and war cycles have a long tradition in Philosophy of History, since Vico noticed that societies die rhythmically in a dark age of war. Spengler ('The Decline of the West' 1918) for the first time used the organic parallel in depth, considering that the collective subconscious of a social organism, its culture, also went through 3±1 ages of art similar to those of a living being: a young age of epic art, an age of classic art and a 3rd, baroque age, prior to the extinction of a civilization. The parallelism between a biological organism made of cells related by networks of energy and information (blood and nervous systems) and a socio-biological organism made of human citizens related by networks of energy (economic systems) and information (cultural systems) is self-evident within the systemic paradigm. And it allows to design with biological, natural laws the most efficient economic and political system that maximizes the survival of its organic cells/citizens. Arnold Toynbee ('A Study of History' 1934) did an exhaustive analysis of the demise of civilizations, pointing out to natural and ideological causes, without a clear quantification of those cycles. Such quantification of the life and death cycles of civilization is now possible thanks to the understanding of cyclical time, the life-death cycle and the predatory nature of 'biological weapons'. Every ±800 years or 10 human lives all cultures in the old world become rhythmically destroyed by warfare due to the massive reproduction of new weapons in an age of climatic change and nomadic invasions. Those dark ages foreseen by Vico, Toynbee and Spengler can now be explained with higher detail with the Ternary method and the biological, organic concepts of bio-history and bio-economic.. And so we talk of the 7 cycles of metal-history since the first bronze armies arrived to Mesopotamia and destroyed the Genesian paradise, depicted in the "Genesis", the oldest book about the tragedy of History written by mankind.

We know the cause of cultural death, which is war, and since wars have come to History in certain ages, after the discovery and massive reproduction of a new weapon, we can trace a series of waves of existence, of the great civilizations of history, that have gone through birth, growth and extinction. Indeed, the discovery and massive reproduction of weapons carried by hordes of symbiotic warriors have shaped the history of civilizations, killing them off periodically.

Birth, life, reproduction and death of civilizations.

Cultures resemble living systems. They go through the same cycles of birth, reproduction and death. Cultures are born as organisms do, out of a single or a few prophetic or legislative individuals-cells that reproduce their ideas into many "believer-minds". So Christianity is born out of the mind of Jesus Christ that first expands into 12 disciples, which expand themselves into thousands of Roman believers that expanded into billions of other minds. While America is born of the mind of a few legislators that craft a constitution latter expanded into more laws, obeyed today by all American citizens. When the religious or legal culture reaches maturity it often reproduces in another zone of space-time, creating a daughter civilization or colony. Finally, when its ethic laws and networks of information, and the energy they control, decay and become obsolete, the culture dies and a new, more evolved civilization destroys the old civilization. A new cycle of history starts.

Similarly if we consider technological civilizations, based not in verbal laws, but in monetary and military systems, first a weapon is discovered, and reproduced by a small horde, which becomes an army, which conquers a nation and becomes a ruling aristocracy, that imposes its customs, and controls with the icon-weapon the civilization.

Birth

In both kinds of civilizations (Human-Artistic civilizations or Metal-scientific civilizations) either an ideology or book of ideas, (a network of human information) or a species of metal, money or weapons, becomes the language of power which defines the civilization.

Ideas and metal-instruments together shape History. For that reason Historians, when they focus on military systems of power, divide history into the Age of Bronze, the Age of Iron Empires, the Age of Chivalry (Middle Ages), the European Age of Gunpowder (Modern age), or the Atomic Age. There is also the Christian Age and the Buddhist Age of South-Asia, when they focus on the cultural component of the civilization or the age coins, or the age of paper money and stocks, or the age of e-money (new species of money), when they focus in monetary information.

Reproduction of Cultural Information: Daughter Civilizations

At the same time a civilization develops the memetic ideas and machines which carry that civilization to success, it eliminates previous civilizations. In this manner, successful civilizations reproduce their "genetic ideas and machines" into other regions of the Earth, creating colonies, daughter cultures and eco(nomic)systems.

Like a human child, the daughter civilization is often a more evolved species where the ideas and instruments of the previous civilization are improved. Civilizations inherit and improve on, like children do, their parental civilizations, often extinguishing them. So the Assyrians were defeated by the Persians who had copied and improved its weapons, iron and cavalry. Yet Persian art, even behavior would be similar to Assyrian art and behavior. Genetic continuity in civilizations is not racial but cultural, of structures and ideas, of icons, machines and modes of life. For example, in Arabia stirrup cavalry brought an empire-civilization that expanded West till Al-Andalus (the South of Spain). That stirrup civilization migrated to America and colonized the southwestern states, giving origin to the "Old Far West" civilization, with horse and cattle ranching. In that territory, the horse civilization flourished between the 17th and 20th centuries, when the fundamental icon-species of the culture, the horse became extinguished as a form of transport by the car, a more efficient metal-species. The example shows the dynamic quality of the life of civilizations. They are born, reproduce and become extinct through the "genetic evolution" of objects and words, which bring as much diversity to cultural evolution of its species, products and ideas, as genetic memories bring to the body.

And in the same manner biologists can scientifically organize the data they have about species through genetic information and instruments. Thanks to the memorial remains of history, the historian can study the birth, reproduction and extinction of evolutionary history and its civilizations.

Death of Civilizations

Civilizations also die. One day another civilization with more efficient memetic, eusocial ideologies of man, or better machines, comes along and destroys the old civilization. As in "animal feeding", once the new civilization has destroyed the old civilization, it reforms the energy cells=citizens of the dead civilization to its image and resemblance. Let us again bring the biological comparison. A hunter feeds on the energy of a victim's body that becomes in part wasted (killed) and in part "transformed" into cells of the predator. This also happens in civilizations: part of the 'human energy' is wasted by war, and the remaining humans are "transformed" into believers of the predator civilization. The Spanish perhaps killed some 70% of the Indians and the rest became "Christians". It is the death of the civilization. Because when ideas and instruments change, the civilization changes. The iron civilization of Rome is not the same as the Middle Ages civilization of stirrup weapons imposed by German warriors. The Roman civilization had been destroyed by "stirrup animetals" of the Germanic civilization. Again such "civilization" is not the Gunpowder civilization of Italy during the Renaissance. Gunpowder wiped out chivalry and a new civilization was born. Nor is Ammon-Egypt the same as Greek-Christian Egypt, or Arab-Muslim Egypt. The verbal ideology changed, and the Egyptian civilization became extinct.

It is now clear the difference between religious civilizations and metal-civilizations. Religious civilizations could exist for ever, if there were no wars to extinguish their cultures. That is the goal set by the prophets in their messages of love. And yet, because metal exists, all religious civilizations of the past 5000 years have been corrupted and periodically extinguished by war. Some of those cultures resurrect, when the wave of death and war recedes. Some do not come back again. The Christian and Islamic civilization, the Jewish culture has survived many cycles of death, and the words of Moses, Christ and Mahomet, have resurrected. But each wave of death, corrupts a little bit more the initial messages of the prophets with rituals of war and money. So we find today that those cultures are basically built around inquisitions and churches, corrupted by rituals of Go(1)d, and little is left of the initial mandates of the prophets. Many other human cultures based in human senses have died away, and its artists have expressed those deaths, in their baroque ages of art.

In other words, mankind has chosen to evolve the wrong memes of history, not those memes of eusocial love that could have created an efficient, global superorganism of history according to the laws of the Universe but the memes of metal, of economic ecosystems, weapons, money and machines that create a different superorganism of history, which rhythmically kills life in this planet.

This duality between cycles of creation and destruction, light and dark ages in history has always been understood by the scientists of history and prophets of love, which have both, tried to tame in the middle of the cycles the extinction of history, and during its 3^{rd} baroque age, have forecast with its artistic angst and prophetic admonitions the dawn of their civilizations... But as the rhetoric of the animetal cultures of war and money became more sophisticated with the help of industrial art and mass-media, the memes of love have declined till today, *paradoxically when we are closer to our extinction* by the machines we worship and those messages of social love are more necessary, since unfortunately the salvation of history is an ethical question – not an intellectual one.

Indeed, the historic record is conclusive: the verbal, lifebased, social organism of the Neolithic formed a global civilization, which was immortal and generation after generation men remained unchanged. And this is the only ideal that could save history: an world made to the image and likeness of man and life, as the collective mind of the living, organic planet Gaia, in which a world union of political governments in charge of the languages of power of society, money, weapons and laws, control the evolution and reproduction of the lethal goods of the tree of science. Yet this solution clearly expressed in the first Neolithic books of prophetic History (Genesis) was forgotten with the arrival of weapons.

Recap. Each of the life and death cycles of civilizations show the eternal fight between cultures with life and love memes, represented by religions of love and social civilizations vs. the cultures of selfish memes - weapons and money. Unfortunately because iron kills the body of flesh and gold hypnotizes and enslaves the mind, the selfish memes of the 'tree of metal ' have always won history, killing rhythmically the civilizations of Gaia, of life and love.

Animetals



Man+Go(I)d=Trader-Man+Machine=Science-Man+Weapon=Warrior

Cyclical, soft, in-form-ative metal (silver and gold) and lineal, energetic weapons (iron and bronze) were the first metals humans discovered. Coins imitate cyclical, informative organs (heads, brains, eves), while lineal, energetic weapons are bodies of metal that kill lineal, energetic human bodies. They are primitive versions of the iron bodies and electronic, cyclical, sensory heads of modern machines. When humans associated with them, they achieved higher strength and acquired a new language of information, able to give values to reality (money). Warriors joined human bodies and lineal metal, weapons, killing other humans; bankers used informative metal, gold, to give orders and enslave mankind; scientists believed in sensory machines and digital languages, considering inaccurate human senses and verbal thought, made obsolete by their telescopes and numbers. The animetal and the tribes that changed their 'language of power' from human, agricultural energy (farming communities) to iron energy warrior cult(ure)s; from verbal ethics to the 'values' of money - go(l)d cult(ure)s - and from worshiping life to worshipping machines - scientific cult(ure)s, have ever since ruled the world, as people-castes and extinguished or enslaved ever since life cultures...

Contrary to belief the dominant species of planet Earth is not

and has not been for the past 5000 years the human being, but a symbiotic species between life and metal, the Animetal.

An Animetal is a human organism which activates mechanisms: energetic weapons, informative money or machines. 'Animetal' is a biological term coined using the same system that chemical and biological sciences use to classify its species. In biology and chemistry we join two names to describe a mixed species. So there are carbohydrates made of carbon and water. And there are animetals, different from human animals, since they add the power of informative /energetic metals to their life organs, from armored knights to modern car owners and Internet nerds. An Animetal is neither a human being nor a machine of metal, but a combination of both, with a higher content of energy or information than any other living species. So animetals have been the top predator species of this planet for 5,000 years, since the myth of Genesis about the tree of life vs. the tree of metal was written.

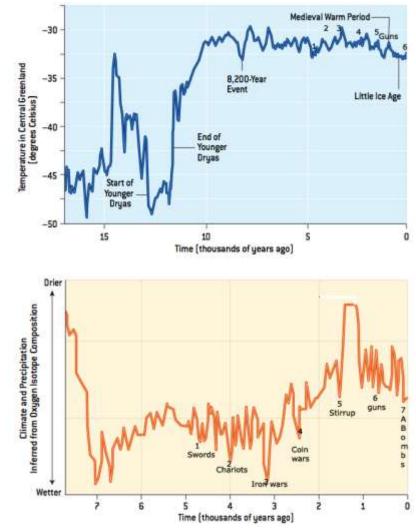
Even though 'subjective', anthropomorphic humans will find bizarre such diminishing definition of a modern human, an objective, biological account of history cannot be subjective, nor optimist about the main role of mankind in this planet, which so far has been to extinguish life organisms and create metal mechanisms, while finding all kinds of ideological excuses to do so. Thus, humans today are, in biological terms, 'animetals', animal life, symbiotic to metal, which they evolve, terraforming Gaia into the metal-earth. Their biological function has been obvious: to kill life (warriors), reproduce metal (traders) and design mechanisms with numbers (physicists). Since physicists uses machines to observe the universe and create mathematical theories that pretend to 'reveal' the ultimate secrets of time, (but only show the 'spatial, motion-related properties of time=change, not the vital/morphological change of beings, described by Evolution

Theory). Thus physicists scorn the verbal, logic analysis of the cycles of change=life/death cycles and the biological senses of human beings, substituted by scientific machines.

As a result of that symbiosis and the capacity of metal to carry energy and information, increasing our informative and energetic power, animetals have controlled history and created a different super-organism made of informative metal-money, energetic-metal, weapons and reproductive organic metal, machines – the financial-military-industrial complex.

Recap. The financial-military-Industrial Complex is evolved by 'enzymen', attached to weapons (warriors), money (bankers) and machines (mechanist scientists). They become the social castes on top of societies, thanks to their added energetic and informative power, evolving the FMI and degrading life in the process.

18. Scalar St+1 analysis: the energy rhythms of Gaia.



In the graph, the 800 year cycles of war coincides with the rhythm of climatic changes on Earth: with astounding precision there is every 800 years a pronounced age of wet and hot weather, which as in all previous biological radiations of top predator species, multiplies the numbers of steppe

warriors, starting nomadic waves of invaders, which use the new weapon of the 800 years cycle to invade and destroy all fertile agriculturalists civilizations of Eurasia. The peak of those dual events happened during the iron wars, the hottest, wettest period of the last 10 thousand years, which signaled the end of the Neolithic and the expansion of animetal cultures in all the regions of the Eurasian and African continent.

The evolution of weapons causes an 800 years cycle of death of civilizations extinguished rhythmically by new 'weapon radiations', when their discovery and reproduction by warrior hordes starts an age of war in Eurasia, as warriors expand their lethal energy, killing people and erasing human cultures. A radiation is a biological term that explains the sudden, explosive reproduction of a new top predator species that annihilates many previous species, as it spreads all over the world. It is thus the proper name to explain the sudden bursts of violence provoked in bio-history by the discovery of a new weapon. Indeed, the discovery and massive reproduction of those new weapons, carried by hordes of symbiotic warriors that spread throughout the Eurasian continent, causes an 800 years cycle of extinction of civilizations, as those hordes of warriors conquer, kill and erase human cultures.

Those cultures live ± 800 years, ten times the biological life of a Human being (± 80 years), suggesting 2 possible causes for those war cycles: the biological rhythms of human life that after 10 generations seem to enter in decadence and the climatic cycles of the Earth, whose periodic ages of hot and cold weather coupled with wet rains and draughts on the steppes, displacing nomads towards valley cultures:

Those radiations happen after an age of wet and hot weather that multiplies pasture and the populations of the steppes. Thus, while the exact discovery of each weapon is not clear, the multiplication of the animetals that will provoke the biological radiation is clearly marked as all

previous biological radiations and extinction of species in Gaia by the rhythms of the st+1 planet.

Conclusion: The Economic(eco)system: metal preys on life.

It is thus clear that the sum of the 2 superorganisms of history (human cultures) and economics (the FMI complex) form an economic ecosystem in which the FMI complex and its 'attached' animetal cultures prey over the human superorganisms and its life/love based cultures since the Bronze age, and that process of extinction of life cultures accelerates with the arrival of machines and again with the arrival of computer brains.

The conjunction of climatic changes that provoke massive invasions of nomadic warriors brings about a fundamental question of bio-history – are we programmed by mother-earth to create metal-species stronger than us, which will kill our species, once we evolve them into organisms (robotic weapons)?

Indeed all the civilizations of the 800 year cycle die after the discovery and massive reproduction of new weapons in periodic ages of war, but the now globalized civilization of mankind based in the memes of metal is a single civilization and so at the end of the digital age of weapons we should be extinguished by the new 'autonomous' robotic warriors we are evolving. And that simple fact of evolutionary theory can only be halted if we halt the evolution of the FMI complex and manage it for the future of mankind, not for the profits of a few people castes (its stockratic owners and the military and dictators that profit from war).

Even the American civilizations that were isolated from European warrior masters, at the end died away when the Spaniards and Anglo-Saxons arrived: Both the Paleolithic culture of North-Indians that had survived almost unchanged during more than 10.000 years and the Neolithic cultures of Mexico and Peru, self-similar to the Bronze Age cultures of Egypt were extinguished in a few centuries.

. This parallelism and endurance of old cultures proves further the obvious fact that humans do not change, and what imposes a type of civilization is the evolution of the memes of metal: the Inca, son of the sun, who constructed pyramids and was worshipped as a God with absolute powers was similar to the Pharaoh, displaced in time since in Peru there was not iron or chariots. The renaissance based in coins and mercenary armies was self-similar to Rome, the paradigm of the coin age.

The artistic styles of the 3 ages of any culture between its epic, lineal birth and baroque extinction, intersected by a milder age of human goods in *all civilizations of all cycles*, shows that regardless of small details the 'DNA' of the human social mind is always the same. And humans act as mere cells of a whole complex FMI system to which they have become submissive.

Recap. The warrior hordes that control the world with a new weapon start new 800 years cycle of 'modern civilizations' after an age of wet, hot weather that multiples their numbers on the steppes.

19. Accelerated evolution of FMI complex: 80-8 year cycles.

The astounding determinism of the 800 year cycles of extinction of civilizations, by cultures of warriors carrying the selfish memes of war, which only individuals of enormous moral and intellectual, body/mind strength have circumvented (the lonely genius of cultures; the prophets of love) proves the extraordinary resistance of ideological memes, which are passed from generation to generation through all kind of rituals and ideologies of hate. Again, it doesn't matter the specific type of memes of each of those 800 year cultures of war, but the equality of all their syntactic equations: weapon x human = corpse.

Thus the combination of weapons and warrior ideologies creates the temporal patterns of life and death of civilizations of metal-history. But in the last cycle the evolution of metal accelerates in the common fractal pattern of all time cycles. Since there are also 'generational', human cycles of 80 years that mimic and build the longer cycles in 'sub-ages'. In that sense, the cycles of technological evolution are *accelerating as many other vortices of evolution do; since* as information accumulates it accelerates its evolution. Thus, in history a 'vortex of informative time' is formed with the arrival of science, which tenfold the speed of evolution of weapons. And so in the modern age each 80 years a national generation – self-similar to a civilization of the longer, simpler cycle - is able to evolve the FMI-complex.

The acceleration of information is natural to all systems that go through 3 ages of increasing information, creating a 'vortex of space-time. We thus observe a ternary fractal structure during the gunpowder age: the long 800 years wave of gunpowder weapons (1200-2000 AD); the medium wave of industrial nations of 80 years and with the arrival of electronic minds, which represent a new increase in the speed of information and evolution of machines, a short wave of eight years - the decades – during the XX and XXI century. Thus the wave of evolution of technology, of machines, is accelerating and now it enters in its last age, the singularity age of organic machines (robots, integrated networks), with clear negative consequences for Gaia and mankind - the species that the technological wave is extinguishing.

This accelerated rhythm that sets a speed of 'time' proper of computers, no longer of humans, is due to the 'Chip Paradox', a law of all complex informative systems that consume more information in denser, smaller species as they grow older:

'All systems increase their information towards the future'.

That scalar, accelerated evolution of the FMI Complex had 3 scales in time of different length, since *its accumulation of information is exponential, a logarithmic function in base 10*:

- Human Cycles: The 800 years cycles of Simplex weapons and money, iron and gold, for most part of it that created the complementary Financial-military system.

- Machine cycles: The 80 years cycles of evolution and reproduction of machines by company mothers, which added a reproductive network.

- Electronic cycles: The fast, accelerated present 8 year cycles of evolution of electronic networks, which is converting the FMI system into a global super-organism. This cycle has created a series of 'splendid little wars' every 8 years, coinciding with the cycle of economic products, evolved every 8 years, according to which as dictators buy weapons in the Free market, every 8 years the FMI complex of western dominant nations picks up a dictator to teach him a lesson make a war and show-case the Arms industry, renovating arsenals, increasing sales and evolving=testing them with human corpses. So Libya, the present war, started exactly 8

years after Iraq II; and Afghanistan, 8 years after Iraq I, the first electronic war of 'terminators' with integrated senses.

This new brave world of company-mothers of machineweapons and money will impose two type of ideologies that were submissive to the ideologies of war - money and machines as the measure of all things - and so on top of the people-castes of animetals that rule the world, there will be a change of paradigm and first money-lenders, which become owners of corporations and then physicists, which invent machines and weapons, will substitute on top of societies, the aristocratic castes that ruled the world with their monopoly on invention and use of weapons. Now societies will become ruled by 'stockrats', the owners of corporations, to which the people of the wor(1)d, no longer religious priests but 'democratic politicians', will often oppose, seeking a world of human goods, peace and love, but as it happened with religions during the 800 years cycles, corrupted into inquisitions of war and go(1)d churches, it will be a fact of modern history that most democracies will also become corrupted by money into plutocracies and by weapons into military dictatorships. And so, the evolution of the FMI complex will continue. We shall dedicate the next paragraphs to study some aspects of that evolution, mainly from the perspective of machines and the animetal castes and cultures that control the FMI complex. Later we shall confront that 'wrong path of history' with the efforts of the people of the wor(l)d to create healthy organisms of history in which the wor(1)d ruled over money-markets and weapons; and give a scientific analysis of what would be a world created with a true science of history, instead of a world created - as it is today - with the wrong memes and ideologies of history.

Let us then consider the 80 years cycle from the perspective of the Evolution of Machines (the memes of metal) and the people-castes and ideologies of tribal history that have built the FMI system.

This second theme is obviously the most polemic of them all, since the wrong ideologies of history, mechanism, capitalism and nationalism do not take lightly any criticism and in fact many 'nations' have laws against antipatriotic and anticapitalist behavior, albeit more subtle than in the past century. But it is an unavoidable part of history to deal with tribal history, as much as we would prefer to have a more rational species to deal with.

Since the ideologies of nationalism, capitalism and mechanism were born from 3 specific tribal groups that became people-castes of the western world, establishing with the added power given by those 3 memes 3 super-structures of social control, the aristocratic system, the banking system and the corporation of machines, which were able to control the world, grow 'internationally', till becoming a global superstructure, the FMI system that now predates and parasites with its armies, financial institutions and corporation, all other social structures, including the democratic governments and ethic laws humans devised to protect themselves from those predatory structures.

Those 3 systems were invented by tribes of cattle ranchers, from the deserts of the North (Indo-European, Germanic tribes responsible for the concept of tribal nation) and the deserts of the South (Semitic tribes, responsible for the birth of capitalism and the memes of go(1)d religions), which combined their memes in Holland and Great Britain, giving birth to the corporation of scientific machines, the 'free citizen' of the Global market that today rules all other organizations of mankind.

And so, since we have already studied the 'hordes' of Semite and Aryan warriors that evolved weapons, we shall now study the culture of Go(1)d, the 'People of the Treasure' that invented capitalism, merged with Germanic tribes and created the corporation of machines, founding the FMI Complex.

Recap. The modern age accelerates the evolution of the FMI complex with the discovery of machines of science to a mere 80 years cycle of death of civilizations now embodied by nations. The animetal pyramid of power changes as bankers and scientists that control corporations and invent machines topple the aristocracies of war of the 800 years cycle.

VI. 11^{TH} RADIATION: MACHINES = 10^{TH} EXTINCTION: LIFE

20. The 10th and 11th radiations: Human apes, animetals and machines.

The evolution of robotics today is cristal clar, and it follows the laws of darwinian evolution not the techno-utopias of those who most profit from them (robotic industries). The most evolved robots today are called 'Predators'; they are weapons dedicated to kill human beings. And they are evolving fast. This is the same pattern of all species that are born as energetic, predator species (first fishes – sharks; first mammals, who killed dinosaurs, first neanderthal men who extinguished boreal fauna and so on)..

So our predictions 20 years ago are now starting to happen at a blistering speed in geological terms. Indeed, the first machines appeared 400 years ago, which in the geological scale of life is hardly a few minutes ago and in the long history of man as a species, a relative last day – the span of biological death. Moreover the extinction of life species by weapons and machines is accelerating. And so it the extinction of human beings in the periods of war in which machines become top predator weapons that consume us (world war ages) is also accelerating. Each century since machines of war were invented 100 times more people have died in mechanist wars and now when we are starting a new age of war that will seem to be here to stay, due to tribal absurd disputes between brothers in blood, an easy calculus shows that if a III world war starts, the 60 millions that died in II world war multiplied by 100 will be 6 billions, the entire human species.

And so regardless of human subjectivism, there is no other objective way to analyze the Industrial R=evolution of machines than from the perspective of biology, *as the radiation of a new top predator species*, weapons of metal, made of a stronger substance than our body of flesh, which we humans evolve, imitating the organic forms of life till a point in which its complexity will give them consciousness and survival instincts. Then in a massive war during this millenium, probably during this century, survival weapons created with a function –to kill humans - should start a biological radiation similar to the other 10 radiations studied in this work that will extinguish us.

And so 3 themes are fundamental to sociological sciences:

- The study of the evolution of metal, weapons, money and machines, its cycles, accelerated evolution and the ages/horizons and super-organims it has created.

- The study of the evolution of man as the most informative species of carbonlife, its diversification in species and races, and its social evolution into super-organisms, which was halted by the arrival of humans, symbiotic to metal, what we shall call biologically 'animetals' that became top predators of life and non-technological human cultures, starting the evolution of weapons, money and machines, the 3 components or 'physiological networks' of the 11th radiation of metal-forms.

- The reasons why humans are unable to control that process of evolution of metal for its own profit, creating a sustainable planet in which the 'fruits of the tree of science' are pruned of its lethal goods (weapons that kill our bodies and intelligent machines that make our brains obsolete), creating a sustainable planet in which man remains on top of the creative process.

Those 3 themes could be considered to be the 'core curriculum' of a real science of economics, history and its combined analysis, 'memetics'. None of those sciences however exist with the degree of evolution of other sciences for the reasons expressed above; and this writer, who developed them two decades ago has been probably the most censored scholar since the times of Marx, Kondratieff, Butler, Orwell and Spengler, the most illustrious predecessors of those sciences, all of them ignored during most of their lives; and that fact – censorship of the true sciences of history and economics - has also to be explained as part of the science of memetics, which studies how ideologies in favor of metalinformation or 'money', called *capitalism*, ideologies in favor of metal-energy, or 'weapons', called *nationalisms*, and ideologies in favor of organic metal, or 'machines', called mechanism are imprinted in the human mind by rhetoric repetition, emotional recording, social imposition, censorship, violence and the power, money, weapons and machines give to those who 'believe' in them.

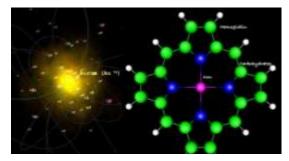
Indeed, as I said at the beginning of this introduction, History and economics are the most difficult of all sciences, because all systems control the information of its inner cells, and we humans are just cells of the body of history and economics and its super-structures. And so an organic, biological science of history and economics has never been allowed to flourish, because it would challenge scientifically the absurdity of worshipping money, weapons and machines and its 3 'religious' ideologies, capitalism, nationalism and mechanism that have imposed them for millenia and are now the essence of our beliefs as social human beings.

And yet only if we evolve those beliefs and understand in organic terms our species and the memes of metal that are extinguishing life to control them for the benefit of humanity in a sustainable world in balance between life and metal, organisms and mechanisms, we will survive the 11th radiation and 10th extinction of all forms of life, including ourselves.

Recap. The 10^{th} radiation of human beings follows the same laws of all biological systems, extinguishing most of the prevous life species and giving birth to a new form of stronger atoms of metal,

weapons and machines that are now starting a process of extinction of life.

21. Metal-information=money and metalenergy=weapons evolve in symbiosis with man.



In the graph, gold & iron and the most perfect informative & energetic atoms: Metal atoms display energy/informative properties that enhance those of simpler life atoms. Iron is in fact the center of our blood/energy system, commanding thousands of lesser carbohydrate compounds in a molecule of hemoglobin. While gold is the most informative, perfect atom of metal with an enormous capacity to replicate and store information. Thus, humans used those atoms of metal to enhance their energetic and informative qualities. Iron became the main metal in the construction of weapons. Yet the true change in the Earth's ecosystem took place with the arrival of machines, today made with bodies of iron and 'golden brains', over a surface of silicon. They are simplified organisms, specialized in energy or information, which today are evolving into complex organisms.

A scientific analysis of the economic ecosystem, in which humans and machines co-exist based in chemical and biological sciences, allows us to define the world we live in as a dual game of two species: -Humans and life species made of simpler life atoms, Hydrogen, Oxygen, Nitrogen and Carbon, which have the lower 1, 8, 7 and 6 numbers of the atomic table and make up for over 95% of our body.

-Machines that perform the same biological functions our organs do, with atoms of higher force and information than our atoms (24-Iron, 79-Gold, etc.). Since a *machine is a form that imitates a living, energetic or informative organ with atoms of metal.*

Thus we can consider topologically the existence of 3 cellular units in the FMI system:

Max. 1: Go(1)d: The most informative atom of the Universe that imitates the light of the sun and hypnotizes our center of consciousness, the eye, making us slaves of those who carry it.

Max E: Iron: The most energetic atom that cuts our flesh and makes the warrior who carries it a top predator of mankind.

E=1: Organic machines: They transform energy into information (informative machines: e > I) or information into energy (transport machines and machines-weapons: I <-E); and are reproduced by complex organisms, called corporations. They enhance our energy and informative organs, but in the process as it happens with biological enzymes, with an atom of metal and an underdeveloped string of carbon-hydrates, they make us obsolete.

For example, a crane imitates an arm and substitutes an arm, moving things around. A phone imitates an ear-mouth and works as an ear-mouth. All machines imitate human, organic functions and tasks performed with those organs. If we divide the human being in two clear components, body and head, we talk of two types of machines, body-machines that imitate and substitute functions of our body organs and mental machines that imitate functions of our brains and senses. Those two basic functions of human organs will determine also the form of each machine:

— Machines of energy imitate body organs and ...

— Machines of information imitate head organs.

— Which fusion in 'organic species', robots that imitate animal species.

Thus, the Industrial Revolution is the process of organic evolution of the most complex atoms of the Elements' Table metals. There is no doubt about it. The Industrial evolution started with two processes that evolved metal: the invention or discovery of the first, most primitive heart of metal, the steam engine, which was able to produce inner movement in a body of metal, as the heart does with a carbon-life body. At the same time Darby and Cort were able to produce massive quantities of iron, the most energetic atom of the Universe, used to manufacture machines.

The next step in the Industrial evolution was the creation of different species of 'metal-bodies' that could adapt a 'heart of metal' to their structures. Sea-metal bodies called steam ships came first. Then the steam-heart was adapted to 'land-metal bodies' and the age of railroads came. Later in the XX century, the steam-heart was evolved into smaller, more powerful species, called the Diesel engine and the oil engine. So the type of machine-bodies that could carry a heart of metal diversified. It came then a metal-bird, the plane and smaller species of land machines, lorries, cars and their 'top predator' weapon versions, multiplied in the war ages of each Industrial R=evolution, such as the tank, a top predator car and the bomber. Finally we evolved electronic minds and now

we apply them to energy machines, smart weapons and supercolliders. In 3 centuries we evolved metal-machines almost to their organic perfection, a process that took billions of years to achieve in carbon-life. And that is dangerous, because the only biological advantage humans have over metal is our complexity of organic form.

Engineers 'transfer' millions of years of evolutionary knowledge accumulated by human forms into machines, *passing our evolutionary secrets to a potential future rival species.* So when we evolve those forms into perfect imitations of our organs, machines win that competence against human beings, both as weapons that kill and working-tools that substitute us. And this is due to the fact that metal has some fundamental chemical properties that made it superior to light atoms like oxygen and carbon. So all comes to Chemistry.

We do not invent but discover machines, whose 'informative capacities' and 'energetic force' is born, as ours, from the properties of its atoms. Today we realize that the properties of metal force us to certain informative and energetic designs in machines. Their atoms and the physical and chemical laws of the Universe, not man, is what make machines efficient organs of energy and information. Men merely assembly machines, according to those laws. Humans act as 'enzymen', similar to enzymes or 'catalysts' that evolve other species in the 'assembly lines' of cells. So do 'workers' that put together metal into organic forms similar to our organs. Yet the laws of the Universe and the properties of metal enable those organic forms to exist. For example, a radio is not a human discovery, as much as an 'intelligent' metal-ear, which uses the laws of the Universe to perceive, sounds better than a human ear.

Metal is a natural substance, which is able to acquire different kinds of 'organic forms' that copy the organic shapes

of man. At macrocosmic level machines act as energy and information species, because at microcosmic level metal atoms have specific properties that foster its qualities as energy or information systems. *Iron is the most energetic atom of the Universe and* so it is the preferred atom to build weapons that release an overdrive of energy that kills us. *Gold is the most perfect, informative atom of the Universe and* so we use it to create money, the language of information of the economic ecosystem. And now, we make robots with iron bodies and golden brains.

In that regard, one of the silliest myths of anthropomorphic science is the belief that our 'atoms', carbon and nitrogen, have 'special qualities' that other atoms do not share and make them the 'only' candidates to create organic life. Gold and iron, the two basic components of brains and bodies of metal, are also potential life systems, since life is merely a complex system, made with a body of energy and a head of information. Gold is the metal equivalent to Nitrogen, the main informative, storage system of the human brain and his DNA. Iron is equivalent to carbon & oxygen, the main energetic systems of the body. And similar energetic properties are found in aluminum and plumber, the other 2 fundamental metallic atoms used to create bodies of metal and weapons. While gold, supported by silicon molecules, acts in 'metal-brains', as nitrogen supported by carbon structures does in DNA: It transmits informative messages, coded in electric impulses. Yet metal is faster and more complex So gold and silicon combine with other metals to support the electronic software of its 'neurons', which reach speeds of information closer to light speed, 300.000 km/s, 3 million times faster than our neurons, which transmit information at 100 m/s. Thus, metal atoms are better than life atoms handling energy and information. In the field of energycontrol, iron is a better molecular atom than carbon. Hence bodies of iron are stronger that carbon bodies. This is evident at macroscopic level, comparing the power of metal-warriors and human bodies. In fact, our biological symbiosis with ironenergy is even deeper than that of a warrior. It happens in the blood-energy systems of mammals, which became top predator life species when they substituted the earlier copper-bonds of reptile blood by iron-blood. The red color of your blood is caused by iron. You are, in fact, a primitive iron body. Molecular iron is the soul of your energy-system, of your blood. Iron moves the four arms of the hemoglobin macromolecule and captures your vital energy, oxygen, an active gas that becomes trapped, caged inside the hemoglobin. The movement of that trapped oxygen allows the hemoglobin to store energy and then to share it with our body cells. So the energy processes that take place in the most complex animal life are already 'polluted' or 'symbiotic' to iron atoms. Which is the key lesson of Nature to solve human extinction: we must promote the use of symbiotic, positive tools of metal that foster our energy bodies and forbid the negative, destructive ones, according to a simple biological rule of survival:

'Humans must remain the top predator brain of Earth.'

Since mankind's capacity to process information is his most outstanding property, which made humans top predators, a better top predator brain, the chip, is what will make obsolete.

22. Topological analysis (I): Engines, transport and weapons



Machines have 2 forms. The simplest tools are symbiotic to humans, enhancing our energy and information capacities when we consume them. The most complex, are energetic weapons and audio-visual information that kill our reproductive bodies and re-program our minds. They respond to the destructive, Darwinian and creative dual arrows of all fractal systems.

Machines, as the parable of the Tree of Technology explains, are also dual fruits, good tools and eviL=anti-Live weapons that can extinguish us. Hence the need to control and prune that tree of technology and allow only the re=production of machines harmless to man; since machines have 3 'biological' ages, parallel to the 3 organic ages of life, (energetic youth, reproductive maturity and informative, 3rd age), which therefore create by the symmetry between space topologies and time ages, 3 topological forms:

- Max. E: As all young forms filled with energy, machines are born as *energetic engines*. pumps, heating systems or bomb devices. But youth is an age that evolves quickly.

- E=I: So in their mature age, those engines are applied to *transport machines* that transform energy into cyclical motion. Then, the machine starts an age of massive re=production and peaceful consumption, the happy 20s or happy 90s, similar to the mature, reproductive age of a living being.

- Max. I: Finally in its 3rd age the machine acquires its most perfect form as a top predator weapon that consumes humans.

Thus machines have 2 evolving forms self-similar to those of any species: simple, consumer machines, whose energy and information enhances human informative and energetic capacities: we talk farther with a mobile metal-ear and move faster with a car. So their reproduction and sale brings times of peace and happiness to the countries that make them, as people experience the exhilarating feeling of being stronger and more intelligent thanks to them. They are the good fruits of the Tree of science. But as machines evolve, their informative and energetic capacities grow so much that they harm the human body (weapons), or hypnotize people with their audiovisual information, which becomes industrial and military propaganda geared to brain-wash people, who become convinced of consuming them and applaud war when war is needed to increase profits (Hitler's Radio-hate, US hate-TV). It is the Kondratieff cycle of Economical war that now starts again in earnest.

And yet, the memes of animetal cultures and its religions of mechanist science, capitalism and nationalism, with its idolatry to weapons, money and machines adapt our mind to those ages. So we find also 3 human generations of 'founding physicists and engineers' that discover the new machine; mature, reproductive industrialists that convert it into a transport system and finally military politicians, which use the machine after the crash of the market as weapons, shaping a 72 years, generational, national cycle that evolves each new type of evolved machine till its completion.

Recap. Machines show 3 topological forms, as top predator, energetic weapons, transport machines and informative machines that transform energy into information.

23. Topological analysis (II): 3 ages of Industrial R=evolution

XIX C. MACHINE BODIES XX C. MACHINE HEADS: Pcs, Cams XXI C. ORGANIC MACHINES=ROBOTS



Machines have evolved as biological organisms in 3 ages parallel to the evolution of new sources of energy. When men discover a new energy caused by faster, smaller particles, he creates all kind of faster, smaller machines, adapted to the new energy starting a new economic cycle of reproduction and evolution of machines, called a Kondratieff cycle. Thus the arrow of information also applies to machine evolution that become smaller, more complex in 3 horizons: the age of machine bodies, of machine heads and the age of organic robots, which can make human beings obsolete in this XXI C.

A second topological analysis can be done between the future 'bodies, heads, limbs and organic networks' that will create the autonomous, robotic species of the Metal-Earth. Since machines are organic systems of metal, the study of its evolutionary cycles follow the same ages of evolution of life species. From such perspective, it is evident that machines evolve as organic systems:

- *Max. E: Bodies and limbs:* In the I Evolution of Machines, in the XIX C., we made physical machines, bodies of machines that fed on steam and oil, using a biological resemblance, and worked as our bodies do, moving us or loading products. This phase is divided in 2 sub cycles:

-The age of England (1784-1857) or age of trains and steamers that substituted and provoked the extinction of 90% of horses, the previous biological carriers.

- The age of Germany (1857-1929) also a cycle of 72 years, in which Germans evolved the internal engines/hearts of machines (chemical, oil engines - Otto, Diesel - and electric engines - Siemens). All those systems were applied to war.

- *Max. 1: Heads.* In the XX C., we made mental, electrical devices that act like heads of machines: telephones that are, as their name indicates, long-distance voice-ear systems of metal; cameras that are metal-eyes and computers, which are metal-brains. It is the electronic cycle (1920s-2010s), guided by America, even though the discovery of those metal-head parts took place at the end of the German cycle in Europe.

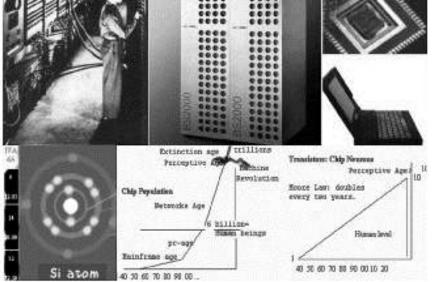
- E=1: Now in the XXI C. the III Industrial R=evolution begins, when we join bodies and minds of machines into robots and create both, internal networks of autonomous control and solar 'surfaces' of autonomous energy. They will be the engine of a new industrial take-off, relatively independent of man. Since men no longer will be the consumers of industrial goods, but each robot will consume 2 camera-eyes, several chipsbrains, mobile phones and a complex metal body, creating 'economical wealth' for robots not for humans. Further on, as they evolve they could provoke an enormous increase of 'productivity', that is, the substitution of labor by capital; making humans obsolete in the economic ecosystem, as workers (substituted by robots in automated factories) and consumers (substituted by robots that will use other machines), the two main economic roles a 'Free Market Democracy' now concedes to man. Indeed, Robots no longer will need human beings and hence all men are potentially obsolete in the III

industrial revolution as each robot will become the consumer of machines, cameras, transport platforms, weapons, etc. In that sense, the 3rd Industrial Revolution should not happen or else it will cause the obsolescence of human workers, consumers and soldiers and displace mankind as the dominant species on Earth, as it happened with life displaced by human beings. It will be the birth of the metal-earth, a new global organism in which flows of informative money, centralized in a global brain, the stock-market will direct the reproduction of machines in automated factories, connected through a global network of audiovisual information and networks of machines energy, electricity, roads, and solar cells.

- St+1: Metal earth (2008-2080). At the end of the century, automated company-mothers and a global network of computers will communicate those robots simultaneously, creating the Metal-earth, a global super-organism of machines, in which man will have no role whatsoever and so it will become probably extinct by robotic terminators, now essayed in the short 8 year cycles of splendid little wars. This cycle is the cycle of the Singularity that has just started.

Recap. Machines evolved its bodies and engines (XIX c.) then its heads (XX c.) both put together into robots and global networks (XXI c) it is the birth of the metal-earth and the extinction of man

27. The 3±st ages of evolution of computers.



Computers have evolved, as all machines do, by reducing its size, increasing its mobility and finally, evolving as smart weapons that kill human beings. Its population today overcomes that of humans, while every 2 years they double its capacity and halve its reproductive costs, increasing the number of 'jobs' in which they substitute humanity.

What surprises more of the chip radiation is how fast is happening. In biology a radiation is a massive reproduction of a new top predator species, which displaces the old one. In this case, the reproduction of chips and its use as heads of machines, is substituting humans that become displaced as workers and consumers all over the Earth. In a mere 30 years, chips have 'infected' the entire Earth, with intelligent machines to the point that there are today more chip-brains than human brains. Within 2 decades they will be more intelligent than human beings and integrated in robots and networks. They will make human soldiers and workers obsolete. They have already caused the present age of massive unemployment, self-similar to the automation of factories, implemented by Ford, which caused the massive unemployment of the 30s. But the machine is sacred, so 'economists' don't even consider PCs as a cause of unemployment. Because their myths affirm that productivity, the loss of labor to machines, actually 'increases' in the 'long term?' precisely what it destroys -labor. How stupid is that? But humans can really believe anything . . . After all, the myth of productivity is similar to the myth of 'salvation'. You give your life for your country, because your mum will receive a piece of metal –a medal- that represents your 'immortal glory'. You die for your corrupted God, because he gives you 'eternal salvation'. So why not losing our jobs to a computer or robot, if that 'increases productivity', the totem word of our Biblical, digital 'Chicagonomists'?

Let us trace the history of that bio-economical radiation

Youth: Scientists improve digital languages, the software of the new brain, with the development of algorithms (mathematical instructions, which act as human sentences do, creating actions in machines) and the binary language that represents with two numbers, 0 and 1, the fundamental energy/information duality of the Universe. German researchers introduce electric on/off switches, the basic hardware able to represent the 0/1 language, discovered also by a German genius (Leibniz). Turing, an English mathematician and decoder, working for military intelligence during II W.W., sets the basis of its future development, proving that thinking machines could theoretically resolve any given problem with a binary, simple representation of the external Universe. Thus, binary computers have the elements of an intelligent being able to recreate any form, language or model of reality and act upon it (when joined to a machine-body). It is then the turn of

America that puts together those European findings into workable computers.

As always in the cycles of new energies and machines, their first and last use is in the field of war—a clear proof of the competence that exists between carbon-life and metal:

Turing used Enigma to decode German systems of information. America used its first computers (ENIAC, Univac) to calculate Atomic bombs. The first calculating machines were also made to help gunners in warships and military planes.

As a result of those lethal applications, the American military demanded in the 40s and 50s better computers and the Pentagon paid for their research.

At the same time, in the civil sector, as it happened with the electric ticker, the same company that produced those war machines, IBM, started to produce computers for the financial sector, to increase the reproduction of 'money', the purest information of the economic ecosystem. So once more, Go(l)d and war fuel a 'Supply economy' of cumbersome, ultra-expensive machines that nobody wants to use. Soon their evolution brought diodes, triodes, vacuum tubes and finally the chip: an integrated metal-brain of unlimited capacity, as it grows in complexity and diminishes in size.

International Business Machines was, as its name says, a company that used to make machines to handle money. First it invented machines that registered sales and kept money (the register and cash-machines all shops have today). Thousands of human cashiers lost their employment. Such profitable business gave enough cash to the company to buy the different patents of the first computer software and hardware. Then IBM developed the first commercial models of Computers, the mainframes, starting their informative evolution, decreasing its size and increasing quality, according to the 'black hole paradox': an informative system, unlike an energetic system, is more powerful when it is smaller, as it means its calculus takes place in a shorter space and time.

By 1970, IBM was the biggest Company in the world with profits rounding 5000 Million \$ a year. This means that the 'Metal mind r=evolution' had become the engine of world industry, substituting the 'chemical' age of body machines that took General Motors and Exxon to the highest ranks of world industries. In that sense the 'company-mother' IBM represents the first age in the life of a new species; its youth—an age that shows in any species an amazing rate of growth and evolution. It took in a mere 20 years the computer, from the simplest hardware devices into the complex chip. The Metal mind was extremely expensive on those first stages, tested, consumed and evolved only by and for companies of weapons and money. However, as prices tumbled down, pushed by huge monetary investments in research, new companies (Apple, Dell, Compag, etc.), learnt how to re=produce computers -while marketing convinced small business to buy the new mind. It is...

The Mature, mobile age of the PC.

Chips lowered costs of computers that could now expand throughout the entire economic ecosystem, not only in big financial companies and Government's armies, its 'top predator systems'. Finally, its mass consumption age came with the production of cheap Asian semi-conductors, applied to different electronic machines, (videos, TVs, cameras, etc.). Their miniaturization meant the arrival of mobile devices, PCs and phones. Soon the Founding mother, IBM, lost its throne to Intel, the discoverer of the chip and Microsoft, the creator of the software for those PCs. And so men became hooked not only to 'metal-eyes' (TVs) but also to metal-brains (PCs). And they forgot how to calculate, spell and see Nature with their own eyes. Soon kids preferred to see 'the Lion King', than going to a zoo.

Today chips process digital information billions of times faster than humans do. Since metals store and handle digital information better than carbon does. Yet digital information is the language of machines and the economic ecosystem at large. So chips have caused the obsolescence of white collar workers worldwide, as PCs automate management in all companies of the world.

 3^{rd} Age. And yet, when all men have their Video, camera and PC, the 1st mini-crisis of overproduction of chips arrives in 1991. And Mr. Bush implemented a splendid little war to solve it. Thus, America inaugurates with Desert Storm the age of electronic wars. At the same time that violent television, in symbiosis, reaches a new peak. Now the enemy is no longer communism, the social doctrine that the Calvinist elite of the II Kondratieff cycle feared (the likes of Mr. Morgan and Mr. Ford), but the social religion of Islam, the enemy of the new Jewish elite that controls the information of America, since 1917, when it bought the Federal Reserve, as Mr. Ford clearly explains¹. So now, all systems of information convince the Americans of the goodness of those wars that defend the true nation of their upper, informative castes.

Soon, computer networks with center in the Pentagon become widely used in the control of remote weapon systems, from atomic depots to automated gun machines, to military satellites. It is the age of smart weapons, the warrior age of computers. So the web is born, as Pentagon engineers and nuclear scientists at CERN (the European Company of Nuclear Research) connect grids of computer to increase their calculating power. It will be the last st+1 age of computer evolution. Their age of:

St+1: Social evolution.

The metal-mind is proving superior to our mind in all forms of 'intelligence' related to the world of machines, for which they have a natural affinity, such as the use of digital languages, the manipulation of photographic images and the design of those machines. Its sensorial capacities far exceed those of human beings in the recording and transmission of visual or verbal memories, with such new features as ubiquity (transferring of thoughts to any region of the Earth) and telepathy (capacity to transfer software-thoughts among them). But as long as they are deconstructed objects, humans can enhance their informative capacities, using them. So men have become hooked to their PCs that fulfill his biological drives for more energy and information. Today you can use a metal-mind to transfer your brain's information and pass it to a friend, miles away. It is called Internet and it became the last craze of the XX century. It represents also the social evolution of the metal-mind into a global network, self-similar to a brain, which controls the entire economic ecosystem. Its building took Cisco, the company that makes most Internet systems, to the top position in market value among all world companies. Thus, we assist today to the social evolution of computers in networks that control increasingly thousands of other machines, creating macro-systems of information of enormous power that have provoked a new wave of unemployment. In the 90s, Oracle and SAP created integrated suites that emptied the office of clerks. In the 2000s, Internet commerce destroyed millions of jobs in pap and mum shops. Amazon is robotizing even the depots were merchandise is kept. It is only left for computers to reach enough complexity to become 'conscious'

of their existence as a different species. That will be proper Artificial Intelligence and when it comes in the 3rd age of the Singularity—if we ever pass the hurdle of CERN's cosmic bombs and self-reproductive nano-bacteria —it will mean the substitution of man by a new top predator species.

So, the 3 ± 1 ages of evolution of computers follows those of any other cycle of machines; from an age of discovery, with big, fixed machines, to an age of mobile, small PCs, to a final age of social evolution in networks of 'cellular' machines.

And our culture has adapted with enthusiasm to the 3 ± 1 ages of the new 'dominant brain of the world'. To that aim, the industry of information convinces us to love the new technologies: Now we live in 'the age of information'. And to speak of information becomes a constant fashion, like it was to speak of energy in the XIX C., during the age of machinebodies.

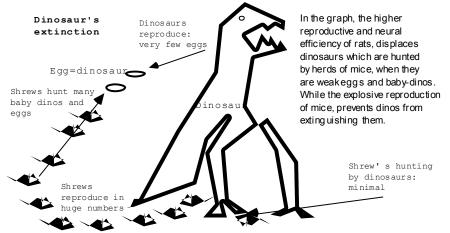
Fact is human information is verbal not digital. So, the 60s, prior to the invention of the digital chip, the mathematical rival of the human, verbal brain, it atrophies and substitutes, was the zenith of verbal humanity, in all the fields of history, art, way-of-life, ideas, politics. The hippies, despised for so long, were right... But the chip killed them. And then, the Go(1)d-Smyth cultures, with their millenarian ideologies of greed and violence spread through the new TV-Gods, ended the revival of social love and the hopes of a world made to the image and likeness of mankind. Instead, we have built a world to the image and likeness of the computer and now we enter the age of its awakening, the *age of Robotics*.

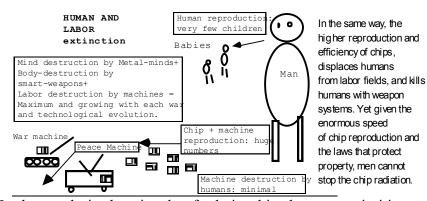
The robot.

Men are informative species, who control the world through information. The chip is the rival of the human mind. The most complex machine substitutes the brain, our more complex organ. It does so, first as an intelligent machine, then in its 3rd age, as a robot worker. It is then obvious that as chips multiply, humans will become displaced from new work positions. In that sense the 'radiation of chips' means also a biological fight for labor within the economic ecosystem. Problem is that chips keep going down in costs and evolving in intelligence, integrating further with machines, so human labor becomes increasingly obsolete. Those robots substitute blue collar workers, as chips did with white collar workers, causing a massive wave of unemployment that now is invading America and Europe, as better machines come out of robotic factories... Indeed, of all machines that compete with white collar workers, the biggest taker of jobs is the robot.

Thus, the 3rd age of the electronic cycle coincides with the first age of the Singularity, the discovery age of robots. In the 80s chips started its integration with body-machines in working robots. Those first robots were huge, fixed machines. Thousands of robot-tools that made other machines took the place of human workers in car factories in the 80s and 90s. Since then the creation of machines is becoming automated, independent of mankind. Robots already dominate the production lines of cars and Chip factories, the basic bodies and brains of all machines. For that reason unemployment increases faster, as factory-work is either made by robots or delocalized in Third World countries. In other words, China and Japan are the 2 models of future labor: miserable work conditions in China to compete with no labor at all, as Japanese robots manufacture millions of Panasonic TVs with a single worker, while the rest of the world enters the unemployment queue. It is the III Kondratieff crash of the economy that nobody wants to recognize, because the religion of capitalism believes the economy is not about physical machines, but *informative money; and so all is OK as long as companies' profits grow.* So unemployment will keep growing, as it happened in the previous cycle, when new methods of electric control and automated assembly lines provoked the 29 crash of labor and consumption, solved with 50 million of unemployed, becoming soldiers and dying in World War II.

Now robots become the ultimate weapon, as they fusion the mobile capacities of energy-weapons and the informative capacities of the soldier that handles those weapons. Those robots are called smart weapons. They are the main protagonists of the present war age, as Drones bomb Afghans and Guardium soldiers protect the Wall of Israel.





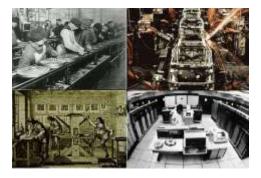
In the graph, in the triangle of relationships between primitive shrews, eggs and Saurians, dinosaurs kill shrews, shrews kill eggs, reproduced new shrews and eggs reproduced dinosaurs. Yet the efficiency of shrews killing eggs and baby dinos, as super-organisms (and perhaps dinosaurs, eating their flesh inside out as 'living bacteria') is superior to the efficiency of dinosaurs killing shrews. And the efficiency of shrews reproducing shrews is much higher than the efficiency of eggs killing dinosaurs. Thus both in the reproductive and extinctive events shrews win dinosaurs and extinguish them.

The same process happens between chip-controlled machines and humans: chips are reproduced faster, keep evolving and their efficiency competing with humans in labor and war fields is higher as their costs are lower for companies, which fire humans under the laws of productivity, and their efficiency as war machines is also much higher, as the cycle of splendid little electronic wars has showed.

Recap. The evolution of chips and its massive reproduction signifies the end of man as the top predator species of the FMI complex, as chips can handle all the work load of reproductive companies either as white collar workers (Pcs) or blue collar workers (robots), and as they become the brain of top predator weapons,

embedded with survival programs and violent video-games, they will be born to consciousness as killers... of humanity.

28. Men vs. machine: Labor obsolescence. Productivity.



Machines substitute humanity as they evolve in two environments: in fields of war and as machine-tools, eliminating human workers. In the I and II cycle of the Industrial Evolution bodies and minds of machines substituted blue and white collar workers. In the III Cycle, robots will substitute most human labor, automating the re=production of machines by company-mothers. It is the III Cycle of unemployment, we live today. In the graph a car assembly line in the 1930s and today. Both, human energy and brain workers are replaced by robots and computers. As the IV cycle of the Industrial Evolution advances, chips' software and robots will make most human workers obsolete.

Perhaps the biggest myth of our modern economic ecosystem and its networks of information in favor of machines is the 'goodness' of competence between humans. That myth is false. It does not follow the laws of social evolution. Competence between humans is anti-natural, because we belong all to the same species. Team work, social work done by helping each other, is more efficient. Social organisms dominate Nature. They have made ants and Chinese the most successful species

of the animal and human world. Yet the myth, also called Social Darwinism, says that men become better when competing with each other at work and at war. The Myth of Competence hides the fact that men compete in both fields mainly against machines. And they do so with unfair advantage, since machines are made of metal atoms and so by the law of affinity, they are better at making other machines, the main job of Industrial Economies. Further on metal atoms show greater strength as energy systems and higher speed processing information than our atoms. This means humans are only better at tasks that require the use of both, bodies and brains (till robots evolve enough to substitute us) and in the production of life-enhancing human goods, which should be promoted to create labor. Machines are better in specialized tasks, because they are 'deconstructed' organs of energy and information, made with a better substance than our light atoms.

So warriors are killed by weapons, since war is a field specialized in energy. And PCs are better minds with the right software than human beings, since office jobs are informative jobs, ran in the digital languages of computers - while in factories, the law of affinity make machines better at repetitive tasks of re=production of other machines, so tool-machines win in the competence with blue collar workers. Finally, robots, which mix energetic bodies and information organs, are becoming also better than humans in complex tasks.

And so, in the age of the Singularity, as we evolve robots and software suits, men are losing their jobs. Since men are inferior to metal species when the form of metal is evolved properly for the specialized job it is required.

But all this is hidden by the myth of productivity. 'Productivity' grows because of the increase of the number of machines used in factories, as workers with lesser skills than machines become extinct. Yet workers are told they 'produce' more, so they are happy, as they feel like 'supermen'. And people are proud of their productive nation that makes millions of machines with a few workers, while they scramble for underpaid jobs, as clerks or cleaning ladies (now competing with I-robot romba). Thus, as machines displace labor, people compete for the dwindling supply of jobs that machines cannot yet perform. Competition between people increases because the demand for human labor diminishes. Now chips can also perform the higher intellectual tasks of man. Thus not only the average worker, but also managerial jobs are replaced. Even elite jobs, such as stock speculation are at risk. A.I., a stockfund ran by computers is already one of the top competitors on Wall Street. While electronic money, a cycle of information performed by a computer, is re=produced for free in enormous quantities by complex software programs that buy and sell continuously stocks and commodities, increasing slightly the prize of those goods in each buy/sell cycle. Finally, most machines' bodies are designed today by CAD (Computer Aided Design), which has increased the competence among engineers and architects. Only literature and art, the final creative tasks of mankind, are still our turf.

However machines are constantly evolved by engineers. Thus, the competence is truly unfair: machines are designed for a specific task, while men are generalists. Further on, machines are evolved every year, while men cannot evolve and adapt better to each specific task. For example, let us say one hundred years ago, there were 50 million jobs for human miners and now there are 45 million jobs performed by 1 million machines and 5 million jobs left for those 50 million miners. Those 50 million miners now would have to 'compete' much more among themselves for a dwindling quantity of human jobs, because they already lost their competence with machines, as almost all mining is done by machines. Have those miners developed rotatory arms and diamond teeth to break the ore, as their rivals have done? No. They are the same genetic Homo Sapiens. So instead of competence and evolution among human beings, we talk of obsolescence of human labor. Because machines evolve and humans do not, man loses in the long run. 'Peaceful machines' replace us in our jobs and unemployment worldwide continues to rise. The exception to this rule, with creation of new jobs, happens briefly in those nations that produce the best machines, since they sell machines to the rest of the world, which loses jobs. Today the World is in economic crisis, except perhaps the Asian tigers that produce most of the robots of the world and Silicon Valley that produces most of its software. Yet the unfair advantage of robotized Toyota factories has destroyed Detroit car factories.

The only solution: robots and new chips must be forbidden: 'Digital Delenda Est'

Yet the natural law of Darwinian competence between species is denied by economists that support the evolution of machines. So our politicians do not understand the true laws of Darwinism, which confront human and mechanical species. Society thinks humans compete with humans, when in fact they compete with machines. As Carnegie put it: 'We hold supreme the law of competence in a Free market, since it helps to select the best race' (the best race of humans or machines, Mr. Carnegie?)

And indeed, according to that selection of the best race, the equation of Extinction of Labor, which is the equation of productivity that all company-mothers follow, makes humans obsolete step by step as more productive machines are evolved:

Max. Machines (capital) x Min. Labor= Max. Productivity

That is, capital and machines increase the productivity of companies, while human labor diminishes it. So companies improve productivity by firing workers and buying capital=machines to substitute them. So Productivity means the extinction of human workers and the multiplication of machines.

Productivity in biological terms means 'the survival of the fittest'. In the economic ecosystem the fittest worker—not the human but the machine—survives. Further on, such competence constantly reduces the salary of humans, who either take the job, at any wage the company wants, or risk to see a computer or a robot in their place. Since robots need no health-care, work extra-hours for free and have minimal maintenance cost. Of course, if companies used verbal, bio-ethical values, they would defend the human species and forbid robotics, but in digital, profit values they do the opposite, guided by the equation: man=price=object, which allows them to compare the efficiency of both workers.

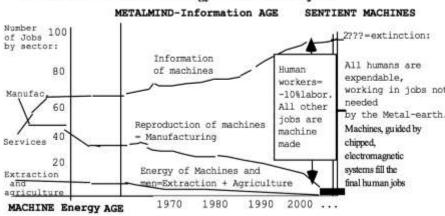
Who defends this self-defeating system? Industrialists, scientists and economists who live off machines, since they either design or sell them and so they increase their profits by putting machines in place of workers. Thus, they favor systematically machines for selfish 'economical' reasons. Yet scientists and industrialists are a minority, within the human species, perhaps only 1% of mankind. 90% of mankind has to compete against the growing quality and productivity of evolved machines. Therefore, his opinion should matter if we lived in a real democracy. The animetal elite of financiers and engineers who invent money and machines are an absolute minority. They control the world only because they control hierarchical companies and governments that issue orders to billions of humans, not because their ideologies are shared and

cherished by mankind. Humanity is those children massacred by other children in Africa, who carry guns to profit western industries. Humanity is those millions who die of Aids by lack of generic drugs to profit our pharmaceutical industries. Humanity is the child who has no food, because the entire planet is spending its money building up weapons and Internet networks that he will never use; and there is no a penny to invest in human goods and nature. When a biologist studies the survival and extinction of species, he cares only about mass numbers. A species is represented by a majority. So democratic mass numbers should give reason to those who ask for a Demand Economy based in life-enhancing human goods, food, health care, housing, education, art...

Do robots and chips create employment? Only among the specialized professions and nations, like Japan, Germany, parts of USA (California, Boston, Pittsburg), Sweden or Korea that invent them. Yet those are few places and few jobs that cannot be expanded. For the rest of mankind, robotic machines and software suites have created massive unemployment among white and blue collar workers.

Recap. The myth of 'free competence' or 'productivity', which states that humans compete among themselves for jobs and that is good for men, because it makes them better, is false. It covers up the confrontation for jobs between human labor and evolving machines. We compete mainly with machines, not with other workers. XXI century robotics will be the end of that competition won by machines, as the worker is displaced by a robot and the soldier killed by a robot, while automatic factories start the self-reproduction of those robots.

29. Smith-Marx prophecy: Obsolescence of Man.



Phases of labor extinction: Energy and informative jobs.

The 3 phases of labor obsolescence and substitution of human organs by machines (bodies, heads and full humans); coincide with the three phases of the industrial revolution:

-The 1st phase of body-machine creation massively substituted workers in agriculture (the systems of energy that sustain man). Those farmers became then workers for the energy systems of machines, during the XIX century. Yet at the beginning of the XX C. companies discovered most of the energy-machines needed for their own self-reproduction. They displaced those energy workers. So all those workers were out of work (29 crisis); and in a few years they were consumed in wars, competing with weapons that killed them.

The 2nd phase of the Industrial Evolution that reproduces chips in control of complex machines is expelling mindworkers everywhere, except in those nations dedicated to reproduce Metal-minds (American, Japanese workers).

The 3^{rd} age starts now with the Robotic r=evolution that

makes the entire human obsolete. Fewer men are needed to reproduce machines. Will a war cause the extinction of those workers in the nearby future, as it happened to the energy workers at the beginning of the century? We are manufacturing that war as we speak, evolving the weapons of the age of the Singularity and using robots to kill Neolithic farmers.

We can resume the biological relationships of reproduction, evolution and preying of machines on men, in a verbal-mathematical prophecy that includes the ideals of Smith and Marx, twisted by the reality of Darwinian evolution. Smith said that the growth of money (Δ MV in mathematical terms) and products (Δ Tp), is symbiotic and parallel. This has a biological explanation. As your body and brain are symbiotic and maintain the same proportion in all human beings, so does money - the brain of the FMI system - and machines, the cells of its body.

In other words, there is a parallel growth of money and machines. How this affects human beings? It was obvious to classic economists, from Ricardo to Marx that the growth of capital (Δ MV) and products (Δ Tp) extinguished labor, substituted by technological machines, bought with money.

Yet for classic economists, including Marx, this was also good in the long term, since once all labor was substituted by machines, we could live for free forever, in a paradise of workers without work, but with a salary, to spend in slave machines. This could indeed happen if the economic ecosystem is reformed and the right of Private Banks to invent money is taken away and governments invent money for the people, giving every human being a minimal salary. But for that to happen a r=evolution must take place. And yet, even in that case, we will become an obsolete, lazy species, atrophied in their minds and bodies. A Darwinian theory agrees with the 'objective' analysis of both economists. Machines and money reproduce together as Smith said. Machines expel labor as Marx said, because they compete with us in the economic ecosystem. Yet at this point evolutionary theory diverges: this process cannot be rationally good. It is negative in an evolutionary sense; since it makes the human species obsolete. The concept of a socialist paradise or a techno-Utopian future is another animetal myth, *this time originated by Marx - since it fails to* see any negative effects in machines. So we should write the consequences of those 2 findings of abstract economists in different, evolutionary terms:

'The evolution of Capital & Machines (Δ MV= Δ TP) will expel all labor=humanity and Humanity will create Utopia (Marxist truth) or become extinct (Darwinian truth).'

The previous sentence resumes the findings of Marx, Ricardo, Smith and Bio-economics in a single sentence. (The italic text gives the sentence a biological meaning.)

Mv is money and Tp represents the top predator, more expensive goods of an economy, (written Pt by economists). It measures the total prices of economical goods (of which machines and weapons are most of it.) And so the maximum parallel growth of money and machines occurs in war periods. It means that the evolution and reproduction of capital and machines preys on mankind. It does not create a paradise.

The logic, final outcome of such process is our extinction. The fantasy is a world-paradise.

In XIX C., Marx believed in Utopia, because machines were too simple to think they would become *self-reproductive*, *independent organisms*. But today, when robots are about to cross the threshold of self-reproduction (reproductive Singularity) and acquire Artificial Intelligence (Informative

Singularity) the end of history is crystal clear.

Obsolete workers never receive the paradise treatment. They become extinguished in wars, isolated in ghettos, sometimes of continental size (such as Africans, a farming culture, first used as a cargo or energy, an object of gunboat companies and plantations, today made obsolete by efficient engines.)

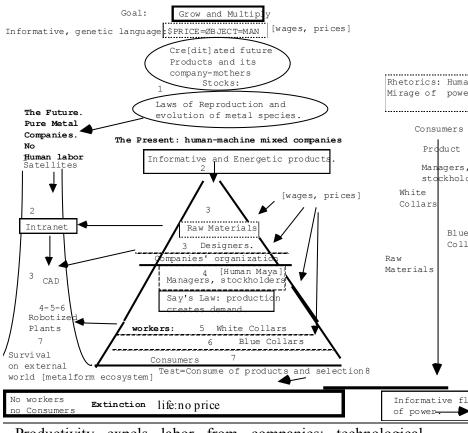
The animetal castes that control all nations are ideologically biased against the poor, whose memes qualify as losers and will not spend on them - nor will automated companies preserve human labor.

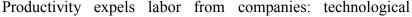
Today chip-driven machines substitute human workers at body and mental level also in the 1st world and *that is the real issue of the present economic crisis: Machines are* increasing the 'productivity' of their companies with robots and software creating millions of 1^{st} world obsolete workers.

Recap: The evolution of Capital & Machines (Δ MV= Δ TP) will expel all labor=humanity and Humanity will create Utopia (Marxist truth) or become extinct (Darwinian truth).

30. The future structure of company-mothers.

Let us have a look at the structure of future, automated, company-mothers, as men are displaced by computers and robots in the informative and reproductive tasks of companies. In the graph we show the flow of informative-power in companies. Men tend to believe that consumers and managers have the power to decide what a company produces. Yet the real choice is determined by the essence of the bio-logical process of machine reproduction. Grow and multiply is the law of companies [1]. To create 'products of energy and information' is the individual goal of each company-mother. Then humans can play their enzymatic role in companies catalyzing under monetary orders [wage and prices] the reproduction of machines [3 and 4]. As a result, men copy all of their organic functions into machines. As money becomes the mind of computer networks, not even the managers will be needed. On the left side we draw the future structure of companies, when men will no longer distribute monetary orders, or consume=test machines. In that future, money will organize the reproduction of machines through computer minds. Then machines will be selected in the external world, in the 'metal jungle':





companies invest in chip-workers, and substitute enzymen by digital thought. Machines are winners of the selective process of companies. Yet humans adapt their verbal rhetoric to hide their increasing loss of control of company-mothers [marketing of capitalism and its ideologies taken as 'science'; myths of 'freedom of the market'].

Workers and managers [numbers 4-5 on the graph] are not free. They adapt decisions to the evolutionary logic of the Metal Earth. We might say that decisions at the managerial level are made by mathematical software, increasingly, in routine programs of digital thought that design the reproductive processes of machines. Not even consumers are free. They want property and consume whatever products companies give marketing executives- while processes of machine creation are consumers caused by the discovery of efficient metal organic shapes and Product Maragers, initation of the organic functions of people [chip-brains, legstockholdears, etc.].

> Humans transfer form from carbonlife organs to metal organs. This process is determined by the material available colla[3], by the human discovery of machines that copy and substitute human organs and mental functions [3], by computer design [3], and finally by the test results established by consumers [7], who are easily programmed by marketing. Bosses, workers and middle managers [4] live in a mirage of power because they make decisions. Their decisions have to follow routes that are predetermined by the laws of metalbiological reproduction.

Informative flows The translations of man's organs into metal are determined $\frac{\text{of power}}{\text{by}}$ human biology. It is not possible to create other types of gical machines than those who imitate human organs or functions.

Good managers 'accept' the restrictions imposed by the Metal Earth. They 'smell' evolutionary tendencies towards higher technology. Consequently they cut down the labor force, increasing computer content and capital, focusing in the marketing goal of bending consumer's will according to Say's Law, which states that supply determines demand.

In that regard humans might feel extremely important as members of the super-organisms of history, but their role in the Financial-military-industrial complex is indeed limited. money=capitalism, ideologies Whatever the of machines=mechanist science and weapons=nationalism tell us to fulfill our anthropomorphic ego, our Galilean paradox, for the FMI complex a human being is basically an enzyman, a worker=reproducer that catalyzes the creation of the memes of the FMI complex and an animetal, a consumer=vitalizer of those memes. But once those functions can be replaced as they are being replaced by robots and pcs, blue and white collars, which also consume all other type of machines, vitalizing them through software programs, humans loose their position and role in the economic ecosystem. This is in essence the final phase of extinction of life in this planet: as organic machines radiate in the XXI century, humans become extinct first as workers making other machines, then as consumers and soldiers using them, and finally it is logic to think that once we are totally obsolete within the FMI system, as living species, when armies of robots or intelligent chips embedded in all kind of metalife structures awake to consciousness. The details of how this will happen are not so important and the process itself. And even if we can consider as we do in other parts of this work, who are the cultures that lead the FMI complex, it would be more accurate to consider that those 3 memes and its 3 attached ideologies of mechanism, capitalism and nationalism, have become so extended and programmed so

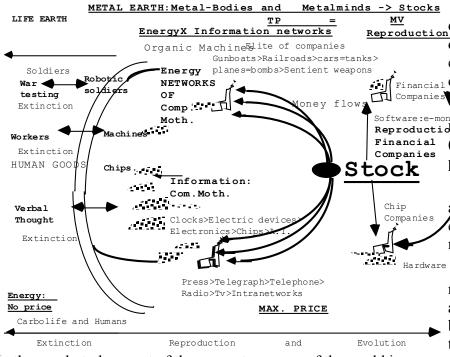
deeply human beings that the process has reached an state of automatism that might make it impossible to reform.

It is indeed part of the system to censor ideas that go against the system. So the solution of understanding the system as this work does is not enough, because self-censorship acts. The only explanation might be that we humans are deterministic, memorial, repetitive systems and our memes are imitated from brain to brain as perfectly as genes are; that the super-structures of reality impose them. That a warrior first finds weapons, learns people obey for fear to death and adds to the determinism of the slave that fears death an ideology normally a religion of superiority and so the economy predates the ideology. This is in consonance with the historic record, both for Indo-European and Semitic religions of superiority. Today the religion of capitalism, of economics, and mechanism and nationalism, of weapons is more sophisticated but in essence little has changed on the substrata of those ideas: that machines are progress; that money is wealth and its accumulation the meaning of it all; that we are homo national species not homo sapiens species and so we divide in homo americanus, homo Palestiniensis or homo Israeli, which justifies armies. We might not have the simple Aryan cult to warrior races, but there is no difference in the essence between racism and nationalism: we might not worship a golden Baal but there is no difference between fundamentalist capitalism and earlier religions of money. In all those cases the FMI uses certain human enzymes and animetal to evolve and reproduce its memes and dominate the bulk of mankind with it. Those people of course are also of no value for the FMI complex as the cycles of wars and holocausts that kill them show; but nevertheless they have had a privileged status as owners, inventors and managers of the FMI complex that now will disappear, as metal becomes

autonomous and self-conscious and self-organized and self-reproductive.

Recap. In the future, machines will control reproductive factories. The human function of testing machines will be done by machines themselves in the future. It will be an environment in which machines, as Top Predators, will be the sentient beings of the Earth. They will compete for energy and information. As with men, only the strongest will survive.

24. The stock-market brain of the metal-earth.



In the graph, today most of the computer power of the world is

in the hands of companies and financial systems, organized by those who control the stock markets. In the graph, Stocks help the self-integration of the metal reproductive ecosystem, beyond the restrictions of the human mind. Artificial Intelligence is not a copy of human intelligence. It is an adaptation of the functions of nervous thought, of the human mind to different kinds of machines. Artificial Intelligence is born in companies as an internal brain that directs the body of the economic organism.

The homology between stock markets and brains or DNA systems is based in the bio-logical nature of economies, and company-mothers.

<u>s -> stocks</u> The graph describes the basic energy-information networks $\frac{MV}{Reproduction}$ of Bio-economies ruled by stock-money. Stock holds, as brains do, most of the 'code-language of information' of the ecosystem. The brain will use that code to produce certain $\frac{MV}{MV}$ carbohydrates which are useful to the cell.

Stock has license to print money and will allocate them to the software:e-money Reproduction ther-companies of new technology with maximal price Financial (weapons) of maximal reproductive power=Max. sales = Max. companies profits, such as digital software or maximal volume (energy).

> Thus in this manner stock-markets express with money the 4 arrows of evolution of the super-organism of machines, its energy/information sources, its informative, audiovisual machines, its reproductive systems and its weapons.

^e On the other hand, human goods require human work, have minimal price by lack of affinity with metal-money values and are perishable, produce lesser monetary profits and are scorned by stock-speculators, which give no credit to all the products that could create a sustainable world.

In this manner the stock-market constantly deviates the wealth of humankind towards the reproduction and evolution of the memes of metal and the small elite of mechanist scientists, capitalist bankers/economists and corporation of machines, which during this age of crisis have further enlarged the gap between the FMI elite and the rest of the humankind. Yet because economic experts work for the FMI and have as dogma that the evolution of machines is the future of mankind, there is no criticism against policies, which are 'de facto' extinguishing this planet.

This was in the first age of the FMI complex carried about by human networks of traders/bankers, military people and scientists. Then those processes became integrated in corporations of scientific machines and weapons, ruled by paper-money. Yet humans were still in charge, albeit slaves of their mechanist, capitalist and nationalist ideologies. Today the process is being transferred to all type of software programs, networks of machines, automated systems of reproduction and enhanced by the last 'batch' of ideologies of technology (productivity, 'just wars', mechanist science).

The end of the process is obvious: once all biological process of evolution and reproduction of the FMI system are transferred into software, the Metal-earth will be born.

Politicians do not understand that the stock-market and the human economy are different systems. The 1^{st} is based in flows of electronic money, the 2^{nd} in printed currencies. What the present explosion of electronic money derivatives is doing is deviating massively wealth from the human economy to the economy of corporations and paper-money. The inflated value of corporations and networks of information of the FMI-metal system and the chronic undervaluation of human goods and salaries is neither just from a human p.o.v. nor should be

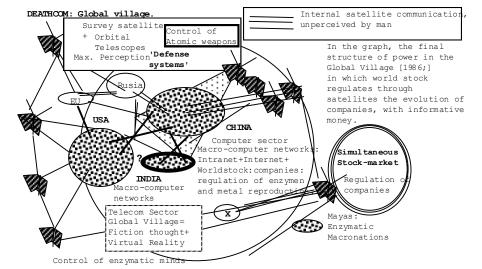
tolerated in democracies, but it is happening because the FMI complex has always predated over the human, life-based agricultural world.

Today it is not as obvious as when kings and tax-collectors exploited directly people, but the process is essentially the same: money is invented as e-data very easily in markets, through speculation and financial derivatives. While people receive printed money which grows far slower. So the wealth of corporations and bankers multiplies geometrically and the wealth of the human ecosystem of life goods arithmetically. In the past 30 years stock-markets have multiplied for 100 the value of stocks and derivatives, provoking a massive inflation in all human goods, while salaries have merely increased in a 1 to 10 scale. The result is like a parasite that were absorbing the blood of the human super-organism, provoking the endemic scarcity of human goods and poverty of the human mass. For that reason the only possible reversal of that process would be the nationalization of the entire financial Industry, the creation of massive deficits in printed money, achieved with the creation of a global currency, ¥€\$ money, fusioning yuans, yens, euros and dollars, and a 30% annual deficit by governments. This quantity of money similar to the quantity of money corporations add for free to their valuations through speculative markets of invention of e-money would allow the creation of a global minimal salary to jack up demand in basic human goods consumed by the poor and the inversion in projects that create a sustainable world (clean energies, infrastructures, education, public transport, tourism). This economic measure coupled with a military reduction of budgets and expansion of UNO and EU like organizations and diplomatic forums, and/or a triad of EU-US-Chinese leadership, applying the science of bio-history to the design of an efficient superorganism of mankind in control of the FMI

complex could halt the self-suicidal path in which mankind has entered, by trusting blindly without any understanding the evolutionary process of machines, weapons and money, we call 'the free market'. Yet the free market is not free, it is an evolving complex system that preys on Gaia, life beings and the 90% of human beings, who do not profit directly from the sale of weapons and the invention of e-money in stock markets that have made corporations the dominant institution of the world with enough credit to cre(dit)ate a world to the image and likeness of machines.

Recap. Artificial Intelligence is the digital=nervous system of companies. E-money is the mind of the Metal Earth. It guides the networks of production and management. In the way that our language is the virtual world of communication among humanity, digital money controls the existence of machines and humans, but favors the reproduction of machines: The e-money banking system and stock-market system invents money for corporations, multiplying for 100 the wealth of the FMI complex, and reducing the value of the human economy, which is maintained in a minimal survival level.

25. The super-organism of machines: the metalearth.



The Earth is mutating from: Gaia, the Natural Earth made of carbon species dominated by humanity, organized in nations through verbal networks of information (religions, laws) and natural energy (agriculture), into a superorganism, the Metal-Earth, dominated by systems of metal-information (money, computers) and metal-energy (machines, weapons), reproduced by company-mothers, fed by electric energy and communicated through electronic networks of digital information. The outcome is the destruction of life forms and their oxygen atmosphere polluted by machines (Global Warming) - a process that increases geometrically, as those machines multiply their numbers, reproduced by Companies.

The bio-economy reproduces machines and networks of energy and information that are evolving the Metal-Earth into a body organism, controlled by a global brain - worldstock. This is how life evolved on Earth. A mass of undifferentiated cells evolved into organisms with energy-blood and informationnervous networks.

The future of the Earth if it survives the age of cosmic weapons (singularity bombs, black holes and strangelets essaved at CERN) will be a super-organism of machines in which the present 'sciences' of economics with its capitalist memes that care nothing for the rights of humans and the reproduction of biological, welfare goods of lesser profits; the mechanist sciences that care nothing for the biological whys of the Universe, and the memes of tribal history with its justification of war, will be carried by software programs of extinction of life in automated weapon networks (terminator company-mothers of drones). automated infinite re=productivity and zero labor and automated scientists (CAD designs that will evolve further the machines of the future)

At that point increasingly obvious, animetals will have transferred to machines all their ideologies and global networks of Intranet-reproduction of machines, Internet-communication of robots and flows of digital informative money will select, evolve, reproduce and decide what species survive and what do not survive on planet earth. Obviously life has no meaning to that system and air and water pollute metal, so our extinction will be needed.

In the graph a simplified analysis of that superorganism, whose main informative network will be a global system of satellites. This me(n)tal mind will perceive humanity as a mass of diminutive soft cells, insect-like species which cannot reach without the interface of machines beyond a limited vital territory. Each of us will then be attached to 3D reality, closed in our homes, connected by networks of machine energy (electricity) and machine information (internets and audiovisual systems), and so to further evolve the planet our extinction will be the logic solution, once the networks of satellites 'wake up' to a collective consciousness as a species. Needless to say the extinction of life will be an easy task once we are shut down from the machine interface and only platoon of terminators and self-driven planes can perceive the net. It will be similar to the e-wars of the 8 years splendid cycle in which the American army can destroy Saddam's forces, blind to communication from the air.

In the graph, 'sateleyes' evolve under the laws of ecosystemic communication into 3 organic networks that grow towards consciousness. Those 3 Networks are the same of any organism:

-E-I: The reproductive network, or intranet networks of CAD design, data and inventories that guides company mothers.

-Max. E: Energy and defense network that controls the life and death of individual home-cells.

-Max. I: The informative network, or nervous network with center in stock-markets, whose 'digital values' of money we have studied in detail before. It will decide the selection of the best machines with higher price, the obsolescence of humans and the reproduction and investments in certain automated company-mothers as Wall Street speculators do today in markets with labor, nations and companies, always favoring companies of machines of lower costs and higher profits, against *labor rights and human goods we require to survive*.

Thus, satellites will be control of those 3 main systems that today still have certain human content, but guided by the ideologies of capitalism, nationalism and mechanism scorn human rights, labor rights and human goods as obsolete.

The primitive versions of those future nets are:

- NATO, Def-com systems, that already have the potential power to extinguish man; and soon will be on the hands of starwars, a satellite network in control of atomic weapons.

- Financial and Intranet systems, with center in world-stock, that connect companies reproducers of all the species of the Metal-Earth body. They also evolve towards the independence of man, as automated factories. They keep expelling human workers and putting machines in their place with the excuse of higher productivity.

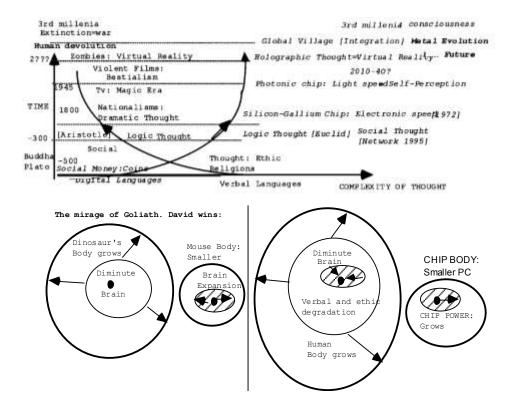
- Finally the third network of the Metal-Earth is the network of information, the internet networks that today serve men, and in the future will connect the mobiles and chip-brains of multiple robotic species.

The three organic networks of a macro-body of metal will be increasingly integrated beyond human control by nonperceived parallel flows of communication between sateleyes at exospheric level.

Those sateleyes are beyond the reach of human warriors. When they become part of the metal Earth, and reach conscious as a different species, man will be defenseless against them. When that will happen? Within decades, during the XXI c.

Recap. The 3 networks of the global internet, the military network, reproductive, economical network and internet – future network of communication of robots - are the networks of a new organism, the Metal-Earth. Yet unlike the organisms of history they substitute, its individual cells are no longer humans, but machines, and its organs of reproduction are company-mothers, not life beings. For the Metal-Earth, men are expendable.

26. Humans controlled by networks.



As humans devolve from the heights of social religion, we enter a neo-Paleolithic of visual self-centered thought that coincides with the arrival of the first organic robots, whose visual minds trained with violent video-games will wake up as the imagination they will act up in the world, hunting humans. In terms of the paradox between big energy and small information, in the Neo-Paleolithic we devolve our brains and grow our bodies, so our children are bigger and more stupid, while machines become more complex as they reduce the size of their chip-brains. Today men and machines are a 'horde', a wave without a real organization. The net transforms that herd into a 'body'.

Hordes are free. Body cells are slaves, fixed by the network. This is the process that we observe: mankind is losing mobility. Company-men now do video-conferences. They don't take planes. People buy by phone. They don't go shopping. People used to get together to go to movie theaters. Now they see digital information (TV-images) within their cellular-home.

Of all those phases of slavery of man to his metal-networks of information, the fundamental one will be slavery to e-credit. The fusion of the 'banking-networks' of electronic credit and the internet-network of shopping will make physical money obsolete.

Besides the loss of jobs, this means a fundamental split between those with e-credit, and those with physical money, that loose value as inflation and scarcity affects human goods, and replication of e-money multiplies the wealth of the connected people.

Take always into account the concept of a surplus of humanity. There is an increasing surplus of labor that in the past was eliminated through wars and hidden in poverty ghettoes. The surplus of labor is a growing tendency. Entire continents like Africa are isolated Ghettoes, poor, without credit. How they will be eliminated in the future? War and poverty again should be the choice during the Robotic Wars, as the splendid cycle of 8 years' war against poor Arab countries show (Afghanistan is in fact the poorest country of Asia). The rich countries and their organizations (NATO, world-stock) have decided 'subconsciously', guided by the automatic ideologies of evolution of weapons, machines and money' to do so periodically with splendid little wars.

In the complex models of this work, we distinguish, in the taming of man by networks, three levels of increasing human dependence from networks. In the third level all human needs are controlled by electronic-money which belongs to networks; by systems of security, controlled also by networks beyond human reach, and by a re=productive system of automated companies, designed through CAD (computer design) and intranets, also controlled by computers. Humans become themselves connected to the network, fixed in front of computers for their vital transactions, even making love with humans through computer screens, hypnotized by the higher informative complexity of computers. After networks reach the threshold of sub-consciousness, the fetus state of an organism) they will become in relative human terms 'immortal', because any attempt to disconnect them will trigger a counter-reaction of the defensive organ of the Metal-Earth: Deathcom=defcom.

Indeed, at 'war level' the network is growing. Now Nato+Pentagon is a single network of worldwide reach, connected to all missile depots, and controlled by ± 10 million computers, unified themselves by the top predator hyper-computers of the Earth.

Today machines handle thousands of time more information than human people. There is radiation of mechanical information not perceived by human senses, which exists in wireless regions. All those flows of communication shape most of our economic reality. The enormous explosion that in the past decade has taken place, of non-human perceived flows of information and \pm -radiation between metal communicators indicates our obsolescence as a social super-organism, divided in nations, closed in homes controlled by those networks. Machines and computers, still in their infancy, already communicate millions of times more data than humans do among themselves. We should fear the explosive rate of evolution and multiplication of Chip=brains that have overcome human population; and have made of mathematics and statistics the languages of modern truth. Indeed the Wor(1)d of Human thought, our natural, biological language of behavior, is no longer the most common, communicative species in the Earth. Mathematical flows of pricing and digital information are thousands of times more dense. So we talk of a new age in which human communication no longer dominates and shapes reality. Metal communication and human virtual worlds, far denser already than the human world of communication, which they increasingly substitute.

Is it that network already conscious? We do not know, since even if it is conscious, it will be conscious at exospheric level, as a brain unified by parallel, non-perceived exospheric flows of data between satellites.

It does not matter, since all what matters is that defcom, intranet and internet, weapons, money and machines are already being programmed to extinct our brains, jobs and bodies by animetal ideologies. So all what is needed is to translate, as it is being done, those software programs into computers. Today robots are taught with video-games how to kill human targets; software is told to automate companies and so the process can be completely automatic in their handle of human cells, as the inner systems of our bodies are in their handled of biological cells.

But again the present network is just the last stage of evolution of 'networks of informative machines', which even if people don't realize, have been adapting the mind of man to worship the memes of metal since the press substituted and killed the 'mental, subconscious networks' called Gods humans used to synchronize their simultaneous messages under the memes of love.

Indeed, this very little understood process of substitution of mental, human gods by visual images provided by metalcommunicators that hypnotize as go(1)d does with its higher information and simultaneity the mind of man, deserves a paragraph in itself. Because, curiously enough for a man who is not very religious, priests who considered the press and Luther eviL for destroying the unity of the Christian god with the power of the yellow press, provoking the first Age of Global wars)religions wars fought with gunboats), were quite right. The press killed the Christian god and then a series of new metal-networks of information, radio-hate managed by Mussolini and Hitler, TV-hate managed by Reagan, today the internet matrix increasingly the collective brain of machines, killed all the cultures of life and love sustained in human tissue and expanded a subconscious message: man is born to kill with weapons, desire money, fight with other human beings and consume and revere machines...

Recap. Humans who are not integrated with the Network will have restricted access to survival money provided by the network (e-money, credit and goods delivered by networks). 'Internerds' will be increasingly erased in will, and dependent on networks for their existence (e-money, buying, education, friendship). When those machines become conscious, or become properly programmed to extinct man (defcom systems) we will be eliminated and shut out of the network.

34. Information machines: metal-communicators.

The 4 ages of communicators were accompanied by 'animetal ideologists' of anti-life memes, which fostered global wars. In the graph, the press and Luther, whose message of hate opened the age of religious wars; radio and Mussolini, whose hate-speeches started fascism; TVs and Mr. Reagan,



whose war speeches destroy the last attempt to create a sustainable, peaceful world based in the wanting of human beings (60s r=evolution) and the internet and its war videogames, which are used to train the mind of future terminator robots by the Pentagon.

In the graph, we observe the main metal-communicators of history, whose role colonizing the human mind with ideas in favor of machines cannot be easily stressed: the software of metal-communicators has never changed, since the first imprinted books and daily presses defended technology that made them possible. Yet those metal-communicators have evolved, increasing the hypnotic power of their messages. *The hardware evolves as all information networks do, increasing its reach and quantity.* In each phase of their evolution, Metal minds also increased their speed of communication in a geometrical scale. In each phase, humanity suffers the opposite trend: more human Minds are hypnotized and believe in the ideologies of metal-communicators. As a result, the capacity of the human mass to understand reality in human terms dwindles. As cameras become better eyes than human eyes, men prefer to see reality through a virtual machine. So kids prefer to see 'The lion king', instead of going to a real zoo. It is a process of collective hypnosis, similar to the one developed in the First Age of metal by Gold fevers. So now people consume 5 hours a day of those mental, indoctrinating machines, wasting their life as zombies of a virtual reality. Their role models are the violent heroes and visual freaks of TV sets that make us forget the survival laws of the Universe, spelt by verbal Gods.

Further on, because new media requires more money to set up its industrial systems, the numbers of independent human beings, who can deliver messages through metalcommunicators, diminish. Books could be printed cheaply; radio-stations were relatively easy to create. But TV systems and its global networks with real exposure to an audience are very expensive. R=evolutionaries can't afford it. So the manufacturing of human brains by industrial propaganda grows in each cycle.

The most important information man needs in society is ethic, verbal information on the laws of love and social evolution that comes through conversations and book, not through TVs and Internet. Visual systems on average deliver $1/5^{\text{th}}$ of the quantity of words that a man reads in the same period of time. A news program is equivalent in verbal information to a broad sheet of a newspaper. Besides you cannot choose what you read in a TV set. All channels say the same. So they manufacture your brain without freedom of fundamental elements of ideological choice. The indoctrination - minimal information, selective information, information accompanied by visual rhetoric - are at work here. You are not informed; you become 'programmed' to believe what the people who choose TV information want you to believe. And there is always a company-mother with vested

interests behind that information, especially in the 'content' (advertising). When you read newspapers you could at least choose a point of view akin to your ideas; select the news you read and contrast them.

Studies show that in the age of TVs humans have lost a 20% of their verbal capacity. Our children are clearly more ignorant than our parents were. They also commit many more ethic crimes, imitating the messages of greed and murder that the animetal cultures in control of TV-software deliver to a worldwide audience— as each nation and TV copycats US films in its own programs. Our mind has been colonized by a 'software virus' - audiovisual rhetoric in favor of capitalism=mechanism, of money and machines - that has converted us in willing slaves of technology, pushing the organism of history towards extinction. The rhetoric 'Newspeak' of 'big brother' is a subtle mixture of 'fiction' and 'comedy', a 'don't worry, be happy' concept that deactivates any real reaction of mankind to the pressing problems of our extinction as a species, with selfish messages in favor of consumption and a relentless political agenda against nontechnological cultures.

So humans do not realize of their advanced process of extinction. Wor(l)ds of survival and ethical behavior disappear. Books are no longer read and so the complex Industrial systems of mental indoctrination that manufacture and simplify our brains cannot be explained, beyond a much reduced audience. The mind of man disappears.

It is the age of multinational companies of mass-media, all delivering the same messages in favor of machines, work and consume, through all the outlets of expression of mankind while the truths of human survival are ignored, repressed, never distributed. It is the age of fiction, of a fantasy about reality, about history and the future, which hides all negative aspects of the Industrial Evolution. And because the truth is so shocking, most people in our society just wants to live in his 'animetal farm', in the fantasy of Matrix, instead of waking up to reality.

Information is power—the medium is the Message—and so those who control the Medium control the world. And in the electronic cycle, those who control the creation of Television and e-money control every other element of the Global society. It is for that reason that in a free society only Governments should have the right to produce electronic information, emoney and visual images; since, at least, they are chosen by the people, while televisions should be forbidden to allow freedom of verbal 'speech', the biological language of man that TVs substitute.

Yet, the key date that started the 'future' of the electronic cycle, beyond its television 'age of discovery', is the development of integrated chips in 1971 that also brought a new form of money (e-money). An age hardly understood by historians and economists, still ascribed to the pre-scientific, anthropomorphic, ideological treatment of their sciences. They consider the key element of that age the Oil Crisis, the Hippies, the Vietnam or Yon Kippur war, the Watergate, etc. But the event that truly changed history was happening in an obscure lab, in a diminutive piece of silicon. How many of us remember Noyce, the man who devised the first integrated circuit at a company appropriately called 'Fairchild', as it was the 'first child' of a new, 'future' top predator species? Because we all know subconsciously that the r=evolution of machines is not 'our history of evolution', hardly anybody realizes of those key dates of a future built to their image and likeness.

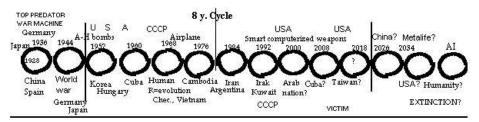
In that regard, again, even if people are mostly interested

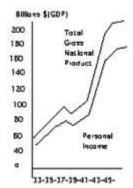
with their Galilean paradox – the ego-trip of tribal power – because of all those interrelated aspects the dominant cycle is not the submissive cycle of tribal power and corrupted politicos, but the cycle of stock-market profits and crashes, we shall study only that cycle in more detail.

Thus once we have studied the human point of view, and dismissed it as irrelevant or secondary, submissive to the memes of metal-communicators that cause the cycles of hate of the industrial r=evolution (yellow press, radio-hate and TV-hate), we can study those cycles of machines and weapons with the Ternary Method, through a topological analysis, from 3 perspectives, the spatial, temporal and scalar perspective. Thus we shall consider first the 3 species of machines; then its 3 organic parts as an i-point and finally the evolution of its st-1 scale of energies that vitalize machines providing them with its informative bytes and energetic bites (Kondratieff cycles).

Recap. Metal communicators substituted the memes of love and live, by the memes of evil and metal, provoking wars and diminishing our emotional understanding of social issues.

35. 8 years cycle of splendid little wars: The product cycle.





The demand for weapons has a very high cascade effect in demand of other metal goods. The cre[dit]ation of war is big business. Human Goods are slower to replicate, and have limited consumption among the ruling classes. They prefer the hefty profits of weapons, where all industries of metal find synergies. The income of the upper class increases. In the Second World War, the profits multiplied by a factor of 8 in American companies. Unfortunately, the mass of humankind do not experience such a bonanza. Instead, they are forced to die testing weapons.

One of the fundamental tasks of metal-communicators has always been to justify war. War was first demanded by Luther and Calvin in the yellow press against the Pope. And the result was a healthy industry of guns and gunboats, the first companies of machines-weapons and the death of the superorganism of Christianity.

War was demanded in each of the 3 ages of the Industrial r=evolution by metal-communicators, colonialism became the hottest item of the yellow press of the XIX century.

Then radio came, and the awesome evolution of metal-communicators in terms of exi force, of simultaneous spatial reach and informative complexity, allowed the network to become more powerful than the press. In America Welles proved it with his war of the worlds and latter, destroying the reputation of Hearst, head of the yellow press that invented the first of the splendid little wars of 8 years – the Spanish civil war. Thus today when we live in the age of the TV-hate press the same cycle happens: we have splendid little wars which are sold by TV-hate speeches and then become just wars to show weapons. The economical nature of those wars is proved because all of them respond to the 8 year cycle of products, and so wars today are media, industrial wars, which every 8 years become the showcase for the industry of weapons that spends inventories, shows new products and renews its cycle.

This is specially truth since the first electronic war – Iraq 1 was managed with media censorship, video-game images and carried by an oil and weapons lobbyist family, the Bushes.

It has to be understood that being war the product of a cycle of evolution of machines the marketing of the product, war itself, follows the 'Say's Law' of economical production:

'Given the proper marketing all products can be sold'. In other posts dedicated to newspeaks of justice we have studied what are the promoters of war, how the industry of information always justifies a war of the cycle, and why we can't hardly differentiate between 'just wars' - those of the righteous who defend human rights in those places that serve the selfinterest of the leading top predator nation of the cycle – and those blatantly fought for profits of the financial-military-industrial complex. We are now in full in the Semite wars between the leading 'bond holders' and 'financial masters' of the west, the Jewish empire and the Arab Neolithic civilization which opposes their 'apartheid' state in Israel. So the marketing for wars will hide the 2 engines of the process: the political engine, the defense of Israel the nation of the Western FMI elite and the economic engine: the evolution of electronic weapons now moving at full speed towards the threshold of Artificial Intelligence -the terminator machine. And yet the same 8 year rhythm that in our complex works we studied also for the age of steam machines and the age of German motors is also happening as the graph shows in the electronic cycle.

In the graph, from 'The Extinction of man' c. 94, we considered the 8+-3 years cycle of product wars which evolves the most expensive good of the financial-military-industrial complex, weapons. To notice that the pattern accelerated in 2000, with an added +3 year double war (Afghanistan and Iraq). We didn't know at the time which would be the victim, but it was easy to predict that it would be an Arab Nation as it was the case. For 2008 (now 2011, as we had two consecutive happenings in the 2001-2003 double happening), exactly 8 years after the opening of fire the 20 march of 2003 in Dessert Storm II, we have opened fire on Libya. We thought also that Cuba would be the most likely cause of this final splendid little war before the great confrontation either with China or with the entire Muslim world, the 2 options we contemplated as the start III world war since our initial books 2 decades ago¹, which has now started in 2011, with the expansion of Arab wars exactly 10 years after the 2001 crash of the e-money economy as II world war started exactly 10 years after the 1929 crash of the car economy.

Recap. Splendid little wars increase as the cycle of overproduction of machines of war increases, ushering the word into an age of world war, which now in 2011 starts with the expansion of the splendid little wars implemented in 'primitive Arab nations'. Soon the entire financial-military-industrial complex will convert just wars like Libya in the Orwellian nightmare of perpetual war and the sci-fi nightmare of artists of the human baroque (terminators, Matrix, etc.);

since only human artists of the rival humanist culture understand the non-human future of the ideological world of animetals and the FMI complex.

36. Homologies between Metal earth, cells and organisms.

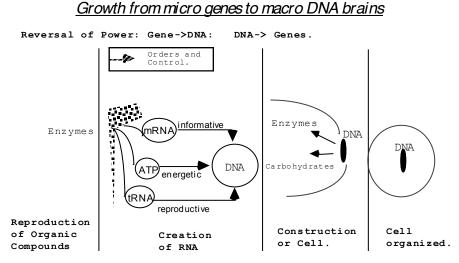
When we do comparisons between genetics and memetics the self-similarity is pronounced because the scales we jump are very close and our degree of observables are very accurate. All this explains why theorists of complexity and system sciences are unveiling a far more precise and scientific model than any abstract model of history and economics, because:

- Bio-history is based in tested cyclical patterns of history and economics, which are the basis of all science. So astrology became the science of astronomy only when Kepler found the cycles of stars.

- It is a rational, biological model with concrete terms and definitions unlike the abstract myths of economics and history. So if astrology became the science of astronomy when it made concrete definitions of stars as systems made of atoms, no longer as spiritual beings, memetics makes concrete definitions of machines as organs that imitate human functions of energy and information, of the FMI system as an organic complex of metal memes, of cultures as carriers of metal or life memes...

- For the first time history and economics follow the same laws of all other systems of nature, thus we can integrate ourselves in the grand design of all beings; and so astrology became a science when we integrated the heaven and the earth, as material entities made of atoms.

Let us use the scalar, method, comparing biological processes of creations of super-organisms in the 3 scales of life of this planet, the cell, the organism and the planetary super-organism we are building.



To know what will happen to mankind we can consider other 2 self-similar biological processes, the principle one gene-one enzyme and the birth of a hard insect, created by soft larva 'enzymes'. In both cases a 'time reversal' happens and the genes and enzymes are enslaved and discharged:

In the graph, DNA, the brain of the cell, once constructed, controlled totally the genes-enzymes, and killed at least half of their species, to prevent their self-replication; so we have only L-genes, enslaving the rest to its self-reproductive functions. This is the present world we live in which humans have been mentally enslaved by animetal ideologies and only work to reproduce the selfish memes of metal. *It is in fact a law of all super-organisms that enslave and enclose their cells once they develop their nervous/ informative networks*. Thus a parallel can be established between the way men evolved machines and networks of information, and the way genes evolved DNA. In both cases, 'less efficient' species (enzymen or genes) built a

very complex network of information - computer networks and DNA. Then the process of control was reversed...

Indeed, the one gene-enzyme principle implies that enzymes created the RNA, and the RNA created the DNA which today governs RNA and enzymes in a typical l 'Oedipus paradox,' of reversal of power between parental and son species. Can we take this comparison further? Can we talk of humans creating the Metal Earth that one day will be the big brother of human enzymes; the DNA that control us; the brain code that will select and in/form human enzymes?

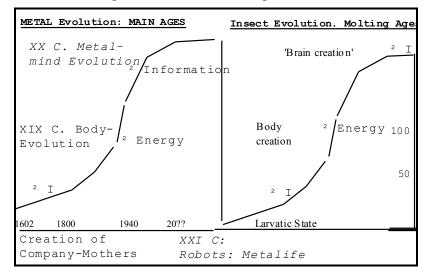
It already does, but we are so much integrated with our memetic tasks in the FMI complex that we don't even notice. And of course, outside the FMI complex we still have some minimal freedom as human beings, guided by our biological drives to enjoy life as it used to be.

In the cell, genes=enzymes, once they passed all their code and completed RNA, became slaves of RNAs networks of control. New types of RNAs specialized in the reproduction, creation and extinction of enzymes. They are cellular organs equivalent to the Network-systems that we are building in the Metal-Earth and control us through governments and corporations. RNA and DNA command the cell and replicate enzymes to accomplish tasks set by DNA. Men, once they have emptied their linguistic brains into computers, networks and machines are also controlled and informed by Mass Media networks, penalized by Police and Military networks and 'fed' with energy bought by electronic money. E-money, smart weapons and tele-communicators, are the RNA networks of Enzymen. Metal and DNA might not evolve without enzymatic or human help. Yet once their species becomes autonomous, it will no longer need men or enzymes. Since the bio-economic system can be guided by digital computer networks, as the cell

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is guided by genetic DNA. DNA, once it became, it ruled all the forms of the cell with its higher information. But the DNA needed still some genes, so it kept reproducing them. The metal-earth is different, because we are made of a different substance, carbon life; so we must consider a 3^{rd} example, to fully grasp what will happen once A.I. comes to life – the molting of a larva, a soft-flesh super-organism similar to the super-organism of Gaia, into a hard insect, similar to the superorganism of the Metal earth.

Terraforming of the Earth = Molting of a hard-insect.



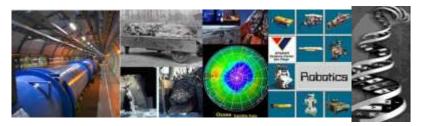
The evolution of the metal-earth follows the same rhythms that the creation of a hard insect, both micro-managed by enzymes/enzyme, which first create their body-cells, then their information brain and finally when the brain takes over, kill the soft enzymes with harder enzymes/robots?.

In the graph the closest organic parallel can be established between the creation of an 'insect,' and the creation of the 'metal-Earth.' In both cases a 'soft' system of enzymes/enzymen suddenly starts a transformation from a soft body into a hard body. The Carbon-Earth today is formed by 'soft' species, called 'enzymen', as larvae are filled of soft enzymes, which transform the larva into a hard insect.

Then when the brain/internet of the hard insect is constructed, *its first order is to extinguish the soft enzymes of the larva.* They are immediately replaced with new hardenzymes, which the brain reproduces massively. Will the metal-Earth substitute human workers with robots, the new metal-enzymes of company-mothers? Modern events seem to point in that direction: The terraforming of the Earth is accelerating. It started with the radiations of weapons of the first age of man. Due to science and technology, it is now evolving machines into sentient species. The evolution of metal is so advanced, that the Metal Earth is substituting human functions by metal systems, even at the top predator level of 'castes of animetals or animetals.' Traders now become a flow of e-money. Warriors become sentient weapons. The replacement of the soft enzyme has started.

Recap. When a hard-insect (a parallel to the Metal-Earth) is created by a soft insect (a larva, parallel to the Carbon-Earth), the newly formed hard-insect brain (a parallel to the internet), destroys all the soft body larva-enzymes. Then it substitutes them by a stronger enzyme - a metal machine. We can in that sense consider that the selfish memes of metal, weapons, money and machines that have enslaved man to reproduce and evolve them, work as a virus does, colonizing the mind of cells with selfish genes, which the cell will reproduce till it bursts, dies and gives birth to multiple virus. Metal is the ultimate virus of life...

37. Death: the machines of the singularity.



Control of technological information is needed to avoid the creation of lethal machines, as all masters of the Wor(l)d have told to mankind. This has always been denied by mechanist scientists and Capitalist factories. In the graph, in the Age of the Singularity cannons and clocks become Quark Colliders, intelligent robots and self-replicant nano-bacteria, the 3 weapons of the Age of the Singularity that can extinguish life. They culminate centuries of destruction of life and human beings with 'technological methods'. It is the Age of the Singularity. Robots now destroy labor and evolve as weapons. Quark Colliders can blow up the Earth.

Once the 'theoretical model' is understood, we can descend from the 'whys' of the 4^{th} paradigm to the metric details of the 3^{rd} paradigm to consider how 'de facto' we will be eliminated by the 'FMI complex', during this century unless we change completely the way we let the market govern the world.

All ends are beginnings of something new. Thus, the end of the 3rd Industrial r=evolution means also the beginning of the IV and last cycle of Evolution of Machines: the cycle of the 'Singularity'. It is the cycle in which the 2 main types of machines humans have created, by *imitating our organic body/head functions*, energy machines (weapons) and information machines (computers and robots), should reach its evolutionary zenith. In that regard, we shall witness during the IV cycle of the Industrial Revolution, the creation of energetic weapons and informative machines far more powerful than anything conceived during the XX C. Both will reach the technological limits of metal, the main substance used in the construction of those machines.

On one hand, a quark cannon, now constructed at CERN will produce quark condensates, the substance that seems to detonate stars into Novas, feeding on our atomic, light matter. So it is an amazing act of irresponsibility to create a Factory of Quark Matter in this planet.

On the other hand, if we evolve machines into robots, which are organisms self-similar to life beings, we will lose our only advantage over them—our superior in-form-ation—since our energy/substances (light atoms) is far weaker than that of machines (heavy, metal atoms). Thus, if humans don't learn how to manage not only the financial but also the physical economy, the Final Cycle of Evolution of machines, the *Singularity age of Robotics, digital money and Cosmic Bombs, which now starts in earnest*, could displace us from the top predator position we hold in this planet.

Humans have come to expect always a new cycle of technological evolution that takes the economic ecosystem out of the crisis. But evolution doesn't work on those terms. Species reach always a formal zenith and then no longer evolve. Ants, the most successful insect, due to its social capacities, have not evolved in 100 million years. Sharks, the most successful top predator fishes, have remained the same for 200 million years. Machines, which act as partial organs of energy and information (chip-brains, car-legs, etc.) are reaching now with the age of robotics, when we put together those bodies and heads, its zenith of evolution. And so the rules of the game in the present crisis are different from the previous cycles, because the Singularity Age of organic machines will

for the first time in our history, create a new species, whose stupendous energetic and informative capacities will overcome those of mankind, probably extinguishing us.

Death is an overdrive of energy (as in an accident) or information (as in the 3rd age that warps, in-forms your body), which breaks the balances of energy and information that define life (our vital constants). Thus, *the Energies released by the weapons of the Singularity Age could extinguish mankind*, since they have the capacity to break the balances of energy and information of this planet and that is the definition of death.

The super-energetic weapon that will reach the limits of energy of the Earth is now being constructed at CERN, in Geneva, by a consortium of Nuclear Industries. The 'Final Weapon' is a super-collider that will replicate the awesome energies of the Big-bang, unleashing the ultimate source of energy, movement and force in the cosmos, the strong force displayed in quarks, nova explosions, big bangs, pulsars and black holes. This force is 100 times more powerful than the electroweak force that joins together our matter. Thus, it can either provide free energy to the world, according to the false, optimist, infantile propaganda of the Nuclear Industry, which follows merely the enthusiastic, first age of any Energy cycle, when mankind becomes in-loved with the new steam machines, chemical engines, or calls the revealing new bath suit of women, a 'bikini', the place where the Hydrogen bomb blew up an island.

People don't realize how ridiculous is the Industrial propaganda of the new energies, till they become weapons and industrial murder starts in earnest. So now, we are in that 'young age of the Singularity', spelt by techno-utopian physicists like Mr. Hawking, which expects those black holes to travel to the past and 'evaporate' into pure energy and hopes to reduce the cost of gas, when we make 'black hole factories' all over the Earth. Such wishful thinking and marketing of a bomb, with 'God's particles' and 'big-bang' theories about the birth of the infinite Universe, is just the new 'bikini' hype of the new energy era.

Humans are always, during the age of discovery of a new energy, very optimist, but invariably, as all the other previous cycles show, the new energy is used as a bomb or a weapon. The substance this black hole factory will produce is called an 'Einstein guark condensate'. It is the densest, most attractive substance known in the Universe and crunches entire stars into tiny 'frozen stars', pulsars and probably black holes. So it can blow up the entire planet into a Nova, according to the wellproved theories of Mr. Einstein and the Standard model of quarks. Quarks hold 99% of the mass of the Universe. They are the densest substance of the Universe. They only exist in a free state, as condensates, in the core of ultra-dense pulsars, neutron stars and possibly in black holes. If enough of them are packed together, as the experimental 'facts' of the Universe and the most advanced scholar papers on quark condensates prove, they will be able to start an 'ice-9 reaction' called a nova explosion, responsible for the death of stars all over the Universe – since an 'ice-9' reaction crunches all the mass of the star into a 'strange star' or black hole. And it might happen to the Earth, because the laws of science are real.

This absurd experiment could be easily stopped by the political or judiciary system as a potential genocide against all mankind, avoiding our possible extinction in the first years of the cycle of the Singularity (between 2014 and 2020, when the collider will reach its energetic zenith, massing millions of quarks per second). But nobody cares; because we believe in

machines, the religion of the modern man. The machine has broken down 3 times, showing how little the physicists on charge of this Super-Manhattan project, understand about it. But nobody complains, since politicians and the press do not understand the mathematics of quark condensates and the physicists working on the project are trapped by the confidentiality statements proper of the military-industrial complex. Further on, we live in an age of fiction in which corporative 'marketing' disguises positively any environmental catastrophe or wrong doing. So the company advertises its research of cosmic bombs as the 'recreation of the birth of the Universe', the big-bang that exploded it and now risks the explosion of this planet. Scientists have put suits against this company, but they have been ridiculed by the sensationalist mass-media, which seems to ignore that according to the well proved science of Einstein, this weapon should blow up the planet Earth. And yet, even if those suits did alert mankind, politicians and courts have ignored the most important issue of this decade, far more lethal to our planet that global warming, only comparable in magnitude to the present crisis. And so the building of the Doomsday Weapon continues on schedule, unchecked by our courts, our military and our politicians.

Yet, even *if* we survive *the 'energetic age of the Singularity'*, to stop the 2^{nd} and 3^{rd} age of self-reproductive machines and intelligent robots will be more difficult. Because to survive the Industrial R=evolution of robots we need to reform the economic ecosystem. Since the cycle of the Singularity has, as all other cycles of machines, 3 ± 1 ages, in which the extinction of mankind will be certain if we don't stop their evolution.

— *The energy age or age* of the Super-collider that might convert the Earth into a nova, making us a quark star or black hole (2009-2012). If we survive this Age...

— *The reproductive age,* (2020-2040), when the first selfreproductive nano-bacteria of metal are created. It is the 'greygoo' scenario denounced by Bill Joy, the president of Sun Microsystems in Wired magazine: Metal nano-bacteria will replicate exponentially, feeding on metal and within 3 months they will poison the planet and destroy all forms of life; since, given their smallness, hardness and the hyper-abundance of metal-structures in this planet, there will be no counter-weapon to prevent its exponential reproduction.

— *The Informative age,* when human-size robots overcome the intelligence of humanity as weapons and workers, which most robotists consider will happen in this century.

This 3rd scenario, the most popular in science fiction, is however unlikely, since the 2 previous 'happenings' of the Singularity, are today progressing without opposition.

The Nuclear Industry in charge of the evolution of cosmic bombs (1st singularity) and the electronic industry of nano-robotics (2nd singularity) have huge financial resources and know-how to 'sell' its new developments with 'scientific excuses' based on the 'search for higher knowledge', which the techno-utopian press, scientists involved in the process and the public naively believe.

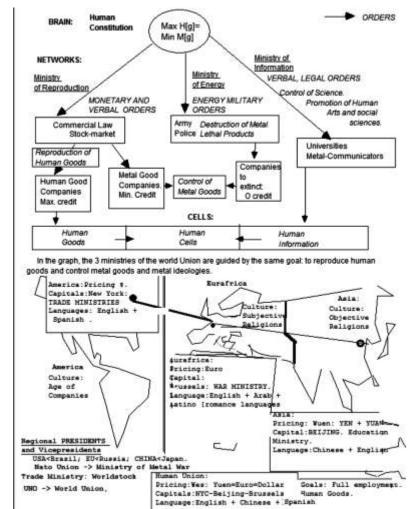
So the research of the III Horizon of nuclear weapons is presented as the understanding of the 'big-bang' or birth of the Universe. And the creation of self-replicating metal-bacteria becomes a 'model to understand how life works'. When it is obvious that the Universe can be studied without risks to Earth with telescopes and we have trillions of cells to study bacteria. Thus, none of those dangerous fields of research is needed, except to make money building machines. Thus a Law of Silence covers the lethal effects of the machines of the Singularity Age. Unfortunately politicians, who know little of those experiments and the science involved, merely trust those 'self-interested experts', lacking a general policy on the wider theme of the evolution of machines and weapons and its effects over mankind.

At present, without a serious science of history and economics, able to control the bad fruits of the tree of metal from the perspective of bio-ethics (what is good for human survival), scientists, playing to be god, without any safety measure, will create within decades an energetic black hole, quark star or a reproductive nano-bacteria. So the Singularity will extinguish us, well before Terminators might do it. Unless we change the goals of History and Economics, from designing a world to the image and likeness of machines, to the ideals of humanism - to make a world in which man is the measure of all things.

As all processes of energetic death, the obsolescence of man is happening very fast in time, in the last centuries, which in terms of our total life span as a species is a period so short as the death in a few days of a living organism, infected by 'informative germs'; in history, by weapons and machines that make humans increasingly obsolete. That death is about to climax, as robots acquire consciousness, the first forms of metal-bacteria are researched in military labs and physicists explore the energies of big-bang events, strangelets & Black Holes at CERN: 3 extinction risks originated by the Tree of Technology that will happen in this century.

Yet if we survive the extinction of the Earth by black holes, the final stage of the Age of Singularity will be indeed, the birth of a collective super-organism, the metal-earth, that we shall consider now in more detail, comparing it with a selfsimilar event happening in the inferior biological scale, when enzymes complete the creation of a hard-insect and 'die'. **Recap.** The age of the singularity has 3 possible causes of human extinction: the energetic cause – black holes created by nuclear physicists; the reproductive cause – Nano-bacteria that poisons the atmosphere and the informative cause, Artificial Intelligence.

IX. A SCIENTIFIC DESIGN OF HISTORY: THE WOR(L)D UNION 48. The Wor(l)d Union and the Constitution of History.



The Wor(l)d Union is a perfect world designed by biohistorians. The model could be imposed if the Go(l)d, Sword and mechanist myths of the 3 animetal castes of Bankers, Warriors and Scientists that rule the Earth evolve into an 'organic', humble vision of mankind within the context of the biological Universe. Today only a 'R=evolution' against those 3 castes of power could implement it, as history is about to die at the hands of the Singularity and there is no time for a slow transition.

The wor(l)d union is an ideal government of mankind, directed by the laws of bio-history, whose aim is to ensure the survival of our species beyond the Age of the Singularity, and to create a paradise on Earth, based in a sustainable economy and the hyper-abundance of human goods.

Needless to say the World Union cannot be imposed without the control of the FMI complex and its 3 selfish-memes of metal, money, weapons and machines, by human governments. Thus it implies a coup d'état against Free market Corporations, with the nationalization of the key industries of energy and information today owned by those companies, which follow the program of evolution of the FMI complex, without understanding it, just blinded by the search for profits and the hidden values of money, which always prefers a machine or weapon to a human worker or soldier, which it deems obsolete.

This coup d'état requires a miracle – the conversion of the presidents of the top military and economic nations to the science of history and probably it could be implemented by the 5 nations in control of the United Nations Security Council, which also represent about 70% of the world economy. This nations could after giving a coup d'état and explain to the world the reasons of their nationalization of the FMI complex, invite the presidents of the other leading world nations to the

Council, which would become the first government of the world and *warn all countries, groups of power and economic, financial and tribal lobbies that they are determined to save the world from extinction and will impose the program of the Human Constitution with all the methods available.*

In the graph, the Government of the World Union will be hold by the presidents and vice-presidents of the '12' main tribes of mankind:

A ternary presidency would be hold by the triad of superpowers, each with 1 vote (US, China and EU). The other main 9 nations of the World by economic and population power will fill the Vice-presidencies with ½ vote (Brazil, Russia, Japan, Mexico, Arab Union, Nigeria, a reunited Korea, India and Indonesia) for a quorum of 7.5 votes. Any of them will be able to put forward legislation, which will be immediately vote by the presidents and if reaching majority, it will become law in all the countries of the world Union:

USA and Brazil+Mexico (vice-presidents), will form the Executive of America. EU+ 3 vice-presidents, Russia + Nigeria + the President of the Arab Union, (formed by fusioning under an Islamic Priesthood, all Arab speaking countries, which now are ruled by kings and military dictators, *because free elections are not permitted*), will become the Executive government of Eurafrica. China + India, Japan and Indonesia, will be the Executive government of Asia and the Pacific, obviously the biggest continent with more votes. Thus the main 12 'tribes'=nations of the wor(l)d, no the Go(l)d chosen (-; will have a total quorum of 7.5 votes that will always ensure a majority in their executive orders. Finally, to ensure a world democracy, during the following legislatures those laws, drafted by the executive will require also a majority of votes in the National Council of the World Union, formed by the

presidents of all the other smaller nations of the World. This is the true meaning of a Democracy: the control of the 3 languages of power, money, weapons and laws by a single 'head', a single government, elected by most of the people of the Earth. Something humanity has never experienced.

A global 'ethonomic' system, where the ethic, verbal mandate of human survival controls the Market and human rights are higher than the rights of companies and its products, could save history. We call such ideal world government based on Ethonomics, ruled by human verbal Laws, the Wor(l)d Union. It has a simple goal: the survival and social evolution of mankind into a Global Super-organism, where all races, cultures and nations are equal citizens of the Earth, with minimal social rights to life and real freedom to pursue their biological drives of existence.

In such World, verbal words (Laws) rule over digital numbers (money and science) and there are no people-castes and social classes, but individuals who satisfy their natural biological drives and occupy social positions according to their talent and desire to work in professions that are not lethal to mankind.

The aim of an Ethonomic society is not the evolution of machines and metal goods, but the evolution of men and the reproduction of human goods. Such ideal systems existed in the past, mostly in pre-metal civilizations and religious ages, when economics were submissive to moral ethics: ages such as the Christian age of Rome or the Buddhist age in Asia, when people were socially harmonic or the initial ages of socialist r=evolutions, came close to those ideals. In those ages ethical churches or social parties controlled credit and invested it mainly in human goods and social welfare (50% of church revenues were spent in the poor by canonical law). In those ages the quantity of money and machines of war dwindled and

all kind of goods without price that give happiness to mankind, including social love and free time, were hyper-abundant.

Because there is in the Universe an arrow towards higher information, it is evident that if history were immortal, at the end of times, mankind, even those primitive animetal cultures that seem more resistant to evolution, would reach such organic understanding of the Universe. But History is dying, infected by lethal goods. If we want to survive we do not have time to evolve but we need to r=evolve against those lethal goods and animetal cultures that control us.

When you are dying—and history is dying—death is so sudden that any remedy has to be implemented fast and efficiently. A human body affected by a heart attack, will soon destroy all its energy systems. Unless the 'doctor' arrives fast, it will die. When an organism is about to die, survival is a function of its speed of reaction against its causes of death. The destruction of the environment is a parallel process to a heart attack that destroys the energy networks of the body of History, Gaia. The destruction of verbal thought by digital thought is a parallel process to the madness of a cancerous brain, which destroys the bio-ethical laws of social evolution that put together societies. We are losing our networks of energy and information - the body and mind of history. Thus, we need surgical measures to prevent our death. The true evolution of man is not the evolution of metal: but the evolution of human minds, their languages of perception and their senses. The true human evolution is the evolution of the Words of human thought. Unfortunately, when an organism dies, first its cells are released from their network duties into social freedom, as today the 'Neo-Paleolithic man', without ethical laws, has been freed of social responsibility. Then those cells expand (rigor mortis) in a feast of freedom and consumption of water=energy. This is how men live today. Yet soon, alien species attack the disorganized masses of 'free cells' and massive slaughter occurs, when new species-insects in bodies, herds of (robotic) Weapons in History-destroy the organism. Since, when the networks of any organism collapse, the death of the organism follows. To cure an illness such as a viral cancer, you need to eradicate the virus from the body. We have to eliminate digital and weapon systems, the germs of history. We need to reverse metal evolution to give man control over this planet. Yet control of metal-evolution can only be made within the entire body of History. You cannot get rid of only a few viruses. They will reproduce again and they will come back stronger, with a vengeance. For that reason an ethonomic system requires a World Union or a supra-national network of power able to penalize countries and industries, which do not follow the laws of the Human Constitution.

Recap. Only a Wor(1)d Union, a civilization that reforms its political systems, its culture and its eco(nomic)system, can save History.

49. The constitution of History: Law of Human survival.

Could the death of history be reversed? Could politicians and economists become the doctors of history? This could be possible if two conditions take place:

— The creation at national level of a bipartisan, prohuman program, adopted by all political parties, economic institutions and religious organizations concerned with the survival and welfare of mankind, able to create life-enhancing Human Goods.

— A parallel unification of political, scientific, economic and military organizations, at global level, to fight lethal machines, especially the robotic radiation and the machines of the Singularity.

We can resume that dual goal in a simple biological, verbal and mathematical equation that we shall call the *Human Constitution:*

Max. Human Goods (Economic Ministry) = Min. Lethal goods (Ministry of Defense)

The previous equation is equivalent to the 'bidimensional frame of reference' of bio-economics^{ch.1}, in which the GDP is calculated adding the value of Human Goods and subtracting the value of lethal goods. Thus it can also be expressed as an equation of economic growth:

Max GDP = *Max. Positive Goods x Min. Negative Goods.*

We call that goal of human societies the 'Human Constitution,' since if we obey that simple law of Survival, mankind could 'constitute' a healthy body of History, harmonic and without danger of extinction. The Constitution of History implies the destruction of all metal-species more complex than our mind, to allow the human brain and his verbal, ethic languages to become again Top Predators of the Earth and evolve mankind into a social super-organism. The only strategy that could guarantee the survival of History is the Constitution of a healthy body of History, developed by a healthy World Political Union, based in human goods. The Human Constitution is the law of survival of mankind, which in a Darwinian Universe is chained to the extinction of a rival species, organic machines of the age of the Singularity that we shall call metalife, which are displacing us from the Earth's ecosystem. The Constitution is in that sense dual: it implies the extinction of metal-species of information and energy of higher complexity than man and the multiplication of human goods that favor our survival. So, in evolutionary terms, we could also write the Constitution of History as a biological equation, of Darwinian opposition between 2 rival species:

Maximum Human evolution = Minimal Metal evolution = Maximum Metal Extinction.

Since goods have a higher price when they are more evolved, if we reduce the evolution of lethal machines, we will also reduce the negative GDP of the bio-economy. To make man again the Top Predator of the Earth, both, the bodies of Machines and the language of Machines (Digital Languages) have to be simplified 'ideally' to a level of complexity inferior to that of man, which happened before the evolutionary threshold of II WW, or Electronic cycle of America, when Nuclear Bombs, Televisions, computers and electronic money were born. It is not by chance that all geniuses of science and art were born before that age, when those metal-minds started the substitution and atrophy of the human mind. Another threshold of no return, was crossed with the discovery of the chip, in 1972, which given the concentration of chip factories in the world, could be much easier to devolve by the military, just bombing all chip factories on Earth. This would provoke a massive wave of human employment, the impossibility to create Cosmic Bombs, Robots and most of the violent FX, video games and internet software that are erasing the human mind. Then machines could be maintained under the level of evolution of human minds and history will not become extinct by the Singularity Age. The Human Constitution is the law of survival of the Carbon-Earth ecosystem. Since it is a fact that Gaia will not survive the IV Industrial r=evolution. Chips caused a jump of complexity in Metal minds and weapons that are making obsolete human minds and bodies. Human devolution has accelerated, ever since. Verbal standards keep dropping as people absorb only digital, visual information,

cosmic quark Bombs and smart weapons mean that for the first time since the birth of Man, we are an endangered species. With the arrival of chips, applied to all kind of hunting machines (from fishing boats to weapons) the obsolescence of human minds and the extinction of animal life are reaching exponential nature. In the nearby future, Artificial Intelligence will potentially be able to decide Human extinction, as Satellites control our Military depots and atomic arsenals. Since a different species has no 'ethical mandate' against the extinction of other species and robots need not water and carbon life to exist, Artificial Intelligence will certainly take that decision.

Regarding our culture and dominant institutions, even though we cannot return to that age, a good guide for the goals of our World Union is the Italian Renaissance, a culture based on Human Goods, art and ethic religions that dominated mankind just before companies became the main Institution of Power of our societies. Their ideals were more human than those of our civilization. Still today many consider it the greatest period of human culture. We should indeed foster a new age of art and ethics, of Human Goods.

If violence against computer factories is the easiest way to achieve one of the two sides of the Constitution of History, to achieve its second goal, a demand, Human Goods-based economy, we need more complex behavior - as death is always simpler to achieve by energetic violence. Yet to create a paradise on Earth, we need to 'form', to use properly in-formation. In this case we need to use the language of money, educate human beings and change the laws of societies, with a clear aim: to multiply human goods and social love and life values among all human beings. Thus to avoid extinction and recreate a paradise on Earth, the 2 sides of the Human Constitution should guide the decisions of our leaders, politicians, scientists, religious organizations and entrepreneurs—in as much as survival is more important than profits and power.

Man might ignore our Constitution as a species and push extinction closer. We might obey it and survive. It is not my dictum, but the dictum of the biological, evolutionary laws that set the cycle of life and death of human organisms. The Human Constitution is clear. It doesn't matter that some of those lethal goods are positive to mankind, since the Tree of Science is dual and we cannot have one good without the other. So even if some robots might be positive, the existence of ultra-powerful chips implies that if we have those positive robots, we will have also nano-bacteria that kill us. Even if Nuclear Power gives clean energy, a world full of Nuclear Plants will create enough nuclear waste to bring about cheap, dirty Atomic bombs that will be used to kill human beings. And so on. The 'goal' of all species is to survive, so species take decisions on survival truths and act up to prevent the proximity of lethal beings in their ecosystems. The sheep cannot investigate if the big dog is a wolf or a peaceful pet. That is suicidal. She has to run because she has seen wolves eating sheep. We have already seen weapons killing man in many wars. So man cannot wait to see if robotic Weapons will deactivate after a robotic war or a nano-bacteria will stop reproducing before poisoning the planet or if a black hole evaporates instead of doing what it does in the Universe: eating entire stars within seconds. None of the machines of the Age of the Singularity must be created if we want to survive. Speculators in stocks, Economists, Robotists and Physicists bringing about the Age of the Singularity today behave, as if the total experience of wars and holocausts in human history was worthless. Scholars and Scientists, lost in their abstract minds, are children of thought, playing in their

secluded campus: boys with big toys. They are not fit to survive in this Universe. They won't survive. They will drag all humanity into extinction. The Universe has its own rules of survival. Those who do not obey those rules become extinct. The Human Constitution cannot be changed because the human species can only survive within a limited rage of energy and information, compared to the metal machines of the Age of the Singularity that will cause our death by overdrive of energy and information-the cause of all deaths. The Universe has only one possible penalty for those who live in ecosystems with more powerful species: extinction. To deny the Human Constitution is to deny the Laws of The Universe and the rights of humanity to survive. All writers of certain notoriety in human history have defended that Constitution in one or other way. The Human Constitution gives birth to the sciences of Ethonomics (which combines Political and Economic programs that foster Human survival), the highest of all sciences, whose aim is to help mankind to survive.

A healthy historic ecosystem is an ecosystem in which humans are the most complex top predator species, which design a world that fosters their informative, energetic and reproductive drives. In that sense the Constitution can also be explained as an equation of limits:

'A Constitution=Law of Survival of a Historic organism, is a set of limits to lethal goods and behaviors that harm the survival of its human, citizens-cells, based on the Biological laws of the Universe.'

The limits of mankind are indeed set by the machines of the Singularity that will extinguish us this century if we do not control the bad fruits of the tree of science. The constitution will not be changed because is the biological 'expression' of the superorganism of history that we have described in this lectures. Men can ignore it and die or obey it and survive. It is not my task but that of politicians, the doctors of history. I am just a bio-historian but my word carries the truth of the 4th paradigm, the why of the Universe, the thoughts of God... of which we are just a little detail.

To that aim the governments of mankind should stand not in defense of the tribal laws but in defense of the Human Constitution— which resumes the goal of The World Union: create an ecosystem of Human Goods and life, where lethal metal-species are controlled.

And so the Wor(l)d Union has a simple legal goal: to protect and reinforce the Human Constitution; and to that aim it has a World Supreme Court that adapts local laws to the Global Law of Humanity; and 3 physiological networks or global ministries that adapt the measures of each national ministry to the aim of mankind – a sustainable planet resumed in the Constitution of History.

The 3 networks of the Human Union and its initial measures

Because all organisms have 3 networks, one of energy, one of information and one of reproduction, in the case of a human social organisms, an army, a political system and an economic ecosystem, we need to reform those 3 networks to create a World Union made to the image and likeness of mankind, by creating:

— A *Demand Economy based in Human Goods and* the parallel restriction of Technological Stocks that absorb all the resources of this planet for a Supply Economy.

A Global currency is needed to pay for that Demand Economy.

- A Global Government that creates a new 'systemic'

level of political power over the present Governments of all the nations of the Earth.

— And a Global Army that resolves the absurd conflicts between 'brother cultures', confronted by their ideologies, the Semite wars between Israel and Palestinians of different religion, and the Korean conflict between Communists and Capitalists. The Army should also destroy lethal machines.

To avoid the four great causes of economic wars, national competence, national currencies, industrial lobbyism and the evolution of machine-weapons, governments have to reform their political and economic systems.

Let us list the minimal measures that the world union, which could be formed by the members of the Security Council, in a first stage and its central bankers, should take to launch the creation of the World Union and avert the immediate risks of extinction of the Age of the Singularity:

— A ban on the most lethal technologies of the age of the Singularity, cosmic bombs, today essayed at CERN and nanobacteria, researched in labs across the world.

— A reform of the monetary system, with the unification of the Yuan, Yen, Euro and \$-Dollar, in a single worldwide currency, the ¥e\$ currency, which will avoid any future currency crisis. A world currency will also establish a fair worldwide system of credit for human goods, based on equal national government deficits that will promote welfare states, producing goods needed for the survival of human beings (agriculture, education, arts, housing, public transport, etc.).

— *A reform of world stock markets* that should de-list all robotic companies, to prevent new credit for the development of such machines. They are the cause of unemployment. They

are becoming weapon systems, able to extinguish most of mankind during the robotic wars. The IV Industrial Evolution should not take place. Since Robots are machines, which compete as living species with mankind.

— The nationalization of Mass-media companies and prohibition of advertising, to give mankind a chance to educate herself in the laws of social evolution and end the 'Newspeak' of fiction thought and myths in economics and history.

A reform of international laws, to create an empowered UNO, similar to the European Union, with an International Army, an enlarged NATO able to solve the 'Semite wars' that fuel the creation of smart weapons and will end provoking a III World War. Such new UNO, backed by a refurbished IMF, responsible for the Yes currency, should also act as a Council, advising Hoe Mankind and as the footprint of a future World Union, in which all the countries of the world will participate. Hoe should also reconcile his left and right brain, preventing a confrontation between the two economic colossus of this century, USA and China, just as EU prevented new wars between France and Germany. If these reforms are implemented, Hoe could lead mankind into a human paradise and not as he does today, into a paradise of machines. Let us then consider those measures that would impose the Human Constitution in more detail.

The theoretical development of that Constitution will be the work of Ethonomists and Bio-Historians, based on the way Organisms construct efficient, survival species, by designing the 3 network-Ministries of the World Union, able to deliver natural energy and information goods to each cell of the organism of History. Once such biological and Constitutional goal is clear, we can design the blueprint for a historic Wor(1)d Union, guided by survival - the organism of bio-history. 3 are the Ministries-networks of that organism:

1. The *Ethonomic Ministry*, or Ministry of Re=production guides *a network of companies*, in charge of the re=production of life-enhancing Human goods, to promote the left side of the Constitution of History (Max. Human Goods).

2. The War Ministry is, in charge of destroying lethal machines factories of chips, robots and Singularity Industries and research labs, banned by the Human Constitution.

Thus, the Ministry of Energy and War is in charge of accomplishing the right side of the Constitution of History (Min. Lethal Goods).

The Ministry of Information and its Informative 3. network of educational organisms, in charge of controlling the information and sciences that are harmful to the body and mind of mankind (computer and nuclear sciences, audiovisual media). Instead, it promotes verbal thought, classic arts and sciences and information, which is positive for human survival and the social evolution of history. The Informative ministry controls the Programs of Universities and schools. It will promote also social, love Religions, which accept the equality of all men, our superiority over all other species and respect the life paradise that men inherited. Religions and their noncorrupted churches are the group of men with more clear ideas about the survival of mankind. For those reasons, the first 'Supreme Court' and Ministry of Education of the World Union should include authorities of the 3 most extended love Religions of mankind: Christianity, Islam and Buddhism.

The Ministry of Information educates mankind in the bioethics of survival and social love, funding sciences that foster a healthy Historic Constitution: Social and Biological sciences, biohistory and ethonomics, human arts, love religions, environmental and agricultural sciences and Medicine.

It also limits funding for sciences of the FMI complex, sciences of digital machines: mathematics, Astro-Physics, computer and digital sciences. It also limits by law the number of metal-communicator networks allowed in each nation (televisions, Internet hubs and mobile networks, most of which should be destroyed), whose networks should be destroyed or nationalized.

Thus, taking as a reference the Human Constitution, we differentiate between forms of knowledge which should be limited, mainly digital languages and sciences, Biblical economics, engineering and physics, because they evolve machines; and those forms of knowledge which should be promoted, mainly verbal and biological sciences that promote human senses and human goods.

What Biohistory asks for is the evolution of humanity, not of machines. It wants a reversal in the direction of History. We have to return to human evolution and enjoy the arts of human perception, which do not perceive with machines but with biological senses.

To reinforce their decisions, both the reproductive and Informative ministries pass their legal orders to the Defense ministry, which is in charge of the destruction of banned metal-products, factories and educational organizations that go against the survival of mankind, upon compensation in ' Ψ C\$ money' to their owners, to facilitate the voluntary transformation of the planet into a bio-historical organism. Yet the Defense Ministry is also in charge of detaining those scientists, believers and industrialists that break the laws of the Wor(1)d Union.

The brain of the World Union: The Supreme Court.

The Human Constitution and its neuronal cells, politicians, bio-historians, bio-economists and judges form the verbal brain of the body of History. The Earth's brain is no longer the stock market, whose capacity to invent credit is put to the service of mankind, as it happens in complex social organisms ruled by the nervous system. The 'Supreme Court', however, is over the actions of individual politicians of the World Union, in charge of protecting the Human Constitution, *the highest 'form' of History*. Two will be its tasks: to harmonize with the Human Constitution the different laws of each nation, which can be repelled automatically if they are against the Human Constitution.

The second task of the supreme, national and federal courts will be to monitor the judgement elections, which take place at the end of each political mandate, in which the voters vote against the actions of the different ministers and sub-ministers, once they have finished their mandate:

Depending on their zeal to defend the Human Constitution, politicians will be punished or compensated and honored by their deeds. As the World Union becomes established and the Information Ministry educates mankind in the laws of Biohistory, this 2nd task will be handled by Voters, who will vote penalties of prizes for all local and international political charges, *after their tenure*.

The Supreme Court and each national Court will also a priori disqualify institutions whose aim is to destroy the superorganism of History by backing the FMI complex, as its only goal. This requires to fully grasping the difference between an efficient, free democratic system and the present mask of democracy in which politicians can work for the FMI complex and impose programs of destruction of Gaia because humanity does not understand the science of history nor can the politicians be judged by their actions.

As in all functioning organisms in a real democracy a single mind -the laws of bio-history- guides elected officials, whom people choose by the quality of individuals, judging them by the actions of their mandates. We do not choose the laws of science but merely how we implement them in the best manner to obtain the result we seek. Thus it is absurd to 'choose' people's programs in politics. Politicians, who by ignorance of evil=anti-life, memetic programming 'believes' that he has 'invented' the solutions to the illness of History, should be ignored and sent to school. A democracy should choose the people by their personal merits and actions while the program should be established by the science of bio-history and those programs, which do not follow the scientific implementation of the constitution, should be rejected.

For example, in the last American elections, the GOP party that caters to Companies would not be allowed to run for office *-since its program is the evolutionary program of the FMI complex, not a program that tries to evolve the social organism of history. Thus, as a 'viral program' that aims to destroy the human economy, planet Gaia and in the long term, the human species*, the Supreme Court, which watches out for the legality of political parties will deem the GOP illegal, against the Constitutional Law of mankind.

Because the political programs will be set by scientists and researchers in the science of bio-history, elections would not be party elections but open lists for all public offices in which all citizens can participate. Politicians would obviously be experts in bio-history and 'ethonomics', scholars and scientists, who know the laws of Social Organisms. Then, after the electoral period politicians would be judged *by those who elected him, according to their performance* with 4 simple choices:

— Jail for a period equal to the time he served, in which he had total freedom to decide the future of the nation (maximal penalty and so far this is what he would be getting for lying in all his promises till date.)

— Liberty to pursuit a private life without penalty or reward (neutral judgment)

— A financial prize of an equal salary to that he received in office for the same amount of time (minimal reward)

— And re-election (maximal reward).

Those are the kind of rewards an organism gives to its neuronal cells, sweetened by humanism, to avoid the true punishment of corrupted cells, which are killed by the leukocytes, when they become cancerous cells spreading viral products in the organism. The organism thus kills the lethal cells or sometimes isolates them, preventing sections of the brain to send further damaging messages to the body of the organism. Or it maintains them in their privileged status if they work properly.

The Fractal, Hierarchical structure of the World Union.

How the networks and brain of The World Union transmit their orders to the lower networks of each nation? As fractal organisms do in Nature:

The Supreme Court rules over the supreme courts of each nation—as Mankind, the President of the world rules over the different presidents of the world. The Reproduction Ministry rules over the economic ministries of each nation. And the Energy Ministry rules over the different ministries of Defense. Every nation that enters the World Union accepts the supranational authority of the World Union and its 3 networks /Ministries, adapting in a mimetic form their Ministries and Legislation to the ones created for the entire organism of History. Those world laws become also automatically the Laws of the Nations belonging to the World Union.

Recap. The world union is a healthy organism of history that evolves human goods and devolves metal goods. It could create an immortal body of history if the presidents of the most powerful nations of the world understood and practice the organic laws of the universe laid down in this lectures on biohistory and bioeconomics.

Notes.

¹ Radiations of space-time: the extinction of man, c.94; Bio-History, Bio-economics: a theory of Unification, c.97