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Beyond Darwin
The Hidden Rhythm of Evolution

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TO

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Abstract

This article surprisingly reveals the existence of a very precise spiral rhythm in the emergence of the evolutionary leaps that mark the history of the universe.

The proposed hypothesis is very simple: just as in any musical instrument successive second harmonics (1/3 of the vibrating unit) progressively generate new sounds; these same second harmonics generate all the major evolutionary novelties in universal dynamics as a whole. It is truly surprising that such a simple proposal is found to be precise and categorical when cross-checked against historical data. Let us see.

Fitting our 'periodic table' of rhythms to the date of the appearance of matter –the Big Bang– and of organic life, we see that every single instant of the emergence of successive taxonomic degrees of human phylogeny is marked out with utter precision: **Kingdom: animal, Phylum: chordata, Class: mammal, Order: primate**, **Superfamily: hominoid, Family: hominid** and **Genus: homo!** The same then occurs with all the stages of maturation of our primitive ancestors: **H. habilis, H. erectus, archaic H. sapiens, H. sapiens** and **H. sapiens sapiens!** Once more, the precision of our hypothesis is repeated in the successive transformations that humanity has experienced in its more recent history: **the Neolithic, Antiquity, the Middle Ages, the Modern Age** and the emergent **Postmodern Age!** If, as we see it, all these stages resoundingly fit the provisions of the 'periodic table' of rhythms that we have proposed, it is more than likely that our hypothesis may also provide the key to glimpse the successive phases yet to be deployed in the years to come in an ever-accelerating process that will eventually lead to a moment of infinite creativity –Omega– within a couple of centuries.

All this is, indeed, unexpected and surprising, but is now almost certain when we verify that the same hypothesis that has behaved with utter precision when applied to the process of global evolution, also does so when cross-checked against the process of development of the individual

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human being! Within the same time frame, with the same pattern of folding and unfolding, and passing through the same stages, our 'periodic table' of rhythms periodically marks out –step by step– the successive phases embryologists, developmental psychologists and spiritual teachers talk of, thus confirming the old idea of phylogenetic-ontogenetic parallelism and pointing very specifically to an astonishing fractal and holographic universe.

It is impossible, absolutely impossible, that all this accumulation of linked "coincidences" –in both the field of overall development and that of individual human development– highlighted in this paper is the product of mere chance. The conclusions that emerge from all this clash head on with many assumptions of predominant materialistic science. Our proposal, which provides a better fit to the presented data, points to the non-duality of energy and consciousness, as posed by many traditions of wisdom. From these pages, we invite all our readers to participate in this emerging experiential and theoretical research in which dazzling prospects can be glimpsed.

Introduction

Hi everyone!

For many years, I have been intrigued by the fascinating creativity of the universe, in its material, biological and mental aspects. More than forty years ago, I tried to find an answer to the surprising evolutionary phenomenon, passionately investigating within the diverse branches of Western science and simultaneously in the rich existential research of the Eastern traditions of wisdom. Suddenly, unexpectedly, all that research crystallized in January 1981 in a very precise hypothesis about the rate of the evolution.

On collating this hypothesis –which in principle seemed to be a simple, ingenious and daring insight that had fall out of the blue– with empirical data from different spheres of reality (paleontological, anthropological, historical, embryological, psychological, etc.) and verifying its surprising validity and precision, over the years it has been become a solid scientific (falsifiable) proposal that shows an unexpected periodic pattern in the emergence of evolutionary novelties and that hence clashes head-on with the still prevailing view of how the world works.

As this paper has been written single-handedly during this time, with no other company than hundreds of books, and given the breadth and scope of the proposal, it seems advisable to open this hypothesis regarding "the hidden rate of evolution" to public criticism so that those interested can carry out their own inquiries with a view to testing its validity and, if need be, make any adjustments they deem necessary. You are cordially invited to do so!"

To start off, to set the scene, I will outline the general scenario within which we will develop our proposal. Things are changing.

A new universe

During recent decades, the apparently solid view of the mechanistic and materialistic world has started to show alarming cracks. Approaches that a century ago were taken as rigorous and almost irrefutable are starting to be seriously questioned.

These approaches postulated that the universe is moved by a simple game of chance, in progressive degradation and inexorably tending toward thermal death. In major contrast with these dark auguries, new science views –beset with surprise– a fascinating creativity in all spheres of reality. An unstoppable evolutionary current runs through entire history of the cosmos, one that generates all types of novelties. The supposed universal machine, virtually condemned to the scrapyard, is now revealed as a rare living being animated by a self-creative permanent force. It seems that Nature starts to reveal the secrets of its holistic inner tendency, one which drives it to climb the ladder of organized complexity. This ascending drive has been creating progressively differentiated, integrated and inclusive units step by step.

Mechanistic Science harbored the reductionist dream of explaining the functioning of complex structures starting out, exclusively, from its most basic components. New science has forsaken that dream on verifying repeatedly and in diverse levels of reality that the whole is greater than the sum of the parts. The flow of evolution engenders novelties which, though logically compatible with precedent structures, cannot however be explained by them. There is thus a dynamic, hierarchical schema of the world in which emerging levels are integrated with previous ones, thereby generating more complex, inclusive organisms with increasing awareness. Elemental particles form part of atoms, atoms part of molecules, molecules part of cells, cells part of organisms and so on. The universe thus reveals itself as a hierarchy that extends unlimitedly upward and downwards throughout the course of evolution.

On the other hand, each one of these levels of universal reality is structured by an infinite reciprocal interplay among individuals and communities. Some and many are involved like reflections in a grid of mirrors facing one another. An individual devoid of an environment is not possible, neither is a group without the individuals that compose it. We cannot separate off isolated unities in these universal networks of interrelationships and interconnections. As Quantum Physics has demonstrated, the scope of these complex webs of relations goes beyond what is humanly conceivable, even transcending our time and space schemata. There are no actually separated "parts" in any level of the evolutionary scale. On the contrary, as in a holographic plate, each "fragment" of the world is no more than a concrete expression of the same, unique totality. The universe starts to reveal itself to the eyes of new science as a unified field that is dynamically reflected in each and every corner of itself.

Attempts were made to build the world upon the solid and strong foundations of matter, but this myth has not stood up to empirical testing. Subatomic analysis has literally taken the floor away from under our feet. Our supposedly indestructible material basis has dissolved in pure forms, patterns, orders and relationships in a fabric that is no longer substantial, but purely abstract instead. We are supported by evanescent forms that vertiginously emerge and disappear in an intangible void. Within the scientific community, it has even been asserted that the universe is beginning to look more like a great thought than a great machine.

The materialistic focus of classical science also aimed to describe the world "objectively", placing the "subject" making the description on the sidelines. However, the emergent postmodern perspective has once more revealed the complete ingenuity of this project. The observing mind is inevitably part of the observed universe. There is not object without subject, no outside without inside, no reality without consciousness. Both terms are definitively interrelated and therefore any attempt to comprehend the phenomenal world integrally must necessarily include both facets. The dynamics of evolution is thus perceived as a generator of entities, not only progressively more

organized and complex in their external appearance, but also, at the same time, of greater inner awareness. We cannot limit our vision solely to the surface of things, because, although we try to ignore them, the depths of lucidity will finally become patent to us over and over again.

The universe that surprisingly begins to reveal itself before our gaze has little to do with that blind, insensitive artifact, that mechanical and inert world in which the human being imagining it, did not even have a place in it. The new approaches that study reality no longer consider us aberrant creatures in a world without sense, but rather as redolent expressions of the creative flow of totality, authentic microcosms that reflect with increasing clarity, the infinite richness of a fascinating macrocosm.

Our research on the rhythm of evolution falls within this new perspective of a universe that is self-creating—a generator of progressively more complex and organized novelties,—, hierarchical —in which each new level transcends and becomes integrated with all previous levels—, holographic —in which each part reflects the totality—, impermanent —in a continuous dance of creation and destruction—, lucid —capable of knowing itself—, and void —without a basic substance that supports it.

In this new emerging outlook, our daring proposal that a harmonious pattern that governs the rhythm of evolution exists no longer sounds so shocking. Let us see.

The crisis of Darwinism

Nowadays science agrees that evolution is a core feature of the universe. There is a complete consensus regarding the dynamic and creative features of phenomenal reality in all fields of human knowledge —astrophysics, biology, psychology, sociology, and others—. Nevertheless, there are discrepancies in the interpretation of the facts.

Darwin's theory of evolution was primarily based on random mutations and the "survival of the fittest". The "synthetic theory" extended these formulations in the late 1930s and early 40s with the contributions of Mendelian genetics and population-based genetics, maintaining as explanatory basic elements the aforementioned random mutation and natural selection. This synthetic theory enjoyed almost unanimous acceptance for two or three decades, but gave rise to a great wave of dissent from 1970 on. The idea that the synthetic theory is wrong is beginning to take shape for many paleontologists, geneticists, embryologists and taxonomists, who refute the random factor as the sole principle governing the evolutionary process. They disagree that natural selection explains the emergence of new species. They affirm that fossil records do not fit Darwinian gradualism and denounce that the theory does not reflect the phenomenon of increasing complexity.

Biologists find it very difficult to understand how a fundamentally random search among an extremely high number of possibilities could result in the emergence of living beings with their evident level of complexity. As we understand it today, evolution cannot be conceived as having random variations as its sole material. Organisms vary as a whole; huge numbers of mutations would hence be required to occur simultaneously, in the appropriate way, when their "need" arose and with a close links among them… How could all this be fulfilled by chance? The same could be said of the formation of any of the complex organs, for example, the internal ear or the brain. A classic problem has been the difficulty in explaining intermediate forms in the development of

complex adaptations, as in the case of the eyes. Darwin himself confessed that it was absurd to imagine that the eye could have evolved by natural selection.

Darwin's original idea about new species emerging gradually at the initiative of natural selection along the course of time is currently being questioned. The simple principle of natural selection seems inadequate to understand and predict all evolutionary processes. Spontaneous mutations may explain variations within a certain species, but not the subsequent variations among them.

Long before Mendel's laws were known, many varieties of plants and breeds of domestic animals were already being developed by means of selective breeding. There is no reason to doubt that a similar development of breeds and varieties may arise in Nature under the influence of natural selection instead of artificial selection. The mechanisms of microevolution —small evolutionary changes consisting in minor disturbances in genetic proportions, the number of chromosomes or chromosomal abnormalities— may be explained by the Neodarwinian theory as a function of random mutations , Mendelian genetics and natural selection. However, this mechanistic scheme, which may be valid at a small scale —in a given species—, encounters countless problems when trying to explain the origin of new species —known as "speciation"— and even greater difficulties when faced with the emergence of genus, families or higher taxonomic divisions. Macroevolution or typogenesis —the evolution of these higher-order taxonomic categories— show far too pronounced differences among divisions to have arisen from gradual transformations. The conclusion seems to be that the laws that govern large-scale processes —such as the origin of new types or the extinction of species— are different to those ruling the simple processes of adaptation to the environmental. Thus, the reductionist expectations of "macro" scale processes being immediately inferable from the "micro" scale are fully refuted. In the words of C.H. Waddington: "one of the most fundamental problems of the Theory of Evolution is that of understanding how the evident discontinuities found among the main taxonomic ranks: *phylum*, family, species, et cetera, have emerged".

The growing sensation prevails that is no longer possible to explain speciation simply by natural selection. Some have even asserted that natural selection does not in fact have anything to do with the emergence of new species. In recent years, the gradualist conception of evolution has been seen to be responsible for only a small part of evolutionary change. Furthermore, deepest changes in the biological evolution have been seen to take place in specific moments of the history of groups, occurring in a very rapid manner and giving rise to stable species that suffer very few subsequent variations.

Fossil records mainly consist in thick layers of earth in which some species are evenly distributed, separated by thin surfaces through which species suddenly change in a process of multiple speciation. Many paleontologists think that this intermittent history shown by fossils should not be attributed to simple gaps in the record, but that it basically demonstrates the rhythm with which life has evolved. Therefore, many of them have started to dispute the classical conception of the *tempo* of evolution. The Darwinian version of a slow, continuous and gradual process has given way to the interpretation characterized by discontinuous, sudden leaps and changes. There is hence an evident renaissance of the idea of vigorous, sudden and energetic speciation, versus calm gradation, strongly giving rise to the perception that fossil records contain much more information than what might be imagined via natural selection alone. This is due to the emergence of non-predictable patterns thanks to our present knowledge about small-scale populations and processes.

In 1972, S. J. Gould and N. Eldredge published a seminal paper in which they demonstrated that nature progresses by sudden leaps and profound transformations and not through small adaptations. According to the theory of punctuated equilibria, evolutionary leaps are relatively sudden processes; speciation stops for long periods in which existing species persist without fundamental variations and without creating new species (stasis). While a species persists, it remains relatively invariable; its legacy of genetic information is transmitted without major changes to the following generations. At some point, however, this stasis is suddenly broken and an evolutionary leap forward takes place. As Gould puts it, "the history of any one part of the earth, like the life of a soldier, consists of long periods of boredom and short periods of terror".

However, synthetic theory has difficulties in explaining not only the sudden changes in species, but also the long periods of stasis. Therefore, some researchers have begun to seek possible explanations for the sudden emergences of new species —analyzing changes in the rhythm of embryonic processes that may produce major effects in adult organisms— as well as the surprising stages of stasis —studying the possibility that the genetic or biological development of organisms may permit no more than the monitoring of certain morphological routes. In that case, once the species has found a good solution to environmental problems, it will adhere to it by means of numerous changes and secondary genetic disturbances, not changing again until it has achieved a suitable stable solution for the future.

Specialists in macroevolution make other provocative observations about fossil records that are difficult to explain from simple Neodarwinian postulates. For example, the fact that the simpler an organism is, the longer its period of permanence period, or the fact that complete diversity seems to be closer to a stationary state (or stasis), i.e. the tree of life has stopped sprouting branches and has reached a certain equilibrium, or the ever present puzzle that practically all of the animal phyla— types of animals— have emerged precisely among the earliest remains of the Cambric explosion, 530 million years ago, or the evident growth in complexity of organisms throughout evolution.

Oriented evolution

Classical science tried to explain the novel events of evolution as mere products of whimsical chance, happenstances that go against the tide in an absurd universe fatally doomed to total chaos. It was said that the emergence of life and mind was only a virtually impossible, odd anecdote in a world of inert and inanimate material.

It is also curious how a theory such as that of natural selection, which aims to clarify the origin of the species, offers no explanation —as Darwin himself admitted on several occasions— for the phenomena of the increase in complexity, which is the essential feature of evolution. According to J. Maynard Smith —one of the main theorists of Evolutionism—: "There is nothing in Neodarwinism which enables us to predict a long-term increase in complexity". In other words, natural selection does not imply any directionality in time. Moreover, observing the overall picture of evolution, we can perceive a characteristic arrow in the process with pristine clarity: over time, living beings have mostly proceeded from a simple structure to a more complex one, their psyche and their autonomy increasing in parallel to this process. Paleontological documents clearly reveal the major currents of increasing complexity in structures and relational functions, as well as the simultaneous advancement of the capacity of such organisms to capture and process information from the environment. All this has led many researchers to propose alternative or complementary theories that attempt to explain the observed phenomena.

As previously stated, science is starting to understand that, simultaneous to the process of growth in homogeneity and positive entropy—chaos— perceived in the universe, the reverse phenomena occurs with the same naturalness, i.e. the progressive increase in heterogeneity and negative entropy. The latter is a mathematical counterpart of the concept of information which may be considered as a new measure for order and organization. Contrary to classic thermodynamics, which aimed to reduce the processes of self-organization to mere accidental events, to simple insignificant anecdotes, today's thermodynamics of disequilibrium allows us to understand the progressive and accelerated evolution of living beings and our own human history as something more than mere strange accidents in cosmic evolution.

Up until the 1970s, researches tended to hold the conception —presented in the most expressive way by Jacques Monod— that evolution acts mainly due to causal factors. In the 1980s, however, many scientists started to be convinced that evolution is not an accident, but a necessary event that occurs when certain parametrical conditions are fulfilled. Laboratory experiments and quantitative formulations confirm the non-accidental character of the evolutionary processes. It is beginning to be evident that the continuous deployment of the organized complexity of the universe, its intrinsic sporadic capacity for sporadic self-organization constitutes a fundamental and profoundly mysterious property of reality. A new and fascinating paradigm is beginning to emerge, that of a creative universe, one that recognizes the surprisingly innovative and progressive nature of universal dynamics. There is much talk of the crazy organizing frenzy of matter, of the animated evolutionary ghost that starts to appear in our worldview, of the strange self-organizing capacity of nature, of its mysterious tendency to ascend the steps of complexity, those of the autopoietic dynamics —self-creation— of the whole universe.

The new sciences of evolution thus perceive a new harmonious and natural coherence throughout the creative universal process from the mere originating instant. They deny that the random factor is the only explicative argument of novel phenomena and they claim that the old theory does not explain the surprising emergence of increasing complexity at all. On the contrary, they advocate the non-accidental character of evolutionary processes and provide numerous proofs that all dynamical systems, at different levels of reality, develop similar creative patterns. The new approaches show how any dynamic system far from a state of equilibrium may leave its permanent state when some of its environmental parameters change. In these situations, systems may spontaneously reach new states of equilibrium of greater complexity subsequent to a chaotic and indeterminate phase. The overall course of evolution thus looks like stairs in which horizontal steps alternate, almost without changes, with abrupt leaps in level.

Both within theoretical or empirical works and in hard or soft sciences, the aim is to understand the innate creative tendency of nature; the surprising patterns of organization in which the game of chance is channeled. We hear about: dynamic attractors, morphogenetic fields, archetypal channels, implied orders, fractal structures —self-similar—, and also stratified stabilities. It now seems evident that creativity cannot be reduced to a mere random product, but rather to the holistic intervention of unified fields that may explain both the overall totality of creative phenomena and their quality of instantaneity. The implacable integrity of these fields would also explain their capacity to organize diverse and independent elements in a harmonious way by means of a unique momentum.

Our hypothesis about the rhythm of evolution contributes novel features to this research and may also offer a line of work full of pleasant surprises.

A harmonious solution

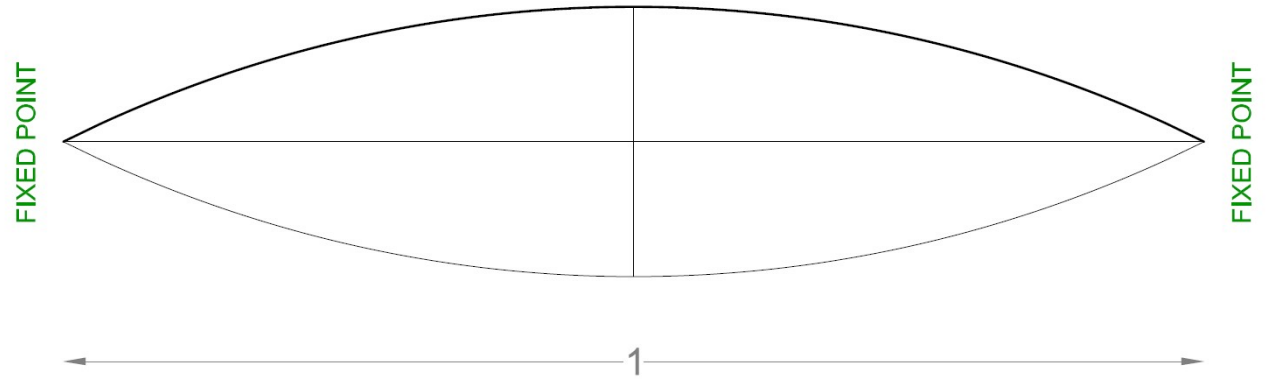
We were saying that the supposed solidity of matter, upon which the world was supposedly raised, has faded away before the gaze of New Science into pure forms and relationships within an abstract, insubstantial fabric. Thus, the ancient dispute between several Greeks schools arises once again in our time. While for Ionic philosophers the most important issue consisted in discovering the corporeal substance of the world, for the Platonic and Pythagorean schools the key was to be found in patterns and orders. The science of today essentially moves along this second line of thought.

The most fundamental statement of the Pythagoreans was that numbers constitute the unmovable principle of the world; the very essence of reality. When they discovered that the proportions among musical harmonics could be expressed in a simple and exact form, they considered that the cosmos itself was a harmonious system of numerical reasoning: all reality could be expressed by means of relationships among numbers. According to the Pythagorean's, the inherent numerical order of sounds was directly related with the very organization of the universe. For them, music was therefore nothing other than the expression of the inner relationships of the cosmos. They even affirmed that all material manifestation was the result of the concert of universal vibrations.

At the beginning of 20th century, physicists were confused on discovering that, far from presenting itself as predicted as a continuous flow, the energy emitted or absorbed by atoms presents itself in a quantifiable way, in very precise packages,. For several decades, they tried to explain this strange phenomenon by seeking a sound new mathematical theory for the atom that would generate these quantum numbers in a natural way. The solution arrived with the proposition of the similarity between the world of electrons and that of musical harmonics —standing waves—, thereby happily giving rise to the surprisingly precise wave equation as the fundamental piece of revolutionary Quantum Physics. It thus seems that we are literally made of music, that we are pure abstract relationships in an unsubstantial reality, the acoustic appearance of the quantum void, the silent music and the sonorous solitude that amazed our mystics so much.

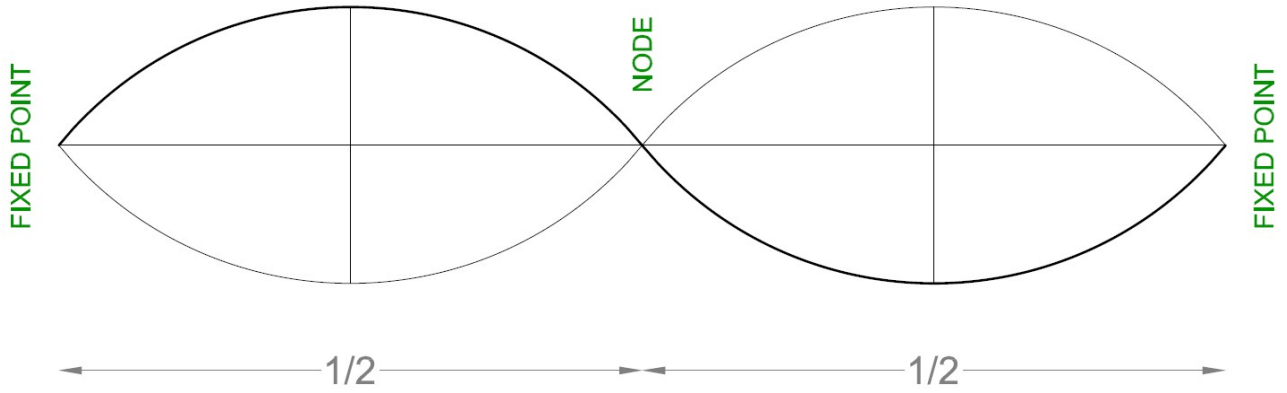
Standing waves are known by anyone that has played a musical instrument. The main feature of these waves is that they divide the vibrating element –string, tube or hoop– into completely equal sections. A guitar string, for example, cannot vibrate randomly –due to the fact that it has fixed ends and therefore has to vibrate in such a way that its ends remain motionless. This is what limits its possible variations and introduces whole numbers. The string can undulate as a whole (see Fig. 1-A), in two parts (see Fig. 1-B,), in three (see Fig. 1-C), in four, or in some other whole number of equal parts, but it cannot vibrate, for example, in three and a half parts or in five and a quarter.

FIGURE 1-A



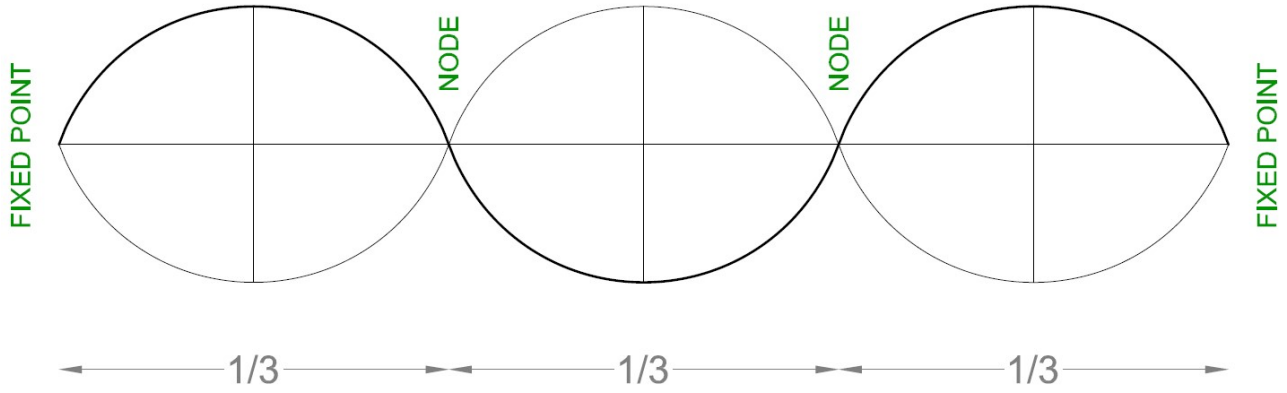
FUNDAMENTAL SOUND

FIGURE 1-B



1st. HARMONIC

FIGURE 1-C



2 nd. HARMONIC

Hypothesis approach

In music theory, these successive standing waves are called "harmonic sounds" or "harmonics". The unlimited series of these harmonics, originating from the "fundamental sound" of the complete original unity, define the varying degrees of the sonorous vibrations very precisely, i.e. the entire hierarchy of the levels of stability of the flow of music.

We thus see that both in the microscopic world of Quantum Physics and in the macroscopic reality of musical instruments, the "energies" —vibrations— do not occur continuously, but in a quantified way according to a hierarchy of standing waves. At any level of reality, a vibrating element —atoms or guitar strings— intrinsically possesses very precise potential levels within which the flows of energy are stabilized.

We stated previously that the new science considers the universe in a holistic way; in other words, that it perceives nature as an integrated wholeness, as a non–fragmented, undivided overall movement. We have also seen how the evolutionary dynamics of this *unified universe* displays its novelties in a discontinuous manner; just as the deepest transformations of evolution come about suddenly and abruptly. This generates a progressively more complex and more inclusive *hierarchy of organization levels*. We find, once again, a *vibrating element* —the evolving universe— that channels its energy flow in a highly defined series of *levels of stability*. Like atoms. Like musical instruments.

Both in the world of atomic physics as in the world of music, the secret of their sudden leaps and discontinuities in sound was revealed thanks to standing waves and musical harmonics. Could not the same occur in the field of evolution? Does it not sound very coherent that this unified universe that we are starting to discover generates similar creative patterns at its different levels of organization? Does it not therefore sound appealing that the sudden evolutionary changes in the history of the universe respond precisely to these same standing waves that are the explanatory key of both the subatomic and musical world? This has been the basic intuition that has given rise to our hypothesis regarding the rhythm of evolution which we will now summarize below.

All our hypothesis of evolutionary rhythms is reduced to what we have just presented. Just that. As simple as that: with each third of the duration a "cycle jump" appears, and after seven cycle jumps appears a "series jump". It's very surprising that such a simple scheme has such fine adjustment to the all the key steps of Evolution, both in the global macrocosm —paleontological, anthropological and historical— like in the human microcosm —embryological and psychological.

Presentation of the hypothesis.

A new theory has recently been posited regarding a unique process that explains hierarchically ordered diversity without any recourse to reductionism. This theory suggests, as a general cosmologic principle, the concept of the "stratified stability of potential levels" as the key to understanding the evolution of systems in disequilibrium. It basically suggests the existence of specific levels of stability around which energy streams gather and are organized, thereby permitting the subsequent and sudden upward leaps toward new layers or levels of progressively

greater complexity. Our hypothesis constitutes a very precise specification in this appealing approach. Let us examine it in greater detail.

Taking the example once again of the guitar string, let us imagine that the guitar is tuned to *C* —the fundamental sound. If we make half of its length vibrate —the first harmonic—, we will obtain the same original note in a higher octave. If we induce the vibration in a third of the string —the second harmonic— we will get a *different* note, which in this case will be *G*. This means that a tonal novelty emerges with the second harmonic. Taking the new note as a fundamental sound, we can likewise iterate the experience as many times as we wish and we will always obtain successive scaled sound novelties with each second harmonic. Thus, when we induce the vibration of a third of the length of the string, a creative leap will appear and with a third of the third, another one, and with a third of the third of the third, another new one, and so on.

This simple fact provides the key to our hypothesis. The proposal is very simple: considering the totality of time as a vibratory element —see Figs. 2—, the consecutive linked second harmonics, i.e. the successive thirds of the duration, will mark the emergence of evolutionary novelties. In other words, the second harmonics will define the "potential levels of stratified stability" through which nature's creativity channels itself or the steps in the ladder of evolution through which the energy streams flow in their ascending process of creation of progressively more complex and conscious organisms.

Figs. 2 show the overall process in graphic form. If we take the entire course of time—from the "origin" to the "end"— as the fundamental sound, we have sketched the consecutive leaps in level in both directions: in Fig. 2-B, the section from the origin to the second node "P" of exteriorization, called the "exit" or "outwards" section; and in Fig. 2-A, the section from that same second node until the end —the "return" or "inwards" section. Fig. 2-C shows the joint trajectory, the overall ladder of evolution.

Summarizing our approach, we could say that, just like when a musical instrument emits a specific note, a wide range of its harmonics sound simultaneously, the universe as a whole likewise has, from its first original vibratory instant, a complete potential hierarchy of standing waves through which its creative flows can ascend. According to our scheme, starting out from the precise vibration that gave rise to the origin to the universe, the universal process commenced with a vertiginous explosion of creativity and leaps in level, gradually slowing down its rhythm on its ascending path toward a specific layer of the spectrum —"the fundamental sound"—, and from there on starts to progressively accelerate the rhythm of its leaps in novelty once again. And so on along the ascending path towards an unstoppable one-time vibration bringing infinite creativity to an end. Later on, we shall consider the profound meaning of these surprising poles: origin and end —Alpha & Omega—, as it is precisely there where we shall find the key to many of our questions.

Finally, in order to provide a coherent and ordered framework for our musical proposal of evolutionary rhythms, we shall now present another observation.

As stated earlier, if we tune a guitar string to *C*, its second harmonic —1/3 of its length— will be a *G*. Similarly, the second harmonic of this *G* will be a *D.* And that of this *D* will be an *A*. If we repeat the same operation indefinitely, over and over again, we will obtain a chain of sounds —*C, G, D, A, E, B, F#, C#, G#...—,* that exactly reproduce the order of the "sharp tones". If we consider each note in this chain to constitute the characteristic sound of a determined "cycle", we will thus obtain, with each 1/3 of the duration, a completely new sound and therefore a "leap in cycle".

Figure 3-A presents the successive fundamental sounds with their corresponding harmonics, while Fig. 3-B shows the order in which these sounds emerge, without taking in account the scale at which they appear. As we can see, after every seven cycles, the same series of notes is repeated in a higher semi-tone. We shall therefore use the term “series” to refer to each one of the subsequent groups of seven cycles that keep on appearing, and “series leap” to refer to the transitions between them.

FIGURE 2-A

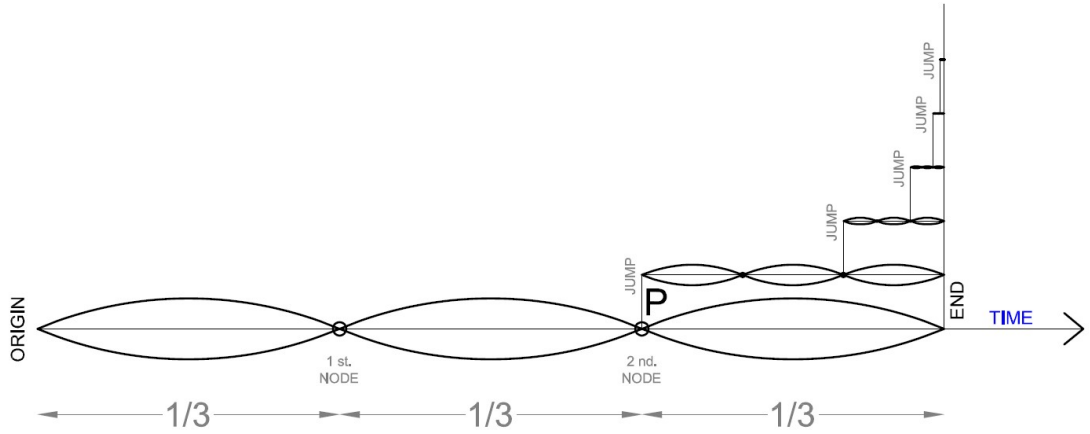


FIGURE 2-B

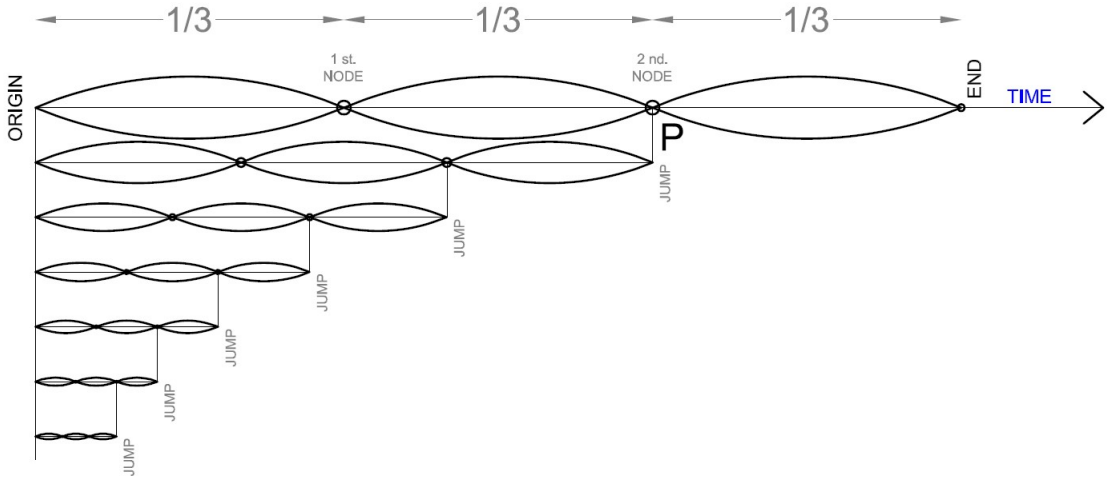


FIGURE 2-C

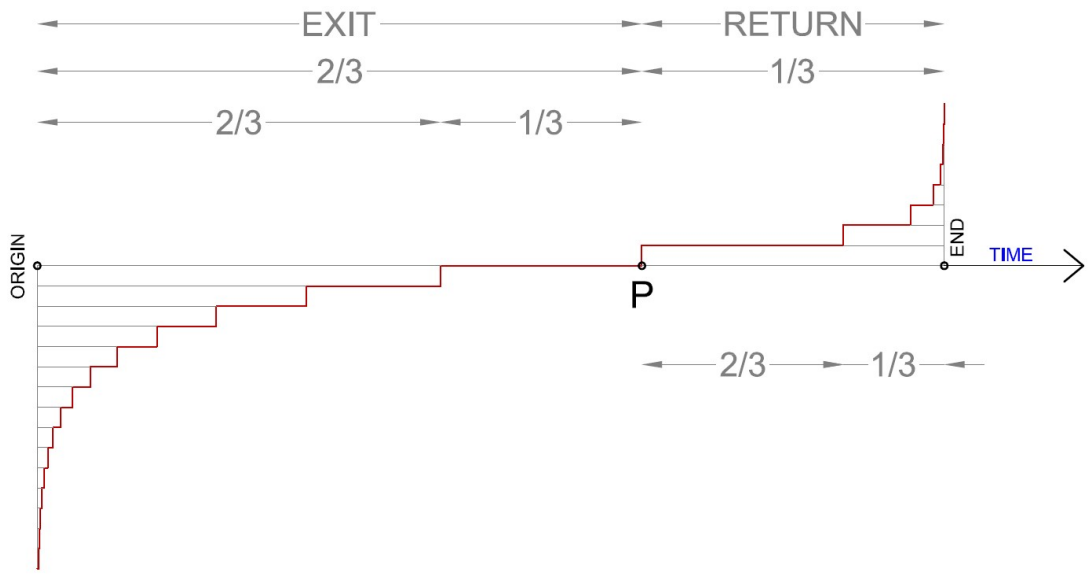
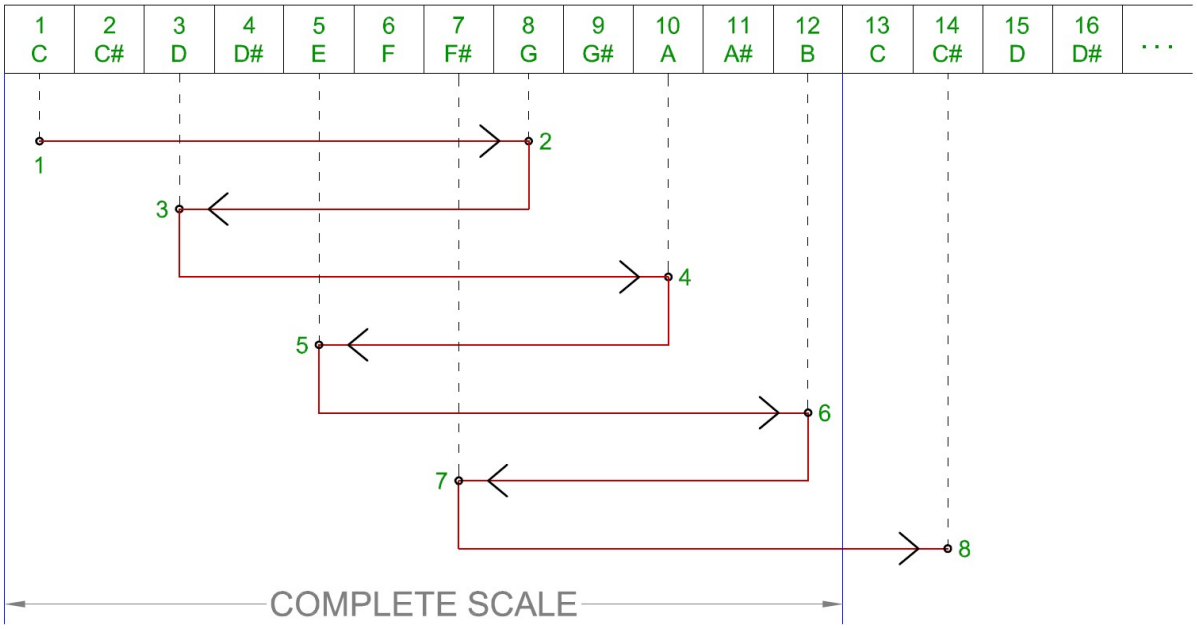


FIGURE 3-A

	1 st. SERIES							2 nd. SERIES		
	1st.	2 nd.	3 rd.	4 th.	5 th.	6 th.	7 th.	1st.	2nd.	. . .
FUNDAMENTAL SOUND	C	G	D	A	E	B	F#	C#	G#	. . .
1 ST. HARMONIC	C	G	D	A	E	B	F#	C#	G#	. . .
2 ND. HARMONIC	G	D	A	E	B	F#	C#	G#	D#	. . .

FIGURE 3-B



Our entire hypothesis of evolutionary rhythms can be reduced to what we have just presented. Just that. As simple as that: a "cyclic leap" appears with each third of the duration, and after seven cyclic leaps a "series leap" appears. It is truly amazing for such a simple scheme to provide such adjustment good fit to the all the key steps of evolution, both in the global macrocosm —paleontological, anthropological and historical— as in the human microcosm —embryological and psychological. I am certain, dear reader, that after examining the test of the hypothesis that we are about to carry out below, you will be convinced that there is, in fact, some hidden secret and you will be even more surprised that no one has recognized this evident, clamorous scheduled rhythm of events. One cannot see the woods for the trees. Get ready!

Verification of the hypothesis in the macrocosm

After having introduced our theoretical framework of rhythms of "cycles" and "series", we shall now test whether such a "periodic table" fits the data that science presently offers.

Before starting, we would like to point out that the graphs we shall be using are of two types: rectilinear —Fig. 4-A—, in which you will see the evolutionary ladder corresponding to each series; and circular —Fig. 4-B—, in which each cycle is detailed independently. This will enable us to observe the multiple correspondences among the two. However, let us not forget that they are simply two different ways of expressing the same data.

According to our proposal, at the origin of each cycle emerges the seed of its own characteristic "sound", around the first node it starts to be drawn and close to the second node it manifests completely, a leap in cycle then occurring.

For enthusiasts of the new evolutionary sciences, we would say that these second nodes of each cycle correspond to moments of the "chaos", "creative unbalance" (I. Prigogine) or "beneficial catastrophes" (R. Thom), in which leaps in level or "bifurcations" occur. At these points, the "attractors" defining the previously expressed pattern disappear and those that define a new state subsequently appear "out of the blue". Abruptly, the fundamental sound changes to its second harmonic.

Knowing that each cycle has a duration of 1/3 with respect to the previous one and that each series of seven cycles is therefore 3^7 times shorter than the previous one, it suffices to know the dates of some key events in the history of evolution to start "focusing" our theoretical framework on actual facts.

We know that the Big Bang, the seed of the universe, started some 13,500 million years ago, that following the formation of the Earth organic macromolecules, the seed of life, appeared more than 4.500 million years ago (1/3 of the duration of the universe) and that the emergence of the first human being —*Homo habilis*—, the seed of self-awareness, occurred little more than 2 million years ago (a period in time 3^7 (=2.187) times shorter than that of all life).

FIGURE 4-A

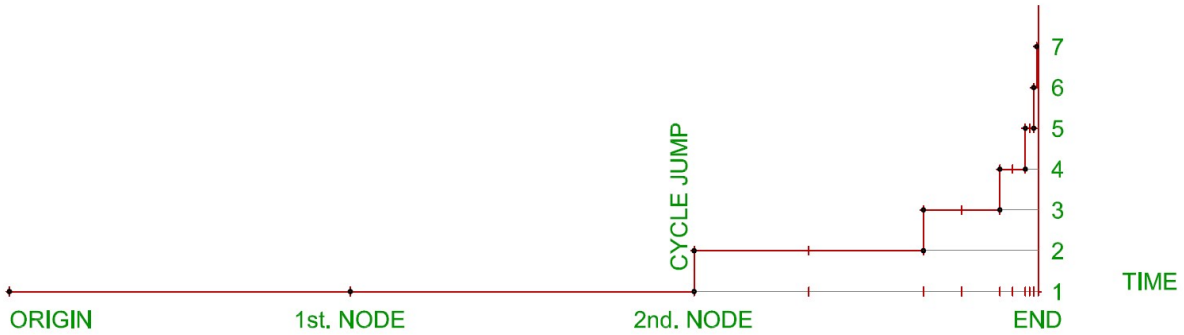
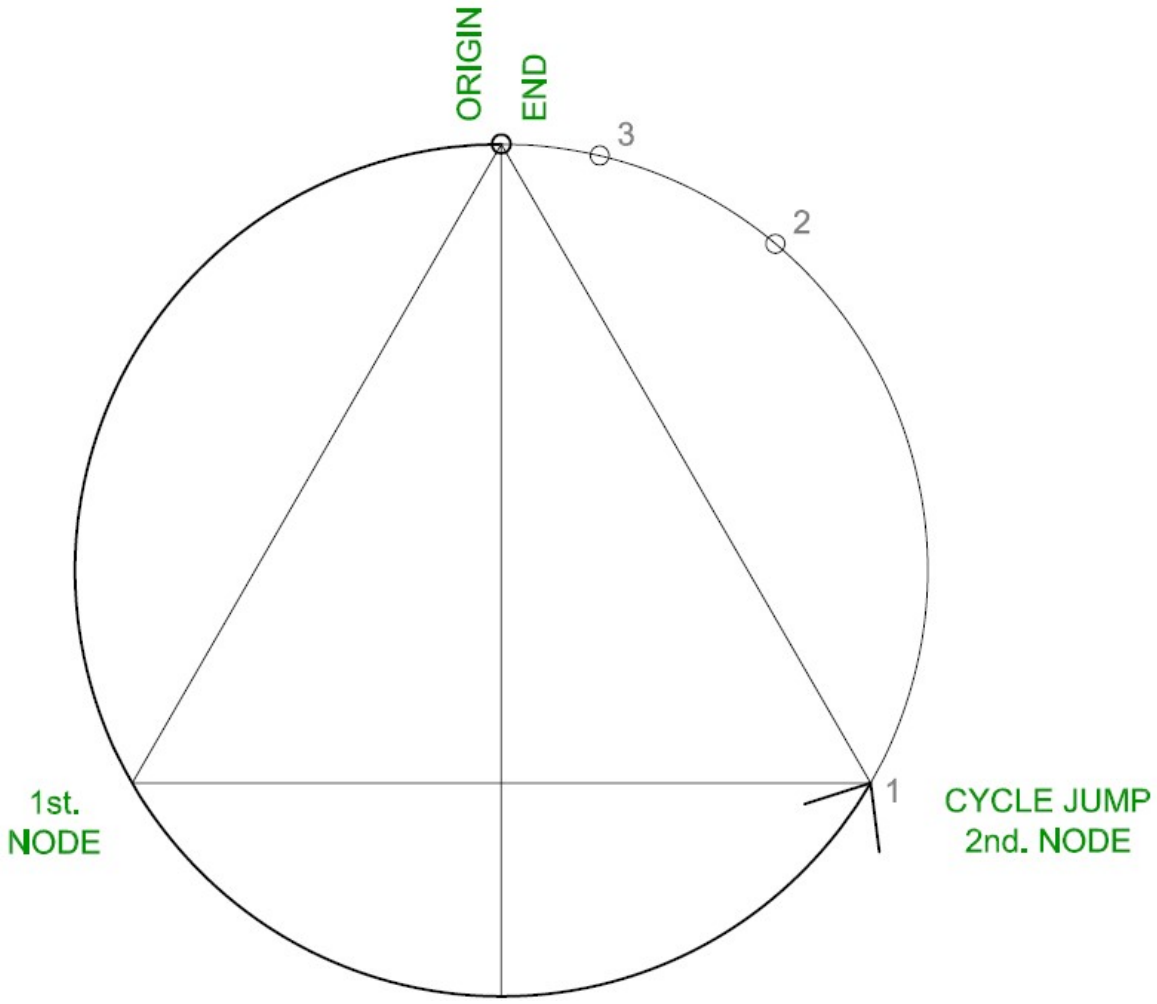


FIGURE 4-B



Placing the Big Bang, then, as the origin of the overall course of evolution and the formation of the Earth as the second node of this course, we shall call — as in Fig. 2-C— the path travelled between both points —from the potential energy of the original void to the formation of complex material— the "exit" process and the entire evolutionary unfolding of all life from then on the "return" process.

We shall now examine precisely this "return" section in greater detail. However, before doing so, we would like to remember the reader that one of the fundamental problems of the classic theory of evolution consists in explaining the marked discontinuities observed between the main taxonomic groups. Our scheme of rhythms, on the other hand, specifically marks the emerging moments of the subsequent taxonomical degrees of the phylogenetic process of human beings with extreme accuracy: **Kingdom:** Animal, in the first cycle, **Phylum:** Chordate, in the second cycle, **Class:** Mammal, in the third cycle, **Order**: Primate, in the fourth cycle, (**Superfamily:** Hominoid, in the fifth cycle), **Family**: Hominid in the sixth cycle; and finally **Genus: H**omo, in the seventh cycle!!! Let us look into this in detail step by step. I suggest that the reader switches between looking at Figs. 5 & 6 and reading the text.

The first cycle (A-1) of the return evolutionary process begins in the precise moment of the emergence of organic macromolecules, after the formation of the Earth and the rest of our solar system. In the course of evolution approached the first node (approx. 3.000 million years ago), prokaryotic cells —cells without a nucleus— began to form, the same occurring with eukaryotic cells —cells with nucleus— on approaching the second node (approx. 1.500 million years ago). It is precisely then when the first of the aforementioned major taxonomic bifurcations takes place, between the Plant and Animal **Kingdoms,** with the emergence of differentiation between *autotrophic eukaryotic* cells with cellulosic cell walls, many of which contained chlorophyll —plants—, and *heterotrophic eukaryotic* cells with only a fine plasmatic membrane never containing chlorophyll—animals—. There is then a leap in cycle.

The second cycle (A-2) then starts with the formation of eukaryotic cells. The first multi-cellular organisms begin to emerge around the first node (approx. 1,000 million years ago), developing their integration at the beginning of the Primary Era with the rapid expansion of marine invertebrates, giving rise to the first vertebrates —fish— when reaching the second node (approx. 500 million years ago). t is exactly in the ascent towards this second node —as foreseen by our scheme of evolutionary rhythms— when the explosive and surprising appearance of all the animal **Fila** —types—takes place, with our chordate ancestors last of all, giving rise to the first vertebrate fish. New change in cycle.

We would like to point out here that classical paleontologists, when analyzing the fossil remains in the consecutive layers of sedimentary rocks, found some clearly delineated borders in which there existed a sudden change in the nature of the actual fossils. Based on such findings, they established the major Eras in Earth's History: the Primary Era or Paleozoic; the Secondary or Mesozoic; and the Tertiary or Cenozoic. Progressive oxygenation of Earth's atmosphere during the Precambrian period led to the death of many organisms. At the same time, however, it enabled others to use this new energy source to develop suddenly, in novel and diversified ways at the beginning of the Primary Era, during the so-called "Cambrian explosion" or "zoological Big Bang". This Primary Era ended with the massive extinction of the Permian period, in which almost 95% of all existing species were annihilated. This fact facilitated the major expansion of reptiles and the emergence of primitive mammals at the beginning of the Secondary Era. This Secondary Era also ended with the major extinction of the Cretaceous Period, which led to the disappearance of dinosaurs and permitted the great expansion of the modern placentals at the start of the Tertiary Era. These three expansive processes, with which the three major Eras of Earth history begin, occur —of course!— as the course of evolution approaches the second nodes in cycles A-2, A-3, A-4, respectively. Let us continue.

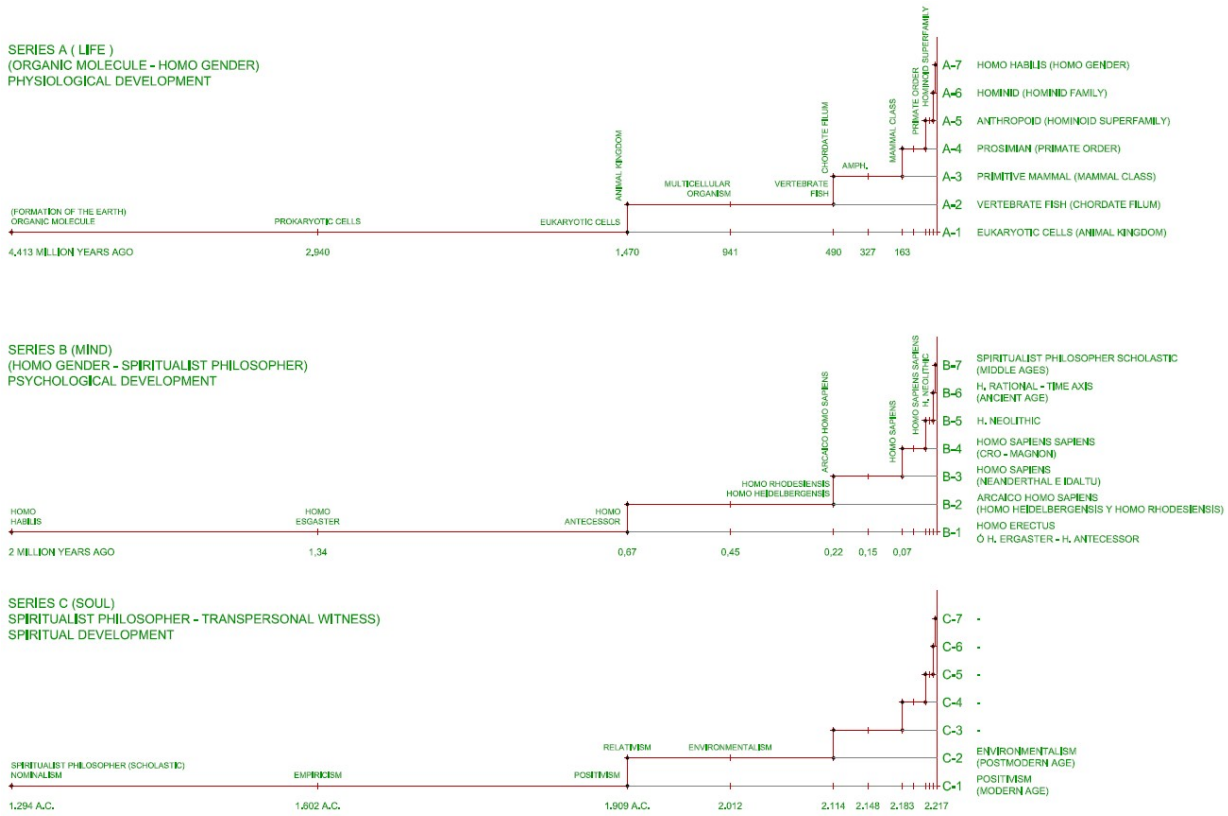


FIGURE 5

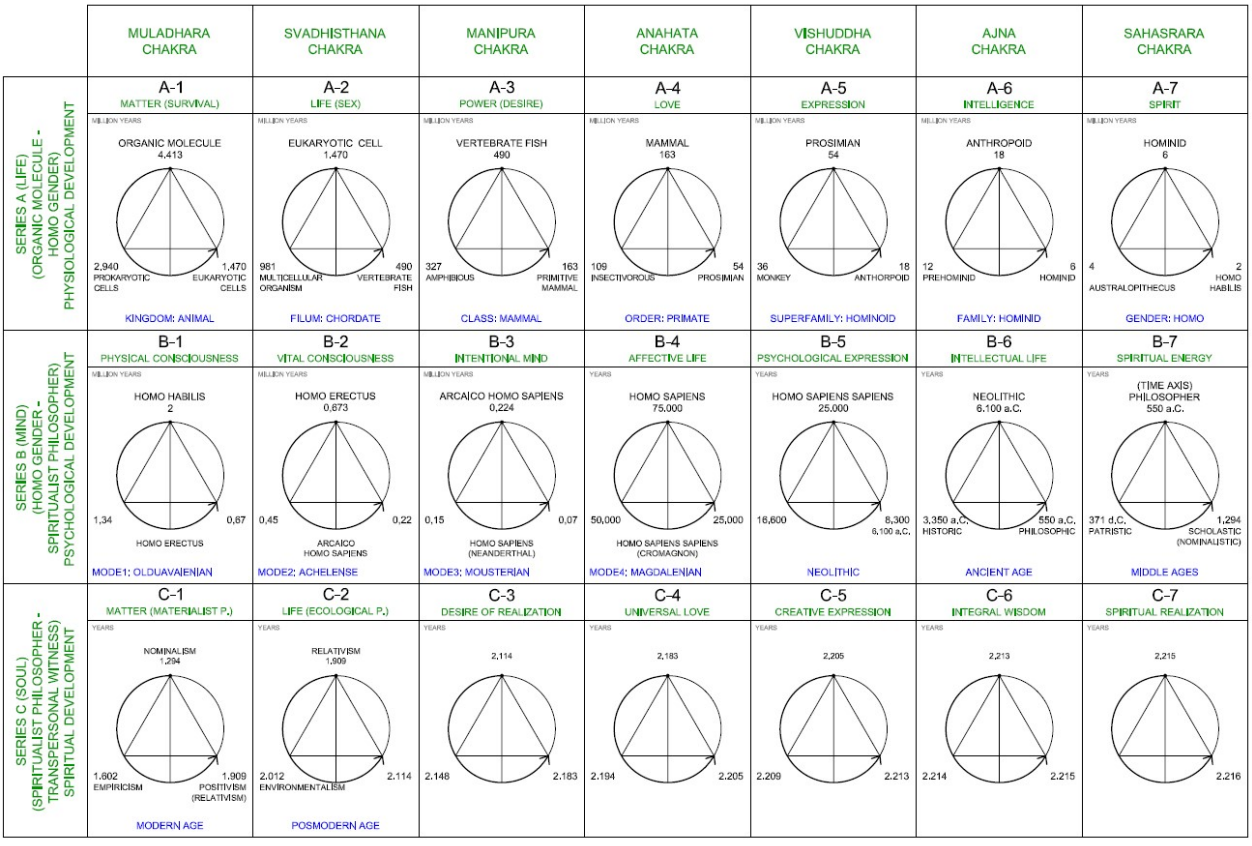


FIGURE 6

Referring back to the description of these cycles, we will say that the third (A-3) starts, as we saw previously, with the formation of the first vertebrate fish. On the path toward the first node (approx. 330 million year ago), we find that amphibians start to conquer dry land, an undertaking which, with the beginning of the Secondary Era, was finally completed by reptiles in their peak of development as the course of evolution approached the second node (approx. 165 million years ago). During the same period, primitive mammals started to emerge which —precisely!— constitute the third basic taxonomic bifurcation —**Class**— of human phylogeny. Change in cycle.

The fourth cycle (A-4), which starts with the appearance of mammals, has its first node (approx. 110 million years ago) at the moment when primitive placentals—insectivorous— appeared, which developed in a radiant and explosive way at the start of the Tertiary Era with the modern placentals —pro-simians— on approaching the second node (approx. 54 million years ago). It is —once more!— during the ascent towards the second node when the appearance of the primate **Order** takes place, defining a new basic level in our phylogenic journey. Leap in cycle.

The fifth cycle (A-5), which commences with the deployment of modern placental mammals, has its first node (36 million years ago) when actual monkeys— *aegyptopithecus*— appear. These were to develop when evolution approached the second node (18 million years ago) with the emergence of hominoids —*dryopithecus*—, which constitute the **Superfamily** of human phylogeny. Yet another change in cycle.

The sixth cycle (A-6) starts with hominoids, having its first node (12 million years ago) when pre-hominids—*ramapithecus*— appear and its second node (6 million years ago) with the emergence of hominids—*ardipithecus ramidus*—It is precisely in this period of ascent towards the second node when a new basic level of our phylogeny is created —the **Family** of hominids—, which separates us from our closest relatives, the Pongids.

The seventh cycle (A-7) thus begins with the appearance of hominids. In the approach to its first node (4 million years ago), we find *Australopithecus anamensis,* which already showed biped locomotion, while on the ascent toward the second node (2 million years ago) *Homo habilis* comes into play, who starts to make rustic stone tools and inaugurates the category of **Genus** —homo— in our own phylogeny.

We have now travelled through the course of the first series (A) of our pattern of rhythms, and as stated, with the arrival of the second nodes in each cycle — seven in all— the totality of all the basic taxonomic levels of our species have appeared one after the other. That is, we have discovered that the major successive somatic transformations that our ancestors experienced. However, evolution continues unfolding and we shall now present a new series (B), which will reveal step-by-step the different stages that human beings have already covered in their way to modernity. We will likewise be able to observe how the subsequent Stone Age industries that our ancestors developed known by paleoanthropologists as Mode 1 (Olduvaienian), Mode 2 (Achelense), Mode 3 (Mousterian) and Mode 4 (Magdalenian), will respectively display the same rhythm in cycles B-1, B-2, B-3, and B-4.

We thus commence this second series with the first cycle (B-1), which starts, as we already stated, with the presence of *Homo habilis*. According to the traditional approach, we could say that as we approach the first node (1.3 million years ago), we would encounter the emergence of *Homo erectus*, who would be the sole leading figure in this cycle with its expansion and development toward the second node (0.6 million years ago). A more recent approach seems to point in another

direction as regards our line of ancestors. *Homo ergaster* —one of the first specimens of African *Homo erectus—,* would actually be the one that was to evolve toward *Homo antecessor* in the ascent towards the second node in this cycle.

The second cycle (B-2) would hence start with the presence of *Homo antecessor,* who on the ascent towards the first node (0.45 million years ago) was to derive in Europe towards *Homo Heidelbergensis* and in Africa towards *Homo Rhodesiensis*, both considered in traditional terminology as *archaic Homo sapiens.* They were to develop on the path to the second node (0.22 million years ago) in their own respective areas. Change in cycle.

The third cycle (B-3), would then commence with the presence of the two branches of *archaic Homo sapiens.* In Europe, *Homo Heidelbergensis* was to evolve towards *Homo sapiens Neanderthalensis* on approaching the first node (around 150,000 years ago), while in Africa, *Homo Rhodesiensis* was to evolve towards *Homo sapiens idaltu,* sometimes known as "protomodern" man because it already has all the characteristics of our species. Both branches were developing a type of Stone Age industry very similar to the one in Mode 3 —Mousterian— on the path towards the second node (around 75,000 years ago). Leap in cycle.

The fourth cycle (B-4) thus commences with the presence of the two branches of *Homo sapiens* living independently. However, as the course of evolution approaches the first node (around 50,000 years ago), the African species was to migrate toward Europe and, after a period of coexistence, Neanderthal man would end up disappearing, while *Homo sapiens sapiens* or Cro-Magnon would keep on developing, creating a Mode 4— Magdalenian— technology on the path toward the second node (around 25,000 years ago), a point at which it was now the only species of the genus Homo on Earth. Change in cycle.

We shall make a pause here in our description of the cycles of this series B in order to explain that, from this time on, evolution will not be expressed biologically, that is to say via anatomic and physiological transformations, but rather that the cyclic leaps will basically be expressed through psychological and socio-cultural changes. In order to leave it very clear that the leaps we shall discuss below fit perfectly en bloc to historical data, we reproduce a few paragraphs from Ervin Laszlo's book *Evolution: The Grand Synthesis*:

"In the span encompassed by Paleolithic societies on the one end and modern information-based societies on the other, an entire succession of societal forms has unfolded. The nomadic tribes of the Paleolithic transformed into the settled villages of the Neolithic; these in turn gave way to archaic empires and to local kingdoms and city-states. The classical empires were followed by medieval princedoms, and these yielded to the rise of nation-states, some with vast colonies. Today the colonies have disappeared, and modern nation-states have spread to the four corners of the world.

With attention to both the technological and the social factors we can perceive a series of dynamic transformations in the development of societies. Nomadic hunting-gathering tribes domesticate plants and animals and transform into settled agrarian-pastoral societies; agrarian-pastoral socieities evolve such technologies as irrigation and crop rotation and transform into agricultural ones; agricultural societies develop handicrafts and simple manufacturing technologies and thus transform into industrial societies; and industrial societies, under the impact of new, mainly information- and communication-oriented technologies, evolve into postindustrial societes.

History's arrow of time does not fly smoothly. Although the historical record is always complex and frequently obscure, it gives good reasons to believe that societies, the same as biological species, do not change at all times and in small increments. Rather, the mode of change appears saltatory and intermittent..."

I suggest, dear reader, that you be prepared for new surprises, because all of these stages proposed by Erwin Lazlo —which match the traditional classification of: **Upper Paleolithic, Neolithic, Ancient Times, Middle Ages, Modern Age** and **Postmodern Age** (in which we are really entering nowadays)— do fit, with absolute precision, to each and every one of the anticipated cycles of our hypothesis of evolutionary rhythms! Let us verify this.

Remember that we had left our test in the fourth cycle (B-4) of the second series, with the development of Cro-Magnon, a cycle that corresponds to the stage of nomadic tribes of the Upper Paleolithic as well as hunting-gatherer societies.

During the fifth cycle (B-5), which commences with Cro-Magnon, we find near the first node (just over 16,000 years ago) an increase in gathering and the expansion of humanity. This was to lead, close to the second node (just over 8,000 years ago), to a generalization of **Neolithic** life, with the aforementioned settlements and agro-pastoral mode. A new cycle then commences (around 6,000 years BC).

The sixth cycle (B-6) starts with this Neolithic man. Around the first node (more or less 3,300 years BC), copper metallurgy arose, writing appeared —History *per se*. As we approach the second node (550 BC), the so-called "axial age" of the astounding 6th century BC arose. This was the time of pre-Socratic philosophers, Israel's prophets, Buddha, Mahavira, the *rishis* of the *Upanishads,* Confucius, Lao Tse and Zaratustra, among others. Between both nodes, archaic empires, kingdoms and state cities developed. In other words, the mode of agricultural life or what is known as the **Ancient Times**. Change in cycle

The seventh cycle (B-7) of this second series starts with the emergence of philosophic man around 550 BC, who places the mythical thinking of the previous cycle in doubt. As the course of evolution approaches the first node (around the 370 AD), we see the appearance of Patristic philosophy in the Western tradition. This philosophy was fully developed as the second node approached (around the 1295 AD) with Scholastic philosophy. This cycle is the one that has been called the **Middle Ages**, with all its special features: princedoms and pre-industrial modes of life. With the appearance of Nominalism and the pre-Renaissance, still in this same second node, the abstract and metaphysical rationality of the medieval world was transformed into concrete and empirical rationality of the Modern world. And with the crisis, a new cycle appears. A new series: C.

The first cycle (C-1) of this new series thus commences with the nominalist-scholastic crisis that was to be the seed that germinated autonomously in Western culture, but was eventually to end up transforming the life of all human beings on the planet. Close to the first node (around the year 1600), mechanistic empiricism started to appear, developing to its fullest as the course of evolution approached the second node (around the year 1910) when Positivist Science was at its peak. The features of this cycle coincide with those of the **Modern Age**, the forming of states and the industrial way of life. At this point, the same crisis of the previous paradigm arose; on this occasion, the theories of relativity and quantum mechanics were the ones that were to stick the knife in the limitations of the mechanistic viewpoint. Change in cycle.

The second cycle (C-2) thus commences with Planck and Einstein and is not to have its first node until 2012. The new **Postmodern**, environmental, relativistic and pluralistic paradigm is thus in course. You are invited to take part!

If all of the basic steps of Evolution, from the formation of the Earth up to now, have fitted the projected rhythm in our "periodic table" with absolute precision, we may presume that it will keep on doing so in the future. If this is so, an accelerated process of transformations will be experienced over the next two centuries that will dramatically conclude around 2217, in a moment of infinite creativity. Tell your great-great-grandchildren to start getting ready.

Before continuing, we would like to state that the hypothesis being presented here regarding a spiral evolution the rate of which accelerates on the way towards a final pole of attraction was initially inspired by the pioneering proposals of Teilhard de Chardin —on "the convergence towards Omega"— and Aurobindo Ghose —on "the ascent towards Supermind"—, which in their time were considered completely preposterous by the world of official science. In recent decades, however, increasingly more research has been carried out in diverse fields and from different approaches, highlighting evolutionary acceleration and its orientation towards a singularity, findings with which our hypothesis obviously has many points of coincidence.
Let us mention here, for example, among the scholars of "Big History", Akop P. Nazaretyan, Alexander D. Panov and Graeme D. Snooks and their "Snooks-Panov Vertical" theory, as our hypothesis coincides almost completely with the stages proposed by Panov, as well as with the rate of acceleration of 1/3 proposed by Snooks. We also coincide to a great extent with: the work by Luigi Fontappiè's on the law of "Syntropy", developed by Ulisse di Corpo and Antonella Vannini; the "Neo-orthogenesis" raised by my recently deceased fellow countryman Juan Luis Doménech Quesada; Carter Vincent Smith's proposal regarding the "Accelerating Evolution of Integral Consciousness"; the "White Hole in Time" described by Peter Russell; John Stewart's "Evolution's Arrow"; Ken Wilber's "Evolutionary Holoarchy"; Steve McIntosh's "Evolution's Purpose"; the "Spiral Dynamics" posited by Clare W. Graves, Don E. Beck and Chris Cowan; the studies by François Meyer and André de Cayeux on the "vertiginous acceleration of evolution and history"; John M. Smart's "Acceleration Watch"; the "Singularity" of which Ray Kurzweil and the transhumanists speak. Terence McKenna's "Timewave Zero"; and so on… It is clear that the paradigm is shifting, as Carter Phipps summarizes in his book on "Evolutionaries". Let us continue investigating this.

Regarding the chakras

Up to this point, we have presented our own verification of the hypothesis, basically with the data provided by Western science, which, for four centuries, has painstakingly studied the world of "outer" forms. It may be useful, however, to also take in account the observations that Eastern traditions have made which, for close to three millennia of the world of "inner" forms. Because evolution, as we stated at first, does not only keep on generating progressively more complex, more organized structures of energy and matter, but also keeps on unfolding deeper and more lucid levels of consciousness, simultaneously.

In this regard, the three series of cycles that we have been analyzing so far could be approached as follows. With the emergence of life in cycle A-1, consciousness, which up to this cycle was absorbed in matter, takes an inward leap, being identified with an incipient living organism —with a "subject"— that, on perceiving its environment full of "objects", can act upon it and manipulate it

in its own benefit. All of the first A series can be understood as a steady maturation of its capacity to act and perceive. With the emergence of the first human individual, in cycle B-1 of the second series, the conscious subject that already perceived the environment with great precision, takes a new inward leap and starts to perceive itself as an individual separated from the environment. This is the surprising phenomenon of self-awareness, the "original sin" of the biblical story, the expulsion of human beings from the "paradise" of non-awareness. The entire second series concludes with the emergence of rationality in the "axial age" with a new leap toward consciousness, thus enabling the mind to think about itself and the discovery of the magic of self-reflexivity. The new series —C—, that then commences will lead —according to our hypothesis— toward a major evolutionary peak in the year 2217, in which humanity in general will reach the state of "transpersonal witness". In this state, there will only remain a subtle form of dualism between the observer and that which is observed; a dualism that will finally disintegrate on discovering that both —the observer and the observed— are in fact one and the same thing and that they had never actually been separate.

As we stated previously, the Eastern mystic traditions have painstakingly delved into these deeper areas of consciousness, and have described their findings in great detail. Thus, the millenary Psychophysiology of the Hindus and in most especially, the Tantric tradition, has conscientiously studied the energy structures within human being and the universe. They claim that the flow of energy —*prana*— circulates through channels —*nadis*— and accumulates in vortices —*chakras*— constituting veritable storage batteries, transformers and distributors of this energy. Each one of these chakras is related to a nervous plexus and an endocrine gland. They therefore act as contact points between the physical body and the subtle structures, having specific psychological and spiritual functions. They claim that there are seven *chakras* distributed between the base of the spinal column and the top of the head and that they differ according to their different sound vibrations and characteristic activities: *Muladhara* (matter), *Svadhistana* (life and sex), *Manipura* (power and desire), *Anahata* (love), *Vishuddha* (expression), *Ajna* (intelligence-mind) and *Sahasrara* (soul-spirit).

As we can see, Hindu Psychophysiology presents a wide spectrum of seven levels of energy stabilization that manifest in at least three different wrappings: biological, psychological and spiritual. As this evidently sounds very similar to what we have described in our scheme of rhythms —seven cycles in three subsequent series—, we shall now investigate whether the characteristics that define each of the *chakras* have any correspondence with the evolutionary cycles that we have previously described. Should there be considerable points in common between both approaches, we may find that not only the "rhythm" of evolutionary cycles is defined from the beginning, but also the characteristic content —the "sound"— of each one of them! Who mentioned chance?

At the top of Fig. 6, we have noted the complete series of the seven *chakras* in parallel with series A, B and C of the seven cycles of our hypothesis. In the case of our suspicion of correspondence between both approaches—that of the *chakras* and that of evolutionary stages— being correct, all of the correlative cycles of the different series —for example cycles A-5, B-5 and C-5—, should develop a common theme. Let us see.

The first *chakra*, *Muladhara*, is the basic center and sustainer of life, representing the domain of simple sensations and perceptions that belong to the material and physical world. It is related to the instincts of individual safety and survival, without which no life could exist. Its most characteristic behavior pattern is the simple stimulus and response. All of this perfectly matches unicellular life

in our first cycle (A-1), which, let us recall, spans the appearance of organic macromolecules after the formation of the Earth right up to the emergence of eukaryote cells.

The second *chakra, Svadhistana*, is related to sexuality, the conservation of the species and the propagation of life; relationships between organs now take on significant importance. All of this is Cleary in tune with our second cycle (A-2), which started with eukaryote cells, generating the first multi-cellular organisms, deploying all its vital potential after the Cambric explosion —the "zoological Big Bang".

The third *chakra*, *Manipura*, is associated with power, will, desire and intentionality; the basic theme of this center is the fight for power, competing, ambition and domination. The third cycle (A-3) of this first series, let us recall, ended with the dominating expansion of the dinosaurs, in utter consonance with this *chakra*.

The fourth *chakra*, *Anahata*, is linked to love, compassion, affection and commitment; here rivalry gives way to cooperation and unconditional service. It is the center of the heart, the motherly instinct. All of this fully links to our A-4 cycle, which commenced with the emergence of primitive mammals and birds —of which it has been said that, because they are the only organisms that take care of their offspring, they are the "inventors" of love and affectivity— and ended with the radiant and explosive emergence of modern placental animals, opening the "age of the mammals".

The fifth *chakra*, *Vishuddha*, is the effective center of communication, that of expression and self-projection and creative inspiration. It would match our A-5 cycle, which, let us recall, started with the emergence of the pro-simians, saw the development of the great apes and ended with the anthropoids, which, as is well known, possess a great variety and complexity of the modes of expression —language of gestures, sounds, attitudes, movements, facial mimic, and so on—, in clear consonance with this fifth *chakra.*

The sixth *chakra*, *Ajna*, the center of intelligence, of knowledge, of wisdom, corresponds to cycle A-6, which, let us recall, encompasses the anthropoids right up to the emergence of the first hominids. As is widely known, besides human beings, all currently living species that still have the same basic features of that evolutionary stage are the animals with the highest intelligence on the planet, in clear consonance with the *chakra* we are talking now discussing.

The opening of the seventh and last *chakra*, *Sahasrara*, means the full flourishing of spiritual potential. It corresponds to the peak cycle, A-7, of the first series, which started with the emergence of hominids and ended with the appearance of *Homo habilis*, the first member of our human race, now entering the new area of self-awareness and evidently corresponding to this *chakra* of the "thousand petals".

We have thus covered the entire chain of the seven *chakras,* from *Muladhara* —sustaining the material base— to *Sahasrara* —deploying spiritual energy— in total the consonance with our series of cycles, from the organic matter of A-1 up to the self-consciousness of A-7! Could it be that chance does not constitute, by any means, the ultimate criterion for understanding the creative dynamics of the evolutionary process? Let us continue with our investigation.

Within the first cycles of the second series, those relating to the most primitive humans, instead of only "checking" the connections with their correlative *chakras*, we shall simply "suggest" this correspondence. Later on, when applying our hypothesis of rhythms to the human microcosm and

on observing the phylogenetic-ontogenetic parallelisms, we shall have more arguments with which to confirm these correspondences.

It is to be expected that in the first cycle (B-1) of the second series, physical self-awareness would gradually deploy —first with *Homo habilis* and later with *Homo erectus* (or *Homo ergaster)*—, subsequently emerging from merely unconscious fusion with the natural environment. These first human beings would thus have started to perceive their physical body, distinguished from the surrounding environment, and therefore would have been able to act consciously upon it, manipulating it to their own benefit —tools, mastery of fire, and so on. All this is in consonance with the features of the first *chakra*, which, as we stated, represents control over the most basic sensations and perceptions pertaining to the material and physical world.

In the second cycle (B-2), *archaic Homo sapiens* started to become aware of their vital and pranic drives and their motivations would basically revolve around pain-pleasure principles. In that case, this stage would clearly match the "vital" feature of the second *chakra.*

In the third cycle (B-3), the first *H. sapiens* will have deployed the "intentional mind" with the emergence of the wide-ranging capacity to create images, which allows the experiencing of prolonged emotions such as anguish and desire. This would be in consonance with the third *chakra*, which, let us recall, is associated with power, will, desire and intentionality.

The fourth *chakra*, as we said, is linked to love, compassion, affectivity and commitment. Our fourth cycle (B-4) in this second series spanned the period during which the Neanderthals first and Cro-Magnons later took center stage on the European continent. It is then when the nuclear family was given a boost and human beings start to worry about treating their sicknesses and the future of their dead. It is perhaps in this time when language started to develop, allowing the broadening and intensification of human relationships as well as the appearance of the "group mind". All of this is clearly in agreement with the "affective" features of the *Anahata chakra*.

The fifth *chakra* is associated with communication, psychological expression and creative inspiration, which is fully in consonance with what happened in our cycle B-5, in which modern man —*Homo sapiens sapiens*, deployed all his artistic potential. Poorly developed up until then, Culture exploded in a multitude of facets: in the world of language, in the dazzling and surprising rock art of Altamira and Lascaux, in sculptures such as the Willendorf Venus, in reliefs, in horn and ivory works and so on.

The sixth *chakra,* as we have already stated, is the center of knowledge, intelligence and wisdom. Our sixth cycle (B-6), let us recall, starts with the appearance of Neolithic culture —in which human beings started to understand natural processes and by doing so were able to control and transform them (taming animals, planting seeds and so on)—, and via the development of civilizations, the discovery of the alphabet and the progressive use of metals, reaches the "axial age", with the emergence of the first philosophers. Its consonance with the *Ajna chakra* is clearly evident.

The opening of the seventh *chakra*, as already mentioned, means the full flourishing of spiritual potential. Our cycle B-7, as we have just seen, starts with the crisis of mythic thinking, as well as with the sudden emergence of the rational thinking in the "axial age". In Western culture, this process spans Greek philosophy, through Patristic philosophy and up to the Scholastic philosophy at the end of the 13th century. The way of thinking developed in this period was mainly abstract,

spiritualized and metaphysical, clearly matching the *Sahasrara chakra.* Simultaneously, this was also the time of the great sages and humanity's non-dualistic mystics: Buddha, the *rishis* of the *Upanishads,* Lao Tse, Chuang-Tse, Jesus de Nazareth, Nagarjuna, Plotinus, Asanga, Bodhidharma, Hui Neng, Shankara, Huang-Po, Padmasambhava, Al-Hallaj, Ibn-Arabi, Dogen, Rumi, Meister Eckhart and the like. None of them "thought" about an external Divinity, but "knew by their own embodiment" that their truthful identity was in fact that Divinity. That is why we believe that, although they were in tune with the *Sahasrara chakra*, they better resonated with its expression in the following series —with cycle C-7—, in which humanity in general will discover, like all these sages had done before, that matter and spirit, energy and consciousness, object and subject are in fact non-dual polarized expressions of the unique absolute reality: the simple, ever-present Self-evidence. We shall return to this point later.

We have now concluded the second series, and the correspondence with the chain of the *chakras* has been very clear, from the mere physical awareness of *Homo habilis* through to the metaphysical rationality of the Scholastic philosopher. We shall therefore continue, testing now our third series —C—, at least in the cycle and peak that we have already covered.

The first cycle (C-1) of the third series started with the emergence of Nominalistic philosophy, which, due to placing emphasis on the specific, led to a crisis in the metaphysical thinking of the Scholastics. It then continued with all the deployment of empirical science and reached a peak with the materialistic Positivism of the 19th century. All this corresponds fully with the characteristics of the first chakra, which represents the physical and material world, as we have seen in previous series.

Allow us now to clarify what we have just been discussing. From the traditional perspective, the materialistic approach is rejected because it is believed to be a step back in relation to metaphysical thinking. However, according to our scheme, modern materialistic empiricism paradoxically represents a step forward in the spiritual process in relation to medieval religious "beliefs". This is so because while the latter occupied the highest stage in the second series —B—, modern empiricism is situated at the beginning of the third series —C—, which, as it has greater depth and lucidity, is hence more "spiritual", although its contents may have been only physical so far. In the long term, according to our pattern of rhythms this path will lead not to the "belief" in the world of the Absolute, but rather to "empirical" evidence of our own identity with the Absolute Itself.

As we have just stated, the second cycle (C-2) started with the first years of the 20th century, when the apparently solid mechanistic and materialistic paradigm of the Modern Age started to fracture with the emergence of the Theories of Relativity and Quantum Physics. As opposed to the cold inflexibility, dogmatism and linear logic of the previous cycle, the new approach introduces reticular logic, perspectivism, environmental awareness, indetermination, pluralistic relativism, multiculturalism, respect and care for mother Earth, Gaia and life itself. The Postmodern Age that is starting is clearly in consonance with the second *chakra*, the focus of which, let us recall, is the conservation and promotion of life.

Summing up: the pattern of rhythms we have proposed fully matches both in rhythm and content, the empirical data from the sciences of Evolution and History. The first sixteen cycles of our "Evolutionary periodic table" coincide with absolute precision with the totality of the stages that have occurred so far. It is obvious that the five remaining cycles of this third series —C—, will also mark the pattern of the accelerating process that will lead humanity towards the great evolutionary Peak in a couple of centuries, around the year 2217. The cycle of "ecological" content

in which we are immersed right now, C-2, will reach its zenith within a century, around the year 2114. The following cycle, C-3, the focus of which will be the "desire for realization" will span the period up to 2183. Next, cycle C-4, whose central theme will be "universal love", will reach its peak at the beginning of the 23rd century, around the year 2205. Cycle C-5, the focus of which will be "creative expression", will develop through to the year 2213. The "integral wisdom" of cycle C-6 will reach its apogee in the year 2215. Finally, humanity's "spiritual realization" will take place around 2217.

Regarding phylogenetic-ontogenetic parallelism

We start out from the classical idea, present in very different cultures, that the human organism encapsulates everything; it constitutes an individual concentration of the world, a unity that reflects, as in a mirror, the totality of the universe. According to this approach, human development is a rapid recapitulation and integration of all the levels gradually deployed within the evolutionary process of the universe throughout its slow, drawn-out paleontological development.

Haeckel's major contribution to the theory of evolution is what he called "the law of fundamental Biogenetics", i.e., the parallelism between the growth of the individual embryo and the development of the species to which it belongs: "ontogeny, that is, the growth of an individual, is a short and fast repetition (a recapitulation) of the phylogeny or evolution of the lineage to which the individual belongs". This means that during the course of individual development, the organism recapitulates its own evolutionary lineage so that the diverse forms which the embryo passes through represent the predecessors of such an organism. Note, however, that this is not a repetition of adult forms of these predecessors; it is their embryonic and developmental stages that are reproduced. This is why organisms which are close in the evolutionary scale —those that had a common descent until very recent periods— have similar embryos in their initial phases of gestation. It is only during the latter stages when differences become evident. In other words, because ontogeny reproduces phylogeny, the embryonic development of historically related animals passes through similar transformative processes which are longer lasting, the closer the degree of kinship. Darwin himself wrote in his *Origin of the Species* "community in embryonic structure reveals community of descent".

In 1828, Karl von Baer, the major embryologist of his time, exclaimed, "I have two small embryos both kept in alcohol and I forgot to label them. Now I'm not able to distinguish their genus. They could be lizards, small birds or even mammals". This is because all embryos from the chordate *phylum* —fish, amphibians, reptiles, birds and mammals— are almost identical during early developmental stages: zygote, blastula, gastrula, etc. Only subsequently do the special characteristic of class, order, family, genus and species start to appear successively.

Given that embryonic development reveals the ancestry of a species, within classic taxonomy —in the classification of living beings—, the most reliable criterion for affirming that two species had an immediate common ancestor above and beyond anatomical similarities was the similarity of their ontogenetic pathway. It is for this reason that phylogenic taxonomy —already defined in the 19th century by Haeckel and Sachs— states that the systematic ordering of biological groups represents a schematization of evolutionary stages achieved over the course of time and, indicates the order of appearance of the different organisms that emerged upon the Earth.

It is becoming increasingly clear that evolutionary leaps essentially occur via branching within embryological processes: new pathways of embryonic and larval development separate at some point from the pre-existing ancestral pathways. The innovations responsible for the appearance of new species will thus occur, not only via simple mutation in a small segment of DNA, but through modifications introduced in the process of individual development, i.e., through "heterochronies" or discrepancies in the rhythm of ontogenetic processes. Of special interest within these heterochronies are the processes of "pedomorphosis"—the conservation of ancestral juvenile traits by the following ontogenetic stages of offspring — and also "neotenia" —pedomorphosis produced by retardation of somatic development—. Many of these cases of evolution by means of neotenia are well known, ranging from vertebrates —considered as tunicated neotenic larvae— through to human beings themselves, as proposed by Stephen Jay Gould on observing the clear similarity between the human adult and the young chimpanzee. Thus, the mechanisms of evolution may be due not only to the gradual selection of individual traits, but by these changes in rhythm given rise to profound anatomic modifications while opening up novel ecological possibilities. These sudden changes would also explain the absence of many "intermediate forms" in the fossil registry as these forms would never actually have existed.

In 1922, Grandjean corrected Haeckel's claim that "ontogeny reproduces phylogeny" and proposed a complementary formulation: "ontogeny does not reproduce phylogeny, it creates it", thereby suggesting that these branches in the ontogenetic pathway are precisely the ones that generate the novel leaps in phylogenetic pathways. These same approaches from the world of Biology are similarly repeated in the socio-cultural sphere when addressing the issue of whether anthropological development precedes the evolution of institutions, is a consequence of it, or both.

In line with the theory of "internal logic" in historical development, history is conceived as a self-deployment of inherent categories of humanity from the outset. All organicist approaches defend this approach and understand history as the "history of human life", based on the parallelism between phylogeny and ontogeny. Thus, according to Vico, culture passes through the same phases as the individuals that compose it. Or according to Habermas, the internal logic of the cognitive development of a child serves as an analogy for the self-understanding of communicative rationality throughout human history. Even Marx was also occasionally inclined to work with the theory of internal logic. In the Paris manuscripts, he holds that human beings may only develop the fundamental constitutive elements of the human essence and that progress is thus the unfolding of this essence.

According to our hypothesis, both the phylogenetic, historic or macrocosmic process and the ontogenetic, individual or microcosmic process are both overall or specific expressions of one and the same unique archetype of rhythms that define the dynamics of exit and return in the manifestation of the universe in time. Thus, both individuals and societies are constrained to progressively updating the successive levels of potential stability of the original matrix.

Returning to the embryologic issue we were discussing and focusing now on human beings, we have to say that, like other animals, human beings pass through the consecutive embryonic stages characteristic of their phylogeny before developing the physiological traits that verify their condition as humans. Their ontogenetic process then becomes much more similar to that of other species; the more so, the closer they are to their evolutionary scale. In the words of evolutionary scholar Francisco J. Ayala, "the human body is built following the same general scheme as other animal bodies, being more similar to anthropoids, primates, mammals and vertebrates in this

descending order". As we have seen previously, these stages correspond exactly to the four successive cycles of our hypothesis: A-5, A-4, A-3 and A-2.

Similar to the embryological process, the psychological development of human beings seems to recapitulate the successive perspectives displayed by their ancestors. John C. Eccles states that it may be postulated that all the transitions that are produced ontogenetically when passing from the baby to the child and then to the adult are situated precisely within the phylogenic process of human evolution, "the progressive development from the consciousness of the baby to the self-consciousness in the child provides a good model for the emergent evolution of self-consciousness in the hominids". Likewise, the psychologist Jean Piaget states that the development of thinking in the child shows an intimate conformity with the evolution of consciousness in our species.

Along these same lines, Jung, after recalling Nietzsche words, "in sleeping and dreaming we once again work through the lessons of earlier humanity", and added, "The supposition is therefore justified that ontogenesis corresponds in psychology to phylogenesis". Ken Wilber equally states, "the same force that produced human beings from ameobas produces adults from infants. That is, a person's growth, from infancy to adulthood, is simply a microscopic version of cosmic evolution". He likewise affirms, "Very like the geological formation of the earth, psychological development proceeds, stratum by stratum, level by level, stage by stage, with each successive level superimposed upon its predecessor in such a way that it includes but transcends it." Ken Wilber also states, "… there is an increasing reacceptance, among developmental structuralists, of the notion of phylogenetic/ontogenetic parallel: Primitive-paleolithic magic is similar in deep structure (not surface structure) to infantile-early childhood preoperational thinking; classic religio-mythic expressions are similar in deep structure to late childhood pre-operational thinking and beginning concrete operative thinking; and modern rational science is top of the hierarchy with adolescent-to-adult formal operative and hypothetico-deductive reasoning."

According to Wilber, the overall process of psychological evolution —that is the manner in which cosmic evolution operates in human beings— occurs in a most significant and coherent way. In each stage, there is a higher-level structure —one that is more complex and therefore more unified— which emerges by means of differentiation from the lower-order level that precedes it. This higher-order structure is introduced into consciousness and the self ends up identifying with this emergent structure. As it has differentiated from the preceding structure, the self transcends it and can thus operate on this lower structure using the instruments that the new emerging structure offers.

Ken Wilber denotes by "deep structure" the characteristic manner of any given level —a form that materializes all possibilities and limitations— and by "surface structure", the specific manifestation of deep structure. All deep structures are undifferentiated, folded or enveloped in the unconscious field. The unconscious substratum is almost completely void of surface structures. This is something similar to Jung's idea of the archetypes as "forms without content". In Jung's words, an archetype (deep structure) "is determined as to its content (surface structure) only when it has become conscious and is therefore filled with the material of conscious experience". We all inherit the same essential deep structures, but each of us learns our own individual surface structures.

According to Ken Wilber, the fetus has fundamental ground unconscious, "In essence, it is all the deep structures existing as potentials ready to emerge, via remembrance, a some future point." All deep structures are included or related to ground unconscious: the "archaic unconsciousness" is the past of humanity and the "emerging unconsciousness" is the future. Given that the higher structures

embrace the lower ones, the higher ones have to be the last ones in developing. The transpersonal cannot be realized while the personal has not yet been formed. Development —or evolution— consist in a series of hierarchical deployments of deep structures parting from ground unconsciousness, starting from the lowest —matter— and ending with the highest —consciousness. When —and if— the totality of ground unconscious has emerged, then there will only be consciousness; all is consciousness as the Whole. As Aristotle put it, when the potential has been actualized, the only result is God.

Verification of the hypothesis in the microcosm

Having previously verified the validity of our scheme of rhythms in the evolutionary dynamics of the universe —the macrocosm—, we shall now see whether this same scheme is also reflected in the developmental process of individual beings —the microcosm.

Assuming that human beings are in tune with the rhythms of the evolutionary cycles we have previously analyzed, and in the knowledge that, according to the study by Richard M. Bucke, the spontaneous emergence of what he called "cosmic consciousness" takes place around 34 years of age, we shall take cycle C-4, which has a duration of 34.17 years, as the base cycle to proceed with the verification of our hypothesis in the individual development of a fully realized human being.

Applying our overall scheme of rhythms—previously presented in Fig. 2-C— we obtain a first approximation to our proposal about this cycle of 34.17 years of duration as shown in Fig. 7-B. This figure shows the full course of a life, which, starting from the moment of engendering, deploys in a progressively drawn-out way to the "exit" section —or "outward arc" toward the pole of the "ego", situated around 22 years of age —matching Wilber's affirmation that the return process or "inward arc" does not generally start before 21 years of age— and initiates this section of "return", in a progressively accelerated way now towards the final pole of illumination. In accordance to this scheme, in the "exit" section toward the maturation of "ego" a human being traverses both the complete series A —life— and B —mind— of our evolutionary periodic table and undertakes the return section through the C series —soul— and the following series in order to achieve full illumination around 34.17 years of age.

Comparing figures 7-A and 7-B, note how the overall macrocosmic and microcosmic patterns of development have identical structures. The only difference between them lies in the level at which pole P is positioned; that is, the pole toward which the "exit" section is oriented in each one of these patterns. In the macrocosm, it is situated at the "series leap" between "matter" and "life" —the appearance of organic macromolecules after the formation of the Earth—; while in the microcosm, it is situated at the "series leap" between the "mind" and the "soul" —the formation of the mature ego.

We shall now verify whether our forecasts fit the data provided by embryologists—for the intrauterine phase— and developmental psychologists —for the postnatal phase. We recommend simultaneously consulting Figs. 8 and 9 while reading the text.

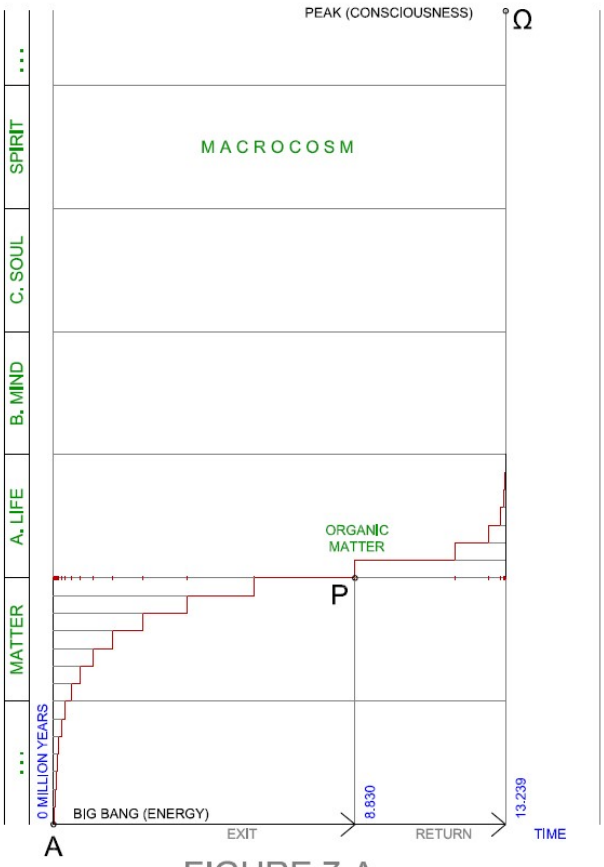


FIGURE 7-A

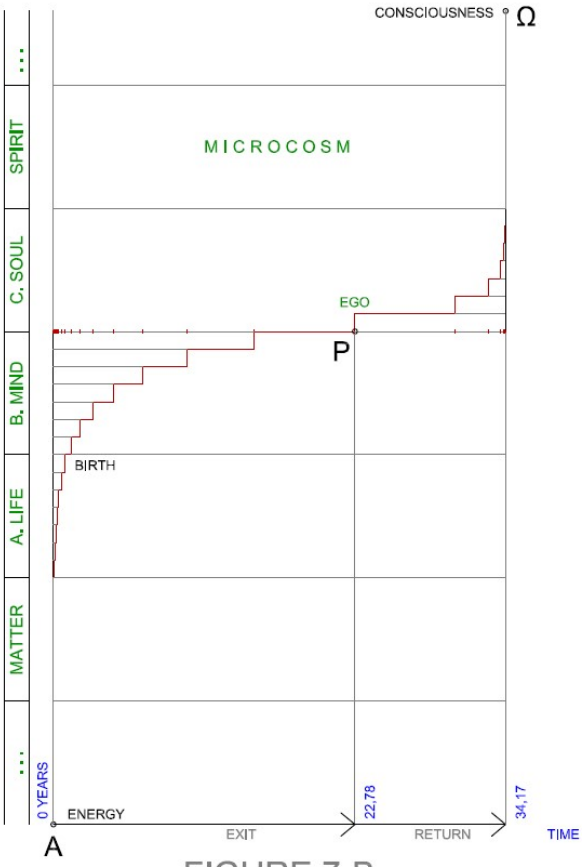


FIGURE 7-B

We start by verifying the unicellular living phase, which in the macrocosm we called A-1, and which coincided with the emergence of prokaryotes first and then eukaryotes. The 28 days of women's menstrual cycle is governed by a complex mechanism involving diverse organs and substances. During the first part of this 14-day cycle, the follicular maturation takes places, stimulated by the pituitary anterior lobe or gonadotrophic hormones, mainly the FSH. The primordial follicle contains a central cell —*ovogonia*— that first becomes a first-order *ovocyte* with a more robust nucleus and later—after being excreted during ovulation— transforms into a second-order *ovocyte* —with the corresponding chromatin depletion—, rendering it apt for fecundation. The A-1 cycle of our hypothesis, i.e. the one that deploys the unicellular stage in the macrocosm, according to our microcosmic scheme has a duration of precisely 14 days, which coincides exactly with half of the menstrual cycle of follicular maturation until fecundation.

After being fecundated, the ovule starts a period of rapid mitotic divisions in which the zygote passes through stages of 2, 4, 8, etc. cells or *blastomeres*. The cells continue dividing, first forming a solid ball – *morula*—, which subsequently becomes hollow —*blastula*. The three germinative layers then start to differentiate —*endoderm, ectoderm* and *mesoderm*— and the cavity of the body or *coeloma* is soon formed. The dorsal nervous cord begins as a longitudinal depression that becomes progressively deeper until finally its edges join together, transforming into a tubular nerve cord. A sustaining cordoned-off formation is produced directly below, derived from the mesoderm, called the *notochord* —backbone— that is common to the chordate *phylum* as a whole, and from which it receives its name. The entire process takes place from the fecundation of the egg cell through to the third week of pregnancy.

As we have already seen, the characteristic stage of A-2 in the macrocosm is the one that displays multi-cellular organisms through to the formation of the diverse types —*phyla*— of animals, such as chordates. In our scheme for the microcosm, this cycle spans from a little more than three weeks from fecundation, which once again matches the embryologic data fully, not only in content, but also in duration.

The human embryo, as it nears the end of the first month, develops some muscular segments, called *miosomas,* at each side of the neural tube, which represent the origin of the skeletal muscle system, typical of all vertebrates. From the fourth week on, limbs—upper and lower— also start to be formed. At first, they are only small protuberances or *mamelons*. However, they soon start to grow and, during the sixth week, already constitute small, paddle-shaped expansions that will evolve into hands and feet. Fingers finally develop during the seventh and eight week. During that time, the *amnios*, which during the first weeks of gestation was a very small vesicle, starts to increase in volume and progressively cover the embryo completely.

	TIME SINCE ORIGIN	TIME SINCE FECUNDATION	TIME SINCE BIRTH	CYCLE	CORRESPONDENCES IN MACROCOSM	CHARACTERISTIC ACCORDING TO CHAKRAS	SPECTRUM OF CONSCIEOUSNESS ACCORDING TO KEN WILBER	SPECTRUM OF CONSCIOUSNESS ACCORDING TO SRI AUROBINDO
ENERGY	0 YEARS	- 42,72 DAYS	- 0,86 YEARS	A				
EXIT (OUTWARD ARC)								
	18,99 DAYS	- 23,72 DAYS						
	28,48 "	- 14,24 "	LAST MENSTRUATION		ORGANIC MOLECULE			
	42,72 "	0 "	FECUNDATION	A-1	EUKARYOTES (ANIMAL KINGDOM)	MATTER (SURVIVAL)		
	64,08 "	21,36 "		A-2	CHORDATE (FILUM)	LIFE (SEX)		
	96,13 "	53,41 "		A-3	MAMMAL (CLASS)	POWER (DESIRE)		
	144,19 "	101,47 "		A-4	PRIMATE (ORDER)	LOVE		
	216,29 "	173,57 "		A-5	HOMINOID (SUPERFAMILY)	EXPRESSION		
	324,44 "	281,17 "	(BIRTH) 10 DAYS	A-6	HOMINID (FAMILY)	INTELIGENCE		
	1,33 YEARS		5,70 MONTHS	A-7	HOMO HABILIS (GENDER)	SPIRIT		
	2,00 "		1,14 YEARS	B-1	HOMO ERECTUS	PHYSICAL CONSCIOUSNESS	AXIAL BODY	PHYSICAL
	3,00 "		2,14 "	B-2	ARCAICO HOMO SAPIENS	VITAL CONSCIOUSNESS	PRANIC BODY	VITAL
	4,50 "		3,64 "	B-3	HOMO SAPIENS	INTENTIONAL MIND	IMAGINAL BODY	EMOTIONAL
	6,75 "		5,90 "	B-4	HOMO SAPIENS SAPIENS	AFFECTIVE LIFE	SYMBOLIC PREOP. MIND	DESIRE
	10,12 "		9,26 "	B-5	NEOLITHIC	EXPRESSION PSYCHOLOGICAL	CONCEPTUAL PREOP. MIND	INFERIOR MIND
	15,19 "		14,32 "	B-6	HISTORIC (ANCIENT AGE)	INTELECTUAL LIFE	CONCRETE OP. MIND	LOGIC MIND
EGO	22,78 "		21,92 "	B-7	SCHOLASTIC (MIDDLE AGES)	SPIRITUAL ENERGY	FORMAL OP. MIND	
	30,37 "		29,51 "	C-1	POSITIVIST (MODERN AGE)	MATTER (POSITIVISM)	MATURE EGO	
	32,91 "		32,05 "	C-2	ENVIRONMENTALISMT (POSTMODERNAGE)	LIFE (ENVIROMENTALISM)	PLURALIST MIND	SUPERIOR MIND
	33,75 "		32,89 "	C-3	-	DESIRE OF REALIZATION	VISION - LOGIC	
	34,03 "		33,17 "	C-4	-	UNIVERSAL LOVE	ILLUMINED MIND	ILLUMINED MIND
	34,12 "		33,26 "	C-5	-	CREATIVE EXPRESSION	INTUITIVE MIND	INTUITIVE MIND
	34,16 "		33,30 "	C-6	-	INTEGRAL WISDOM	OVERMIND	OVERMIND
RETURN (INWARD ARC)				C-7	-	SPIRITUAL REALIZATION	SUPERMIND	SUPERMIND
					-			
CONSCIOUSNESS	34,17 "		33,31 "	Ω	PEAK (2.217 A.C.)		NON-DUAL	BRAHMAN / PARAMATMAN

FIGURE 8

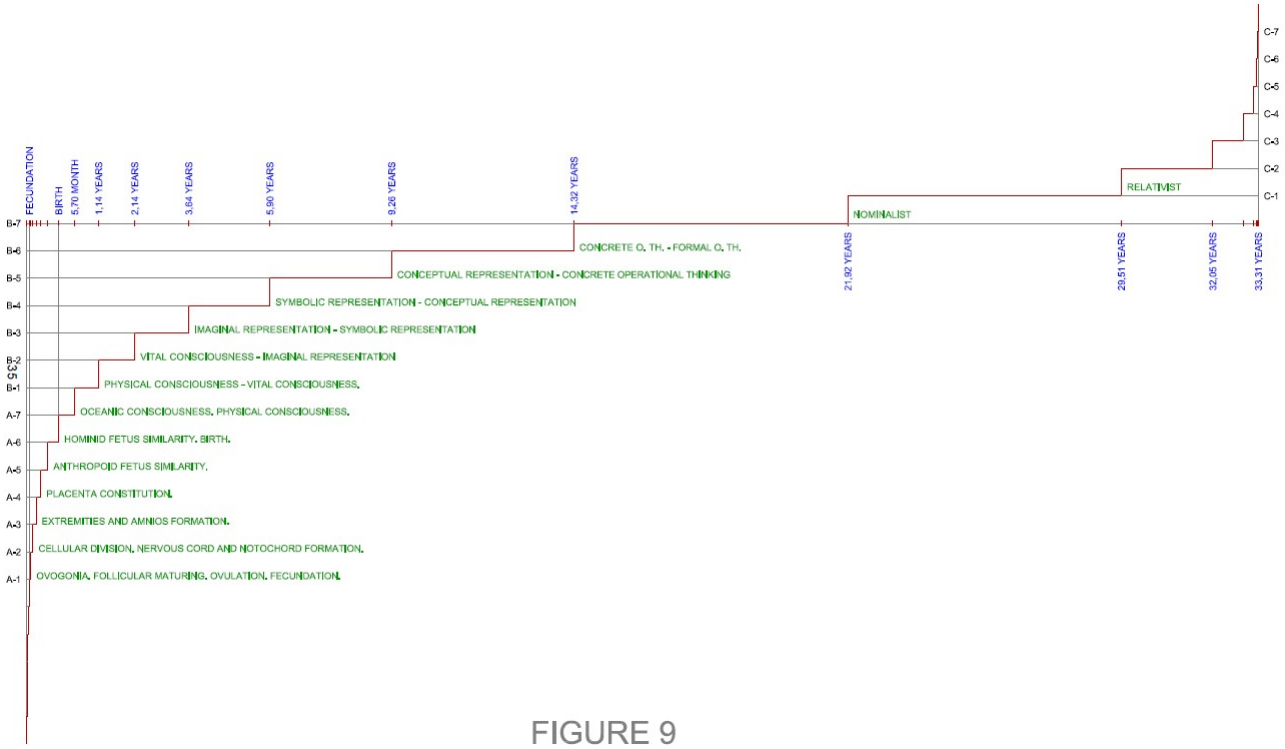


FIGURE 9

Cycle A-3 of our hypothesis started, in the macrocosm, with the first marine vertebrates —fish— and embraced the progressive conquest of dry land, first with the appearance of limbs in the *tetrapods* —amphibians— and then with the invention of that smooth, transparent membrane —the *amnios*— which protects reptile and mammal embryos. In our scheme for the microcosm, this cycle spans from the fourth week to the eighth, once again totally matching embryological data.

At the start of the third month of gestation, the embryo begins to be called the *fetus* —until the end of its intrauterine life— and the placenta begins to be formed. The hormonal functions of the ovary are progressively reduced until being replaced by this organ that acts exclusively from the fourth month onward. Thus, from this moment onward, the oxygen and all the other nutrients that the fetus needs will be absorbed from the mother's blood through the umbilical cord and the placenta, which will maintain the same general structure until the end of the pregnancy. It is also during this time when the typical hair of mammals starts to grow.

As we have seen in the study of the macrocosm, cycle A-4 of our hypothesis embraces the whole development of placental mammals, from the primitive insectivores through to modern primates. According to our scheme of the macrocosm, this cycle deploys itself from the eighth week of pregnancy to the middle of the fourth month. Preciseness is once more present in terms of both content and rhythm.

From the fifth month of gestation on, the processes of the human fetus and those of the pongids continue with similar characteristics; for example, in chimpanzee, the form and size of the head, weight of the brain, position of the fontanelle, hair distribution and so on. As we have already stated, all these traits led S. J. Gould to propose that the appearance of hominids is due to a case of *neoteny* in our anthropoid ancestors.

The prediction in our scheme of the microcosm is that cycle A-5 displays itself from the middle of the fourth month of pregnancy to the end of the sixth month thus appears more than acceptable. Let us recall that apes developed first in this cycle in the macrocosm, followed by hominoids.

Cycle A-6 would then be the one that develops the specific characteristics of the hominid family. Although there is no longer any other species of this family but *Homo sapiens sapiens* —and therefore we cannot verify the similarities that we propose—, there are some indications that point in the right direction. That is, the similarities would be even greater than with the *pongids*. The key to explaining the gradual differentiation of human beings with respect to our anthropoid relatives lies mainly in the progressive slowing-down of our development, exactly as predicted in the overall pattern we propose. Therefore, although human beings and chimpanzees have more than 99% of structural genes in common and a strong resemblance in our fetal forms, there are small alterations in regulatory genes —those controlling the time of activation and deactivation of structural genes—, altering the rhythms in body growth processes and producing relatively major differences in adult forms —brain, hands, legs and so on— as well as in behavior. Retarded development and growth have allowed an astounding development of *cerebralization* in human beings, by prolonging the rapid cerebral growth typical of the fetus until later life. Or, likewise, the lower limbs in human beings, which are similar to those of the great apes at birth —it has been said that "babies are primates with short legs"—, in our case keep on growing for a long time, while those of our simian relatives, in comparison, remain underdeveloped.

It thus seems that due to this slowing-down of development, the similarities between human neonates and primitive hominoids would be even greater than with respect to simians. Suffice is to state the following: while chimpanzees reach 45% of their cranial capacity at birth and human beings, only the 23%, the *australopitecines* are in between, around 30%. The duration of this A-6 cycle, according to our scheme of rhythms, extends from the end of the sixth month of gestation until shortly after the ninth month, practically concurring with the time of birth. Or, in other words, when the cycle in which self-consciousness is about to flourish commences, the one that led to the expulsion of hominids from the "paradise" of animal integration with mother nature, the human creature is also expelled from the mother's womb.

After birth, the human baby continues the slowing down of the developmental process, so much so, that it is been said that we spend our first year as an extra-uterine fetus. In fact, we are the only animal that grows more slowly and there is no other animal in which full development takes so long to achieve after birth. Orangutan, gorillas and chimpanzees grow until 11 years of age, while human beings keep on developing until they are 20 years old. This delayed growth is expressed through late maturation and extended infancy. As S. J. Gould states in his book *Ontogeny and Phylogeny,* this delay has reacted synergically with another two distinctive human traits: intelligence —as the brain increases in size due to the prolongation of the trends of fetal growth, as well as providing a longer period of childhood learning— and socialization —as family units consolidate by means of increasing care from parents towards children that develop so slowly.

So, from this point onward, we shall verify our proposal both in this cycle and in all of the following, taking as a reference the hierarchy of psychological levels so thoroughly presented by Ken Wilber throughout his body of work. Let us see the first of these levels, which, according to our pattern of rhythms should correspond to the transition from cycle A-7 to cycle B-1, as the former involves gestation and is the latter, deployment.

Uroboric-axial body. Shortly after birth, the child's perception begins to float in what is known as the pre-personal "uroboric" kingdom. The *uroboros* is still collective, archaic and primordially oceanic, but it already possesses some type of self-limitation. When the sensation of the infant self begins its evolution from the pre-personal *uroboros* to the individual organism, we see the emergence and creation of the organic and bodily self. By the term "axial body", we are mainly referring to the fact of feeling the physical body as something that differs from the environment. The baby has a physical body at birth, but it does not recognize the axial body until the fourth or sixth month of age. As the self-awareness of the child self begins to be centered and distinguish its individual organism, it also assimilates an ambiguous, yet still undefined threat of extinction. Therefore, simple, brief survival becomes a priority in this stage. Aurobindo calls this level, the "physical" level.

This stage corresponds with cycle A-7 (and B-1), which roughly spans from birth to the middle of the first year and leads to the emergence of the *Mulahara chakra,* whose main feature is "physical consciousness". It is also related to the simplest sensations and perceptions of the material world, along with the survival instinct. In the macrocosm, this phase corresponds with the appearance of self-awareness in *Homo habilis*. The precise correspondence is therefore complete in terms of both rhythm and content.

Pranic Body. Given that a specific organic self begins to emerge, the typical emotions of this self likewise emerge. This basic emotional behavior is called the "pranic level" or "pranic body". Although emotions are still relatively simple and primitive in this stage, the incipient ego has a certain consciousness of the qualities of pleasure and pain and therefore the search for pleasure and the avoidance of suffering become a strong psychological force in this period. This level is also characterized for being full of an overall, still undifferentiated sexuality. Aurobindo calls this phase "vital consciousness".

In our hypothesis, this phase corresponds with cycle B-1 (and B-2), which develops between 5.7 months and 1.1 years of age and leads to the emergence of the *Svadhistana chakra*, whose core feature is "vital and sexual consciousness". The correspondence is once again absolutely clear. In the macrocosm, this stage corresponds to *Homo erectus*.

Imaginal body. The emergence of the infant's ability to extensively create images marks a decisive point in the development process. When babies are about to reach the age of two, they are able to imagine objects that are not present with great accuracy. This enables an enormous burgeoning of their emotional life, as images are capable of evoking the same types of emotions and feelings as the actual object or person. Moreover, for the first time, the child may experience prolonged emotions, both of anguish —which is none other thing than imagined and hence maintained fear — and desire —which is none other than imagined pleasure. The image leads to the satisfying of desires and the lessening of anguish.

In our table of rhythms, this stage corresponds to cycle B-2 (and B-3), which develop between 1.1 and 2.1 years of age and leads towards the emergence of the *Manipura chakra,* whose main theme has to do with desire and the intentional mind. The accuracy of our scheme is therefore complete.

Social cognition (Symbolic pre-operational mind). Between two and four years of age, the child starts to awaken to symbolic representation. A symbol goes beyond a simple image, because while images represent objects pictorially, symbols do not represent them figuratively, but verbally. The emergence and acquisition of language is, by all odds, the most significant period of the "exit"

section in the vital cycle of the individual. Language and emergent abstract thought functions greatly expand the affective and kinesthetic world of the child. Through language, one may anticipate the future, make projects and channel the actions of today towards the future. This enables the onset of the sublimation of emotive-sexual energy, transforming it into more subtle, more complex, fully developed activities. As it moves forward toward cognition and social consciousness, the system of self is faced with the need to belong —and love— a social group that is greater than the individual bodily self.

This phase corresponds with cycle B-3 (and B-4) of our hypothesis, which develops between 2.1 and 3.6 years of age and leads to the emergence of the *Anahata chakra*, whose characteristic feature revolves around "affective life". The correspondence can once more be seen to be very clear, in terms of both the temporal rhythm and content.

Early ego/personic stage. (Conceptual pre-operational mind). The child starts to transfer its central identity to verbal and mental realms. Usually, between 4 and 7 years of age, the child starts to discover the world and its conceptual representations. A concept is a symbol that not only represents the object or an action, but also a class of objects or actions. Although children still cannot operate or coordinate upon these conceptual representations in this phase, they already have a fairly coherent mental ego which differs from the body, transcends the simple biological world and can hence operate to a certain extent in said biological world as well as in the previous physical world, using the instrument of the simple representative mind. It is the level that Piaget calls "preoperational intuitive".

In our hypothesis, this stage is equivalent to cycle B-4 (and B-5), which develops between 3.6 and 6 years and leads to the emergence of the *Vishudha chakra*, whose characteristic theme is "psychological expression". The correspondence is yet again much more than acceptable.

Mid egoic/personic stage. (Concrete operational mind). The trend pointed out in the previous cycle is consolidated as a whole with the emergence —generally from the age of 7 years onwards— of what Piaget calls "concrete operational thinking". That is, the conviction of being able to operate in both the concrete and bodily world by means of concepts. This mental level, which dominates the ego/person mid stage, is not capable of imagining possible or hypothetical relationships, and still cannot operate upon itself. Nevertheless, unlike its predecessor —the representative mind—, the concrete operative mind can start to assume the place or *role* of others. It is also the first structure that can really start to develop regulated operations, such as multiplications, divisions, classifications, the capacity to create hierarchies and so on.

This phase corresponds to cycle B-5 (and B-6) of our table of rhythms, which develops between 5.9 and 9.3 years of age and leads to the emergence of the *Ajna chakra*, whose central feature is "intellectual life". The matching is once again very clear.

Advanced ego/personic stage (Formal operational mind). Within the period of adolescence, later ego/person stage, another extraordinary differentiation starts to take place. Basically, the self simply begins to diversify from the concrete thinking process. On doing so, the self can, to a certain extent, transcend this process and thus operate in it. It is not surprising, therefore, that Piaget calls this stage the "formal operational stage", as it enables one to operate upon one's own concrete thinking —to think about thoughts—, or, in other words, to work with formal or linguistic objects as well as with physical or concrete objects. It is the first clearly introspective and self-reflective level, which is able deal with the subjective mind and is capable of imagining possibilities that are not present, at the same time as carrying out hypothetical-deductive or propositional reasoning. Among other

things, this enables the individual to adopt different points of view which are plural and universal. This stage starts to emerge around 12 or 13 years of age.

In his book *Up from Eden*, Ken Wilber divides this "advanced egoic/person" period we are discussing here into three phases: **lower** (that spans from Old Age to 500 BC), **middle** (from 500 years BC to 1500 AD) and **upper** from 1500 to the XX century), all three of which exactly correspond to cycles B-6, B7 and C-1 of our hypothesis.
The **lower** phase of this stage of "formal operational thinking" corresponds, as we have just stated, in our hypothesis of rhythms to cycles B-6 (and B-7), which develop between 9.3 and 14.3 years of age —exactly coinciding with the emergence of this modality of thinking in the adolescence— bringing with it, the emergence of the *Sahasrara chakra*, whose main feature revolves around "spiritual energy", which appeared in the "axial age", in clear consonance with the self-reflective, introspective and subjective capacities of this level. Correspondence is once again very clear.

The **middle** phase of this stage of "formal operative thinking", as stated, corresponds in our pattern of rhythms with cycle B-7 (and C-1), which develops between 14.3 and 21.9 years of age and leads to the emergence of the *Muladhara chakra*, whose central theme is related to the achievement of material objectives in a primordially materialistic world. All this perfectly matches the transition from "idealism", typical of youth, to "pragmatism", typical of incipient maturity. It is here when —in line with Wilber's opinion—the "return" route commences.

The upper phase of this stage of "formal operative thinking" —which Wilber refers to as the "mature ego"—, corresponds, as mentioned, to cycle C-1 (and C-2), which develops between 21.9 and 29.5 years of age and leads to the emergence of the *Svadhistana chakra*, whose main characteristic is the conservation and spreading of life. All of this is clearly in consonance with the growing ecological sensitivity of this stage of life.

In cycle C-2, between the age of 29.5 and 32, the individual develops what is called the "pluralist mind", which places emphasis on relationships, dialogue, networking, diversity, multiculturalism, the revitalizing of values relativity, respect and care for life, all of which define, in general, the emerging ecological paradigm. We are thus entering a higher cognitive structure to formal operative thinking. This new level, which has been called "integrative", "creative synthetic" or "vision-logic", is not limited to establishing linear relationships, but organizes networks of relationships. This means that, just as the formal operative mind "operates with" the concrete operative mind, the vision-logic mind "operates with" the formal operative mind. The panoramic vision-logic level thus apprehends a massive network of ideas, in addition to its mutual ideas and interrelationships. This structure constitutes the onset of a higher capacity to synthesize, establish connections, establish relationships between truths, coordinate ideas and integrate concepts.

According to our hypothesis, this new cognitive structure will deploy collectively in cycle C-3, which will start to emerge in a century's time, and in individual human beings may flourish around 32 years of age. Verification of all this, as well as the forecasts of successive cycles will have to await future generations. What can be deduced from our periodic table is that around 2217, human beings around the age of 33 —like Buddha and Christ— will be able to attain full spiritual realization at the peak of evolution. At the end of the road, definitive Reality will be revealed, which, far from simply being yet another stage, will surprisingly be revealed to be the very substance of all the transited stage. That is to say, there will not be a new level, but we will perceive that in fact we have never left this total Reality that is, and always has been, our ultimate Identity.

Some final observations

Having tested our hypothesis of developmental and evolutionary rhythms' with both the data referring to the macrocosm ——paleontological, anthropological and historical— and with the microcosm —embryologic and psychological—, and having verified the absolute precision of the forecasts, both in terms of the chronology of the cycles and their content —matching the hierarchy of the *chakras*—, it is obvious that we cannot talk of "fortuity". It does not have anything to do with chance, and we can categorically state that there is something fishy going on in Evolution.

From the materialistic paradigm, all of this seems inconceivable. It does not coincide at all with many of the core dogmas of official science. However, the facts are there and it is not possible to ignore the evidence. From this platform, I invite anyone that wishes to do so to seek an explanation to this massive avalanche of closely coordinated chained "coincidences" in diverse fields.

Let us now telegraphically outline our "philosophical" proposal so as to understand the ultimate significance of all that we have discussed so far.

All manifested reality appears, inextricably, in the form of dualities. No form of expression is possible outside this play of the opposites. We cannot find sound without silence, subject without object, inside without outside, and so on. All opposites are mutually dependent and therefore we can understand them as polar manifestations of a reality that transcends them and that is "prior" to this duality itself.

In the various graphs that we have used, for example Fig. 7-A and 7-B, we can see how the course of evolution starts at a pole of maximum energy (and practically no consciousness at all) and ends at another pole of maximum consciousness (and practically null energy). Physicists talk about an infinite potential energy amidst the original quantum void, while sages talk about a clear infinite consciousness in the final mystical void. We propose that these two voids are the same and unique Void, perceived by physicists objectively and by contemplative people subjectively, which in itself, is neither objective nor subjective, but "prior" to that dual perspective. And the most fascinating thing of all is that this Void is not a distant metaphysical reality, but the simple and pure Self-evidence of each and every present moment.

As there is no separation between subject and object in this Self-evidence, it is not possible *see it*, because there is not "anything" that could be seen by "someone", but neither is it "nothing", because in fact all things in the universe —both objective and subjective— are mere partial and relative forms of this Self-evidence. And although it is, therefore, unutterable, unexplainable, we may point to It, talking about the empty, self-luminous plenitude.

In order to be able to "see" Self-Evidence, it needs to polarize Itself, at least apparently in subject and object, the same as 0 may become dual in +1 and -1 without changing, other than formally, its absolute value. We say this because our ultimate proposal is that, in order for Self-Evidence to contemplate Itself, it apparently splits in two poles: the original (basically, energy) and the final (basically, consciousness), generating an illusory distance among them which, on vibrating —like the guitar string in our hypothesis— gives rise to a whole scale of harmonics, which are precisely the levels of stability that create the evolutionary cycles that we have discussed here which span the entire range, from the most basic —of enormous energy and little consciousness—to the highest —of little energy and enormous consciousness—, that harmoniously channel the so-called game of chance. (Note the parallelism between the hypothesis we are proposing here and "superstring

theory", although the scope of application in our case is not simply reduced to the world of microphysics, but embraces the entire spectrum of reality).

If we see the things from this perspective, the entire avalanche of "coincidences" that we have revealed here, which are totally unacceptable for the materialistic worldview, are shown to be natural manifestations of That-Which-Is. Or the teleological character of evolution, so denigrated by official science, is understood here as the logical expression of the fundamental structure of what is Real. Or the progressive emergence of consciousness, which is often completely forgotten in many branches of sciences, is presented in our non-dualistic approach as a simple appearance of the infinite lucidity of the ever-present Self-Evidence. Is it not time already to change the paradigm?

Fondest regards to all,

José

P.S. A first approach of the hypothesis presented here was published in 1993 by the journal of general evolution *World Futures* Vol. 36, pp. 31-56, edited by Ervin Lazlo under the title *A hypothesis on the Rhythm of Becoming*.

Three years later, Ed. Kairós edited and published a new corrected and expanded version of the same hypothesis under the title *Entre la evolución y la eternidad* (*Between Evolution and Eternity)* in which it emphasized its inclusion in the new sciences of Evolution.

In 2008, Ed. Dilema published another paper entitled *Siendo nada, soy todo (Not being anything, I am everything)* in which I attempted to study the ultimate implications of the hypothesis from the viewpoint of perennial philosophy and the non-dualistic mystics.

I have recently made some adjustments to the periodic table of our hypothesis that have generated new confirmations of its validity, and therefore we think that it is convenient to offer it to the general public. And here it is… *Beyond Darwin*.

Addendum: coincident research

Some readers of the present article have raised doubts as to whether the sequence of evolutionary and historical cycles we have presented here may not have been somewhat forced to make it coincide with the forecasts of our hypothesis. On our part, we think that the series of selected milestones, grouped together in the form of blocks (Palaeontology –Kingdom: animal, Phylum: Chordata, Class: Mammals, Order: Primates, Superfamily: Hominoids, Family: Hominids, and Genus: *Homo–,* Palaeoanthropology *–H. habilis, H. erectus, Archaic H. sapiens, H. sapiens and H. sapiens sapiens–* and History –Neolithic, Ancient Age, Middle Ages, Modern Age and Postmodern Age–), is solid and coherent enough for there to be no kind of trick or manipulation involved. Nonetheless, in order to clarify any doubts, we shall now attempt to confirm our proposal by presenting some key points in the work of three researchers who have analyzed the phenomenon of evolutionary acceleration independently and from different perspectives –Russian astrophysicist Alexander D. Panov, French palaeontologist Jean Chaline and American computer scientist Carter V. Smith–, whose proposals are fully in tune with the pattern of rhythms we have outlined in this article. Let us see.

Alexander D. Panov repeatedly treats the subject in a number of studies. The information we shall contribute here is specifically taken from a couple of articles of his that can be consulted on the Internet. One is entitled: "*¿Punto de bifurcación evolutivo?*" (Evolutionary Bifurcation Point?) (published in Spanish by LeonAlado.org), and the other: "*Scaling Law of the Biological Evolution and the Hypothesis of the Self-Consistent Galaxy Origin of Life*".

Panov holds that the evolution of the Earth's biosphere has passed through a series of stages with phase transitions between them, which he calls biosphere revolutions. He lists a sequence of 19 such revolutions, indicating their approximate dates and their main features. (At each stage, we in turn will indicate the correspondence of each one of these with our pattern of cycles). Let us see the complete list:

0. 3,800 million years ago. Emergence of life on Earth / Prokaryotes. [Period leading up to the 1st node of cycle A-1]

1. 1,500 million years ago. Oxygen crisis / Aerobic lifeforms / Eukaryotes / Neoproterozoic revolution. [Period leading up to the 2nd node of cycle A-1]

2. 590/510 million years ago. Palaeozoic Era begins / Cambrian explosion / Vertebrates. [Period leading up to the 2nd node of cycle A-2]

3. 235 million years ago. Mesozoic begins / Revolution of reptiles. [Period leading up to the 2nd node of cycle A-3]

4. 66 million years ago. Cenozoic Era begins / Revolution of mammals and birds. [Period leading up to the 2nd node of cycle A-4]

5. 25/20 million years ago. The Neogene period begins / Hominoid revolution. [Period leading up to the 2nd node of cycle A-5]

6. 5/4 million years ago. The Anthropogene period begins / Quaternary era / First hominids appear. [Around the 2nd node of cycle A-6]

7. 2/1.6 million years ago. Olduvai / *Homo habilis* / Palaeolithic revolution. [Around the 2nd node of cycle A-7]

8. 0.7/0.6 million years ago. Shell / *Homo erectus* / Settlement of Europe and Asia. [Around the 2nd node of cycle B-1]

9. 0.4/0.22 million years ago. Achel / Archaic *Homo sapiens*. [Stage between the nodes of cycle B-2]

10. 150/100 thousand years ago. Mustie / *Homo sapiens* / Cultural revolution of the Neanderthals. [Stage between the nodes of cycle B-3]

11. 40 thousand years ago. Revolution of the Upper Palaeolithic / *Homo sapiens sapiens* / Cultural revolution of the Cro-Magnons. [Stage between the nodes of cycle B-4]

12. 12/9 thousand years ago. Neolithic revolution. [Period leading up to the 2nd node of cycle B-5]

13. 4000/3000 BC. Revolution of cities / Ancient Age begins. [Around the 1st node of cycle B-6]

14. 800/500 BC. Revolution of the axial era / Iron Age / Age of Empires. [Around the 2nd node of cycle B-6]

15. 400/600 AD. The Middle Ages begin. [Around the 1st node of cycle B-7]

16. 1450/1550 AD. First Industrial Revolution / Modern Age begins. [Period leading up to the 1st node of cycle C-1]

17. 1830/1840 AD. Second Industrial Revolution / Steam engine and electricity. [Period leading up to the 2nd node of cycle C-1]

18. 1950 AD. Computer science revolution / Post-Industrial Age begins. [Period leading up to the 1st node of cycle C-2]

We thus see that of the 19 biosphere and historical revolutions posited by Panov, 13 coincide fully with the rhythm of the cycles of our hypothesis, while the remaining 6 revolutions fully fit in with the pairs of nodes of 3 of our other cycles [“prokaryotic - eukaryotic” in cycle A-1, “urban revolution - axial revolution” (Ancient Age) in cycle B-6 and “first industrial revolution - second industrial revolution” (Modern Age) in cycle C -1], which Panov considered separately. We can therefore say that the coincidence is almost complete and, therefore, given that the research was carried out completely independently, we believe the circumstance to be truly significant and decisive.

Jean Chaline, in the paper entitled “*L’arbre de la vie a-t-il une structure fractale?*” (jointly authored by Laurent Nottale and Pierre Grou and also freely available on the Internet), studies the time sequences of the great evolutionary leaps in the global tree of life. In Table I (and Figure 1), he

summarizes the list of dates and features of these leaps up until the appearance of primates, while, in Table IV (and Figure 6), he goes on to list the major transformations that have occurred throughout the process of humanization of primates. The combined series would thus be something like as follows:

1. 3,500 ± 400 million years ago. Emergence of life / First prokaryotic cells. [Period leading up to the 1st node of cycle A-1]

2. 1,750 ± 250 million years ago. First eukaryotic cells. [Period leading up to the 2nd node of cycle A-1]

3. 1000 ± 100 million years ago. Multicellularity. [Period leading up to the 1st node of cycle A-2]

4. 570 ± 30 million years ago. Exo-skeletons. [Period leading up to the 2nd node of cycle A-2]

5. 380 ± 30 million years ago. Tetrapods / First tetrapod with lungs. [Period leading up to the 1st node of cycle A-3]

6. 220 ± 20 million years ago. Homeothermy / First mammals. [Period leading up to the 2nd node of cycle A-3]

7. 120 ± 20 million years ago. Viviparity / First marsupials and placentals. [Period leading up to the 1st node of cycle A-4]

8. 65 ± 5 million years ago. First primate / Prosimians. [Period leading up to the 2nd node of cycle A-4]

9. 40 ± 5 million years ago. First anthropoid ancestor / Simians. [Period leading up to the 1st node of cycle A-5]

10. 20 ± 2 million years ago. Proconsul / Apes. [Period leading up to the 2nd node of cycle A-5]

11. 10 ± 1.5 million years ago. Common ancestor P/G/H. [Around the 1st node of cycle A-6]

12. 5 ± 1 million years ago. Australopithecus. [Around the 2nd node of cycle A-6 or around the 1st node of cycle A-7]

13. 2 ± 0.3 million years ago. First *Homo*. [Around the 2nd node of cycle A-7]

14. 0.18 ± 0.02 million years ago. Modern man / *Homo sapiens*. [Period leading up to the 1st node of cycle B-3]

We thus see that the first 13 evolutionary leaps that appear in this list correspond accurately, one by one, with all the nodes in our series A, except for number 12, which includes the 2nd node of cycle A-6 and the 1st node of cycle A-7. We can therefore affirm that the coincidence is once again practically complete. It is therefore not surprising that when the Chaline calculates the ratio between the durations of successive stages, he obtains an average value which, as he himself states –in his article "*La relativité d'echelle dans la morphogenèse du vivant: fractal, déterminisme et hasard*"–,

seems to be, both generally and comprehensively, near to the square root of 3 (1.736 ± 0.013), which is completely in tune with our proposal, since, given that each one of our cycles has two nodes, applying this number (√3) twice, we obtain: √3 x √3 = 3, which, as we recall, is precisely and exactly the ratio between the durations of the successive cycles in our hypothesis! Can anyone believe that all this is coincidence?

Carter V. Smith has comprehensively studied the phenomenon of evolutionary acceleration on his two web pages: "*Twelve Stage Vision*" and "*Acceleration Evolution*". From an integral perspective, he outlines a model of 12 grouped stages, three by three, in four eras –Body, Emotion, Mind and Spirit–, which reveals the exponential acceleration of human evolutionary development. We shall now summarize the entire series, which includes the approximate duration of each stage, in powers of 10, its main feature and the respective correlation with the cycles of our hypothesis:

S1. Since the origin of the universe to 5,000 million years ago. Matter / Big Bang → organic matter. [From the Big Bang to the origin of cycle A-1]

S2. From 5,000 to 500 million years ago. Cells / Organic matter → vertebrates. [From the origin of cycle A-1 to the origin of cycle A-3]

S3. From 500 to 50 million years ago. Animals / Vertebrates → simians. [From the origin of cycle A-3 to the origin of cycle A-5]

S4. From 50 to 5 million years ago. Mammals / Prosimians → Australopithecus. [From the origin of cycle A-5 to around the origin of cycle A-7]

S5. From 5 to 0.5 million years ago. Hominids / Australopithecus → *Homo erectus*. [From around the origin of cycle A-7 to around the 1st node of cycle B-2]

S6. From 500,000 to 50,000 years ago. Archaic man / *Homo erectus* → *Homo sapiens sapiens*. [From around the 1st node of cycle B-2 to around the 1st node of cycle B-4]

S7. From 50.000 to 5.000 years ago. Magic / *Homo sapiens sapiens* → Ancient Age. [From around the 1st node of cycle B-4 to around the 1st node of cycle B-6]

S8. From 5.000 to 500 years ago. Mythical / Middle Ages → Modern Age. [From around the 1st node of cycle B-6 to around the 1st node of cycle C-1]

S9a. From 500 years ago. Rational-individualistic.

S9b. Currently emerging. Rational-pluralistic.

S9c. In the near future. Rational-integral.

S10. Integral-spiritual, **S11.** Subtle-spiritual and **S12.** Causal-spiritual will unfold in an accelerated way during the next century and a half.

We thus see that each of the stages that Smith proposes includes, time and time again and in all cases, two complete cycles of our pattern of time. For that reason, as the duration of each cycle in

our hypothesis is exactly one third of that of the previous one, if we consider stages that comprise a couple of these cycles –as Smith does–, the ratio between their durations will be: 3 x 3 = 9, which is obviously very close to 10, the value this American researcher uses in an approximate way, in his evolutionary scheme. Once again, therefore, there is practically complete coincidence between the evolutionary path outlined in "Twelve Stage Vision" and our hypothesis, and it is no wonder Smith situates the end stop –Omega– of the evolutionary spiral around the year 2150, not very far from our 2217.

In conclusion, given the enormous coincidences between the investigations of Panov, Chaline, Smith and my own, all carried out independently and from very different approaches, it seems evident that we have unexpectedly discovered a very precise evolutionary pattern within the apparently random dynamics of the universe. It is obvious, therefore, that, given the scope and profound implications of this discovery, a host of novel perspectives now open up. So from here, as we stated in the Introduction, all readers are invited to investigate the suggestive paths that are beginning to appear. We may thus possibly discover that the reality is much more fascinating than we could ever have imagined.

Addendum 2: Further coincident research

When I started to develop this evolutionary hypothesis back in the early 1980s, it was truly upsetting to realize the utter solitude in which I found myself. I felt I had discovered something truly valuable and yet could not find others with whom to share the discovery and compare opinions. There were times when I was even tempted to throw in the towel. Repeatedly, however, the intuition that what I had found was worth the effort gave me strength to keep working on it.

In recent years, though, the picture has changed completely thanks to the enormous possibilities offered by the Internet. It has been a wonderful surprise and great joy for me to repeatedly find references to numerous authors who, from very different perspectives, put forward very similar ideas to those I had been proposing for many years.

To highlight these obvious similarities between research carried out from very different fields, we shall next present a chart (Fig. 10) which aims to summarize the proposals of a significant number of authors who have studied this clamorous phenomenon of evolutionary acceleration, in line with our own work.

This chart will naturally include the three researchers cited in the previous Addendum –Alexander Panov, Jean Chaline and Carter Smith–, as well as the other two –André de Cayeux and Ervin Laszlo– cited in our article. We shall also include the proposals by the Greek physicist and futurist Theodore Modis, author of the article entitled *Forecasting the Growth of Complexity and Change*; the North American electrical engineer Richard L. Coren, author of *The Evolutionary Trajectory*; the American engineer, inventor and futurist Ray Kurzweil, author of *The Singularity is Near*; the Swedish software engineer Nick Hoggard, author of *Evolution and the Feigenbaum Number*; and

that of the Spanish biologist Miguel García Casas, author of *Teoría de la vida embarazada y la reproevolución* [Theory of Pregnant Life and Reproevolution].

It is truly wonderful to see the myriad similarities between the lists of the major evolutionary milestones proposed in all these works, to the degree that the charts that represent them –whether linear or logarithmical– are virtually identical in all cases. There is just a very slight difference –of only one or two centuries– regarding the date of the final pole towards which the trajectories lead. Yet what are a hundred or two hundred years after a journey of more than 13,500 million years?

Clear differences of opinion do exist among these authors, however, concerning the valuation of this final pole of infinite evolutionary acceleration. From our point of view, it is a "singularity" of the same calibre as that of the initial instant of the Big Bang. If this original pole basically consisted in an *explosion* in the field of "energy", the final pole towards which we are precipitously heading will essentially consist in an *implosion* in the field of "consciousness". Note, however, as stated in the last paragraph of this article, both aspects – "energy" and "consciousness"– are not two different realities, but polar aspects of one and the same unique Emptiness, the objective and subjective aspects of ever-present, simple and full Self-evidence. Thus, from our point of view, the "trick" of evolution and of history will be definitively revealed at this forthcoming final instant. That is, the entire trajectory from the Big Bang to today has occurred in this eternal Now that we in fact are. It will thus be made manifest that our life has not been a mere fleeting fragment in the midst of an endless process, but that we have, in fact, always been the pure, timeless Self-evidence in which all worlds have happened, happen and will happen. There has been no "before". There will be no "after". There is only Now. Is it not self-evident?

Attention, though! Of course, that final moment will not be a mere subjective experience achieved by some enlightened individuals. As we have seen, there is truly no subjectivity without objectivity, nor individuals truly separated from their universal environment. Therefore, the final experience will be simultaneously interior and exterior, both individual and collective. As it is now. As it has always been. (The following Addendum 3 will outline the evolutionary scenario from this integral approach).

A		J.D. FAIXAT	A. PANOV	C. SMITH	J. CHALINE	A. DE CAYEUX	E. LASZLO	T. MODIS	R. COREN	R. KURZWEIL	N. HOGGARD	M.G. CASAS
...		BIG BANG ... ORGANIC MOLECULE	...	(BIG BANG) MATTER (ORGANIC MOLECULE)	...	...	...	BIG BANG ... SOLAR SYSTEM	BIG BANG ...	...	BIG BANG ...	...
A-1	1st NODE	PROKARYOTES (KINGDOM: ANIMAL)	PROKARYOTES	CELLS (VERTEBRATES)	PROKARYOTES			FIRST LIFE	PROKARYOTIC LIFE	LIFE	SELF REPRODUCING FORMS OF LIFE	PROKARYOTES
	2nd NODE	EUKARYOTES	EUKARYOTES		EUKARYOTES					EUKARYOTES		EUKARYOTES
A-2	1st NODE	MULTICELLULAR LIFE (PHYLUM: CHORDATE)	(CAMBRIAN EXPLOSION) VERTEBRATES		MULTICELLULARITY			FIRST MULTICELLULAR LIFE	EUKARYOTIC RADIATION	CAMBRIC EXPLOSION	SEXUAL REPRODUCTION	MULTICELLULAR
	2nd NODE	VERTEBRATE FISH			EXO-SKELETONS			CAMBRIAN EXPLOSION		REPTILES		COELOMATES FISHES
A-3	1st NODE	REPTILES (CLASS: MAMMAL)	REVOLUTION OF REPTILES	ANIMALS	TETRAPODS			FIRST MAMMALS	APPEARANCE OF CLASS MAMMALIA	CLASS MAMMALIA	MAMMALS	AMPHIBIANS REPTILES
	2nd NODE	PRIMITIVE MAMMAL			HOMEOTHERMY							MAMMALS
A-4	1st NODE	P. PLACENTALS (ORDER: PRIMATE)	REVOLUTION OF MAMMALS	(PROSIMIANS)	VIVIPARITY			FIRST PRIMATES	APPEARANCE OF SUPERFAMILY HOMINOIDEA	ORDER PRIMATE	PRIMATES	PROSIMIANS
	2nd NODE	PROSIMIAN			PROSIMIANS							
A-5	1st NODE	MONKEY (SUPERFAM.: HOMINOID)	REVOLUTION OF HOMINOIDS	MAMMALS	SIMIANS			FIRST ORANGUTAN		SUPERFAMILY HOMINOIDEA	GREAT APES	MONKEYS
	2nd NODE	GREAT APES			GREAT APES COMMON ANCESTOR P/G/H							
A-6	1st NODE	HOMINIDAE (FAMILY: HOMINID)	REVOLUTION HOMINIDS					FIRST HOMINIDS	APPEARANCE OF FAMILY HOMINIDAE	FAMILY HOMINIDAE		PONGIDS
	2nd NODE	HOMININI										
A-7	1st NODE	AUSTRALOPITHECUS (GENUS: HOMO)	PALEOLITHIC REVOL. HOMO HABILIS	(AUSTRALOPITHECUS)	AUSTRALOPITHECUS			FIRST STONE TOOLS	APPEARANCE OF GENUS HOMO	BIPEDAL ANCESTOR	HOMO HABILIS	AUSTROLOPITHECINES
	2nd NODE	HOMO HABILIS		HOMINIDS	FIRST HOMO					GENUS HOMO		
B-1	1st NODE	(I.L. MODE 1)	HOMO ERECTUS		HOMO SAPIENS	INITIAL LITHIC CULTURE		DEVELOPMENT OF SPEECH	APPEARANCE OF ARCHAIC HOMO SAPIENS	SPOKEN LANGUAGE	ARCHAIC HOMO SAPIENS	HOMO ERECTUS
	2nd NODE	HOMO ERECTUS										
B-2	1st NODE	(I.L. MODE 2)	ARCHAIC H. SAPIENS	(H. ERECTUS)		CHELLEAN ACHEULEAN		DISCOVERY OF FIRE				H. SAPIENS NEANDERTHAL
	2nd NODE	ARCHAIC H. SAPIENS		ARCHAIC MAN								
B-3	1st NODE	(I.L. MODE 3) HOMO SAPIENS	HOMO SAPIENS (REV. OF NEANDERTHAL)			LEVALLOISIAN MOUSTERIAN		EMERGENCE OF "MODERN HUMANS"		HOMO SAPIENS		
	2nd NODE	(NEANDERTHAL)										
B-4	1st NODE	(I.L. MODE 4) H. SAPIENS SAPIENS	H. SAPIENS SAPIENS (REV. OF CROMAGNON)	(H. SAPIENS SAPIENS)		AURIGNACIAN MAGDALENIAN	NOMADIC HUNTER-GATHERER SOCIETY	ROCK ART	APPEARANCE OF H. SAPIENS SAPIENS	H. SAPIENS SAPIENS	HOMO SAPIENS SAPIENS	HOMO SAPIENS SAPIENS
	2nd NODE	(CROMAGNON)		MAGIC								
B-5	1st NODE	(I.L. MODE 5) MESOLITHIC	NEOLITHIC REV.			MESOLITHIC POLISHED STONE	AGROPASTORAL SOCIETY SETTLEMENTS	AGRICULTURE	DEVELOPMENT OF COMMUNAL VILLAGES	ART		
	2nd NODE	NEOLITHIC								AGRICULTURE		
B-6	1st NODE	CIVILIZATION (ANCIENT TIME)	REVOLUTION OF CITIES	(ANCIENT AGE)		METAL AGES	AGRICULTURAL SOCIETY	WRITING	DEVELOPMENT OF WRITING	WRITING	FIRST CIVILIZATION	
	2nd NODE	AXIAL AGE	REV. OF AXIAL ERA	MYTHICAL				DEMOCRACY		CITY-STATES		
B-7	1st NODE	PATRISTICISM (MIDDLE AGES)	MIDDLE AGES				PRE-INDUSTRIAL FEUDAL SOCIETY	CHRISTIANITY				
	2nd NODE	SCHOLASTICISM						GUNPOWDER		PRINTING		
C-1	1st NODE	EMPIRICISM (MODERN AGE)	1ST INDUSTRIAL REV.	(MODERN AGE)		RENAISSANCE MACHINISM	INDUSTRIAL SOCIETY	RENAISSANCE	DEVELOPMENT OF PRINTING		FIRST TECHNOLOGICAL REVOLUTION	
	2nd NODE	POSITIVISM	2ND INDUSTRIAL REV.	RATIONAL				INDUSTRIAL REVOL.		INDUSTRIAL REVOL.	INDUSTRIAL REVOL.	
C-2	1st NODE	ECOLOGY (POSTMODERN AGE)	COMPUTER SCIENCE REVOLUTION			ATOMIC AGE	POST-INDUSTRIAL SOCIETY	MODERN PHYSICS DNA	DEVELOPMENT OF DIGITAL ELECTRONICS	ELECTRICITY COMPUTER	INVENTION OF COMPUTER WWW	
	2nd NODE							INTERNET		PERSONAL COMPUTER		
C-3	1st NODE			INTEGRAL								
	2nd NODE											
...	...	...	...	...	...	...	...	...	...	...	...	...
Ω		YEAR 2217	YEAR 2027	YEAR 2150	YEAR 2050 / 2110	YEAR 2100		YEAR 1990	YEAR 2140	YEAR 2045	YEAR 2004	

FIGURE 10

Addendum 3: Integral evolution

Throughout this article, we have analyzed the evolutionary rhythm of both the global "macrocosm" –the human phylogeny– and the individual "microcosm" –our own ontogeny– in their respective and similar trajectories, from the original pole, basically energetic –exterior–, until the final pole, basically conscious –interior–. These four aspects –individual/collective, interior/exterior– have been present in each stage of the evolutionary path, as they all imply one another. None of them could take place without the presence of all the others. Unfortunately, this evidence has not been demonstrated until very recently, while bias and sectarianism have produced a great deal of incomprehension and suffering throughout history.

The great integral thinker Ken Wilber has condensed virtually all of human knowledge in a simple chart that summarizes the entire history of evolution in its four aspects –individual, collective, exterior and interior– of an all-englobing and consistent way. It comprises a simple diagram with four quadrants, in which "individual" aspects are located at the top, "collective" aspects at the bottom, "exterior" aspects on the right and "interior" aspects on the left. Thus, the upper-left quadrant describes the interior-individual process (the conscious self); the upper-right quadrant, the exterior-individual process (the energy organism); the lower-left quadrant, the interior-collective process (the cultural perspective); and the lower right quadrant, the exterior-collective process (the social system).

All the evolutionary levels displayed throughout the history of the universe –the entire energy-consciousness spectrum– are reflected in each of the quadrants according to their specific aspects. In almost all his work, Wilber has placed greater emphasis on the exhaustive study of the interior (psychological and spiritual) spheres. On the other hand, the authors mentioned in the previous Addenda have found it easier to resort to exterior forms when investigating the rhythm of evolution based on paleontological and anthropological data. It seems clear that the integration of both bodies of work can be extremely fruitful for all. We shall thus attempt to express the results of our research in a diagram (Fig. 11) similar to that of Wilber's four quadrants. We believe that, in this way, we can provide greater precision in the definition of the levels of the energy-consciousness spectrum.

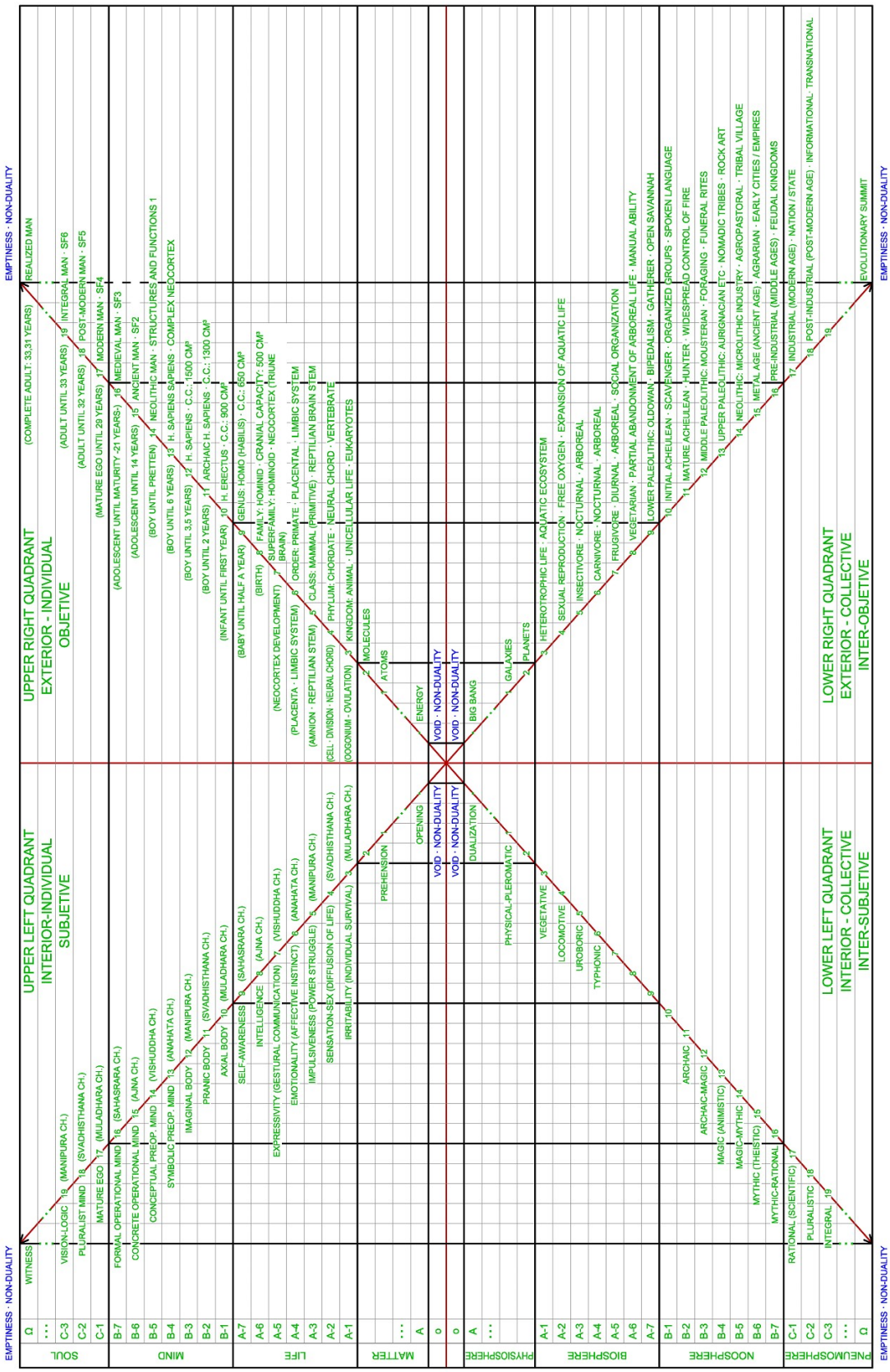

EMPTINESS · NON-DUALITY
UPPER LEFT QUADRANT
INTERIOR-INDIVIDUAL
SUBJETIVE
UPPER RIGHT QUADRANT
EXTERIOR - INDIVIDUAL
OBJETIVE
LOWER LEFT QUADRANT
INTERIOR - COLLECTIVE
INTER-SUBJETIVE
LOWER RIGHT QUADRANT
EXTERIOR - COLLECTIVE
INTER-OBJETIVE
SOUL
MIND
LIFE
MATTER
PHYSIOSPHERE
BIOSPHERE
NOOSPHERE
PNEUMOSPHERE
Ω
WITNESS
C-3 VISION-LOGIC 19 (MANIPURA CH.)
C-2 PLURALIST MIND 18 (SVADHISTHANA CH.)
C-1 MATURE EGO 17 (MULADHARA CH.)
B-7 FORMAL OPERATIONAL MIND 16 (SAHASRARA CH.)
B-6 CONCRETE OPERATIONAL MIND 15 (AJNA CH.)
B-5 CONCEPTUAL PREOP. MIND 14 (VISHUDDHA CH.)
B-4 SYMBOLIC PREOP. MIND 13 (ANAHATA CH.)
B-3 IMAGINAL BODY 12 (MANIPURA CH.)
B-2 PRANIC BODY 11 (SVADHISTHANA CH.)
B-1 AXIAL BODY 10 (MULADHARA CH.)
A-7 SELF-AWARENESS 9 (SAHASRARA CH.)
A-6 INTELLIGENCE 8 (AJNA CH.)
A-5 EXPRESSIVITY (GESTURAL COMMUNICATION) 7 (VISHUDDHA CH.)
A-4 EMOTIONALITY (AFFECTIVE INSTINCT) 6 (ANAHATA CH.)
A-3 IMPULSIVENESS (POWER STRUGGLE) 5 (MANIPURA CH.)
A-2 SENSATION-SEX (DIFFUSION OF LIFE) 4 (SVADHISTHANA CH.)
A-1 IRRITABILITY (INDIVIDUAL SURVIVAL) 3 (MULADHARA CH.)
PREHENSION
OPENING
VOID · NON-DUALITY
DUALIZATION
PHYSICAL-PLEROMATIC
VEGETATIVE
LOCOMOTIVE
UROBORIC
TYPHONIC
ARCHAIC
ARCHAIC-MAGIC
MAGIC (ANIMISTIC)
MAGIC-MYTHIC
MYTHIC (THEISTIC)
MYTHIC-RATIONAL
RATIONAL (SCIENTIFIC)
PLURALISTIC
INTEGRAL
(COMPLETE ADULT: 33,51 YEARS) REALIZED MAN
(ADULT UNTIL 33 YEARS) 19 INTEGRAL MAN · SF6
(ADULT UNTIL 32 YEARS) 18 POST-MODERN MAN · SF5
(MATURE EGO UNTIL 29 YEARS) 17 MODERN MAN · SF4
(ADOLESCENT UNTIL MATURITY -21 YEARS-) 16 MEDIEVAL MAN · SF3
(ADOLESCENT UNTIL 14 YEARS) 15 ANCIENT MAN · SF2
(BOY UNTIL PRETTEN) 14 NEOLITHIC MAN · STRUCTURES AND FUNCTIONS 1
(BOY UNTIL 6 YEARS) 13 H. SAPIENS SAPIENS · COMPLEX NEOCORTEX
(BOY UNTIL 3,5 YEARS) 12 H. SAPIENS · C.C.: 1500 CM³
(BOY UNTIL 2 YEARS) 11 ARCHAIC H. SAPIENS · C.C.: 1300 CM³
(INFANT UNTIL FIRST YEAR) 10 H. ERECTUS · C.C.: 900 CM³
(BABY UNTIL HALF A YEAR) 9 GENUS: HOMO (HABILIS) · C.C.: 650 CM³
(BIRTH) 8 FAMILY: HOMINID · CRANIAL CAPACITY: 500 CM³
(NEOCORTEX DEVELOPMENT) 7 SUPERFAMILY: HOMINOID · NEOCORTEX (TRIUNE BRAIN)
(PLACENTA · LIMBIC SYSTEM) 6 ORDER: PRIMATE · PLACENTAL · LIMBIC SYSTEM
(AMNION · REPTILIAN STEM) 5 CLASS: MAMMAL (PRIMITIVE) · REPTILIAN BRAIN STEM
(CELL DIVISION · NEURAL CHORD) 4 PHYLUM: CHORDATE · NEURAL CHORD · VERTEBRATE
(OOGONIUM · OVULATION) 3 KINGDOM: ANIMAL · UNICELLULAR LIFE · EUKARYOTES
MOLECULES
ATOMS
ENERGY
VOID · NON-DUALITY
BIG BANG
GALAXIES
PLANETS
1 HETEROTROPHIC LIFE · AQUATIC ECOSYSTEM
2 SEXUAL REPRODUCTION · FREE OXYGEN · EXPANSION OF AQUATIC LIFE
3 INSECTIVORE · NOCTURNAL · ARBOREAL
4 CARNIVORE · NOCTURNAL · ARBOREAL
5 FRUGIVORE · DIURNAL · ARBOREAL · SOCIAL ORGANIZATION
6 VEGETARIAN · PARTIAL ABANDONMENT OF ARBOREAL LIFE · MANUAL ABILITY
7 LOWER PALEOLITHIC: OLDOWAN · BIPEDALISM · GATHERER · OPEN SAVANNAH
8 INITIAL ACHEULEAN · SCAVENGER · ORGANIZED GROUPS · SPOKEN LANGUAGE
9 MATURE ACHEULEAN · HUNTER · WIDESPREAD CONTROL OF FIRE
10 MIDDLE PALEOLITHIC: MOUSTERIAN · FORAGING · FUNERAL RITES
11 UPPER PALEOLITHIC: AURIGNACIAN ETC · NOMADIC TRIBES · ROCK ART
12 NEOLITHIC: MICROLITHIC INDUSTRY · AGROPASTORAL · TRIBAL VILLAGE
13 METAL AGE (ANCIENT AGE) · AGRARIAN · EARLY CITIES / EMPIRES
14 PRE-INDUSTRIAL (MIDDLE AGES) · FEUDAL KINGDOMS
15 INDUSTRIAL (MODERN AGE) · NATION / STATE
16 POST-INDUSTRIAL (POST-MODERN AGE) · INFORMATIONAL · TRANSNATIONAL
17 EVOLUTIONARY SUMMIT

FIGURE11

Addendum 4: Inner evolution

In Addenda 1 and 2, we have seen the great similarities between our hypothesis regarding the rhythm of evolution and the research of other authors who have also independently studied the surprising phenomenon of evolutionary acceleration from different perspectives. Almost all of these researchers have taken their data from the "objective" or "external" world.

In Addendum 3, we insisted that, in the phenomenal world, "objects" cannot exist without "subjects" or "outside" without "inside", as both aspects are mutually dependent. Inexorably so.

Therefore, in this Addendum 4 we shall refer specifically to a number of authors who have methodically studied "inner" dynamics, mainly in the field of developmental psychology. This scientific discipline chiefly studies the regularities that occur in the process of psychological development of human beings throughout their life cycle. The specific areas of study can be highly diverse –cognitive, moral, emotional, etc.–, yet in all cases, a detailed description is given of a number of very specific stages which humans sequentially pass through from birth to death given the appropriate circumstances. The existence of these successive stages is not at all mere speculation, but is based on data provided by a major body of research.

We would like to point out here that, as the field of research of developmental psychologists chiefly focuses on the process of human life from birth onward, the spectrum of reality these studies cover is hence restricted to only the last stages of evolution. In principle, it could be thought that this limitation might hinder our attempt to test the hypothesis that we are developing. However, the truth is that the abundance and accuracy of the data we have found has enabled us to carry out the test very easily with very positive results.

To describe the different "lines" or "currents" of development which are the subject of research in this field of psychology, Ken Wilber uses the analogy of a mountain which can be climbed via a number of routes. (We postulate that it is a stratified mountain, like Plank's "quanta", Gould and Eldrege's "punctuated equilibrium" or Mandelbrot's "fractals"). The landscapes spotted from each of these routes may be very diverse, but in all cases, the paths taken must inexorably pass through successive levels (in our words, strata) to access the summit. That is to say, all the lines or currents of development, each with its specific characteristics, advance along the same altitude gradient, defined by the degree of consciousness, in such a way that the higher the degree of consciousness, the higher the development of a particular line will be.

Wilber posits a graph –a "psychograph"– with the colours of the expanded visible electromagnetic spectrum –from infrared to ultraviolet and beyond– to define the different levels of development. He uses the same psychograph for all lines or currents, since, as already stated all progress through the same altitude gradient. Note, however, that altitude is simply a measure or a marker of something, yet, in itself, lacks any particular content. Similarly, consciousness, in itself, is not a concrete phenomenon, but the vacuum within which all phenomena emerge. Nor is it a specific line of development among many others, but rather the opening in which all the lines of development unfold. Thus, the degree of consciousness allows us to determine the height at which each of these lines passes at any given time.

As already stated, after analyzing the work of countless researchers of psychological development, Wilber has designed an integral chromatic altimeter that precisely defines the successive general levels through which the different lines pass. For instance, we may speak of orange cognition, an orange sense of identity, an orange vision of the world, etc. Thus, the "chromatic altimeter" shows the general similarities between the different lines or currents of development.

Dear reader, if you have followed what we have been explaining in this article so far, you may have noticed that our basic hypothesis is ultimately no other than a "sound altimeter" of overall evolution and individual development. As you will recall, we stated that, starting from the vibrating unity of original energy-consciousness –the dual appearance of ever-present Self-evidence–, the successive second harmonics generated the entire spectrum of "potential levels of stratified stability" which, as we have shown, channel the entire process of evolution and development. Amazingly, our "sound altimeter" exactly coincides with Ken Wilber's "chromatic altimeter" in its totality, level by level!!! Wilber's **infrared** corresponds to our **B-4**, **magenta** to **B-5**, **red** to **B-6**, **amber** to **B-7**, **orange** to **C-1**, **green** to **C-2**, **teal** to **C-3**, **turquoise** to **C-4, indigo** to **C-5**, **violet** to **C-6**, **ultraviolet** to **C-7** and **clear light** to **beyond series C**, i.e. beyond the transpersonal witness. All twelve levels!!! Full house!!!

In Figure 12, we have attempted to show the full correspondence between the stages in human life observed by developmental psychologists and the evolutionary levels proposed in our hypothesis. We have placed our "sound altimeter" on the left side of the chart, Wilber's "chromatic altimeter" on the right, and the names and areas of study of 15 of the most renowned researchers in human psychological development along the top: **Jean Piaget**, **Michael L. Commons** and **Francis A. Richards** (cognitive)**, Jean Gebser** and **Ken Wilber** (worldviews), **Abraham Maslow** (needs), **Clare W. Graves** and **Jenny Wade** (values), **Don E. Beck** and **Chris Cowan** (spiral dynamics), **Jane Loevinger** and **Susanne Cook-Greuter** (self-identity), **Lawrence Kohlberg** (morals), **James Fowler** (stages of faith) and **Robert Kegan** (orders of consciousness). The solidity of the resulting plot is almost complete. Fundamentally, in the section most investigated by these psychologists (between our steps B-4 and C-3), the coincidence between the stages posited by each of these authors and the levels indicated in the two reference altimeters (sound and chromatic) is overwhelming. It thus seems that our hypothesis passes (how could it not!) the test of "inner development" with honours. We insist: Can anyone honestly think that this is pure coincidence?

To illustrate the rapid emergence of these psychological stages along the course of the evolutionary and historical process, we had intended to use Wilber's chromatic altimeter. We have encountered, however, the problem of the lack of contrast between the colours representing the successive cycles –magenta, red, amber. etc.–, which makes it difficult to perceive successive phases and interfaces. So, finally, we have chosen to use the colours suggested in Spiral Dynamics, as in this case, cool tones alternate with warm, so the graph presents greater contrast and is therefore more expressive and clarifying. Obviously, the drawing is also applicable to any other line of development ... but without colours.

	J. PIAGET (M. COMMONS/ F. RICHARDS) COGNITIVE	J. GEBSER (K. WILBER) WORLDVIEWS	A. MASLOW NEEDS	C. GRAVES VALUES	D. BECK C. COWAN (J. WADE) SPIRAL DYNAMICS	J.LOEVINGER S. COOK-GREUTER SELF-IDENTITY	L. KOHLBERG MORAL	J. FOWLER STAGES OF FAITH	R. KEGAN ORDERS OF CONSCIOUSNESS	K. WILBER ALTITUDE
B-2 (LOWER PALEOLITHIC)	SENSORIMOTOR	ARCHAIC	PHYSIOLOGICAL SURVIVAL		SURVIVAL (BEIGE)	SYMBIOTIC	0 PRE-MORAL	0 UNDIFFERENTIATED	0 INCORPORATIVE	INFRARED
B-3 (MIDDLE PALEOLITHIC)		(ARCHAIC-MAGIC)								
B-4 (UPPER PALEOLITHIC)	PREOPERATIONAL (SYMBOLIC)	MAGIC								
B-5 (MESOLITHIC-NEOLITHIC)	PREOPERATIONAL (CONCEPTUAL)	(MAGIC-MYTHIC)	PHYSIOLOGICAL SATISFACTION	MAGIC-ANIMISTIC	KIN SPIRITS (PURPLE)	IMPULSIVE	1 OBEDIENCE AND PUNISHMENT	1 INTUITIVE-PROJECTIVE	1 IMPULSIVE	MAGENTA
B-6 (ANCIENT TIMES)	CONCRETE OPERATIONAL	MYTHIC	SAFETY	EGOCENTRIC	POWER GODS (RED)	SELF-PROTECTIVE	2 SELF-INTEREST	2 MYTHIC-LITERAL	2 IMPERIAL	RED
B-7 (MIDDLE AGES)	EARLY FORMAL OPERATIONAL	(MYTHIC-RATIONAL)	BELONGINGNESS	ABSOLUTISTIC	TRUTH FORCE (BLUE)	CONFORMIST	3 INTERPERSONAL ACCORD	3 SYNTHETIC-CONVENTIONAL	3 INTERPERSONAL	AMBER
C-1 (MODERN AGE)	FULL FORMAL OPERATIONAL	MENTAL RATIONAL	SELF-ESTEEM	MULTIPLISTIC	STRIVE DRIVE (ORANGE)	CONSCIENTIOUS	4 LAW AND ORDER	4 INDIVIDUAL-REFLEXIVE	4 INSTITUTIONAL	ORANGE
C-2 (POSTMODERN AGE)	(SYSTEMATIC)	(PLURALISTIC)	SELF-ACTUALIZATION	RELATIVISTIC	HUMAN BOND (GREEN)	INDIVIDUALISTIC	5 SOCIAL CONTRACT	5 CONJUNCTIVE	(4,5)	GREEN
C-3	(META-SYSTEMATIC)	APERSPECTIVIST INTEGRAL		SYSTEMIC	FLEX FLOW (YELLOW)	AUTONOMOUS	6 PRINCIPLED CONSCIENCE	6 UNIVERSALIZING	5 INTERINDIVIDUAL	TEAL
C-4	(PARADIGMATIC)				GLOBAL VIEW (TURQUOISE)	INTEGRATED				TURQUOISE
C-5	(CROSS-PARADIGMATIC)		(SELF-TRANSCENDENCY)		(TRANSCENDENT)	CONSTRUCT-AWARE				INDIGO
C-6					(UNITY)	EGO-AWARE				VIOLET

FIGURE 12

Let us then first outline a basic understanding of this transdisciplinary (bio-psycho-social-cultural) model of Spiral Dynamics, which has major similarities with our proposal. Subsequently, as already stated, we shall graphically express these correlations in Figure 13. Finally, we shall draw a very suggestive conclusion from all this.

Spiral Dynamics is rooted in the long-standing and thorough research of professor of psychology Clare W. Graves into the evolution of individuals and societies. Analyzing the different ways of thinking and ways of being of human beings, he identified a number of common patterns or basic value systems and integrated them into a multi-layered model of progressively complex levels. Graves held that the nature of human beings is an open system in constant evolution which advances by quantum leaps from a stationary state to another through a hierarchy of ordered, relatively stable systems, which unfurl spirally over the entire historical process of humankind from its beginnings to the present. He posited that these emergent stages are not rigid steps, but rather flowing, overlapping and interrelated waves, leading to the expansive spiral dynamics of individual and collective development, driven by their own internal dynamics and changing conditions of life. As it possesses a broader perspective and a more complex capacity for organization, each emergent wave "transcends and includes" –as Wilber puts it– all previous waves, acquires the maximum importance for a period of time and ultimately ends up being "transcended by and included in" a new, broader-ranging and more complex wave.

After Graves' death, his co-workers Don E. Beck and Chris Cowan continued to develop and corroborate their mentor's theoretical model and used it as the basis for their book *Spiral Dynamics: Mastering Values, Leadership, and Change.* These authors call the successive paradigms that define each of the eight basic levels of the spectrum "value memes" or "vMemes". As can be seen in Fig. 12, the eight levels of Spiral Dynamics exactly coincide, one by one, with all the cycles of our hypothesis between B-4 and C-4. It occurred to Beck and Cowan to identify each of these levels with a certain colour, thus facilitating the understanding and dissemination of their intelligent and effective model. The basic characteristics of these levels or colours are as follows:

Beige: Survival Instinct. Satisfaction of physiological needs. Impulsiveness. Biological automatism. Immediate action. [Nomadic hordes. "Savagery".]

Purple: Kin Spirits. Loyalty to the chief, the clan, tradition. Ethnocentric culture. Safety. Magic-animistic thinking. Superstitions. Taboos. Rituals to appease ancestral spirits. [Tribal settlements. "Barbarism".]

Red: Power Gods. Egocentric. The grandiose, impulsive, omnipotent Self. Triumph of the strong. Myths of heroes. Fighting. Conquest. Domination. Exploitation. Tyranny. [Ancient empires. "Enslavement".]

Blue: Truth Force. Absolutist thinking. Certainty. Existence ordered via a divine code. Regulations. Rules. Traditions. Obedience. Discipline. Guilt. Self-sacrifice. Deferred reward. Order. Stability. Conformism. Socio-centric culture. [Medieval kingdoms. "Feudalism".]

Orange: Strive Drive. Effort. Pragmatism. Empiricism. Positivism. Scientism. Strategy. Competition. Dynamism. Growth. Success. Results. Achievements. Free market. Material goods. Consumerism. Individualism. Autonomy. Control. [National states. "Capitalism".]

Green: Human Bond. Community Collaboration. Solidarity. Associative movements. Building of consensus. Relativism. Pluralism. Multiculturalism. The sensitive Self. Emotional communication. Feelings. Equality. Sense of injustice. Human rights. Feminism. Environmental awareness. Sustainability. Ecology.

Yellow: Flex Flow. Process integration. Systemic thinking. Complexity. Interdependence. Collaborative networks. Multiple realities. Open systems. Acceptance of uncertainty. Questioning mentality. Curiosity. Inquiry. Flexibility. Utility. Functionality. Spontaneity.

Turquoise: Global View. Global synthesis. Chaordic (chaotic-ordered) world. Fractal reality. Life as an unfolding of holoarchies. Spiral dynamics. Multiple levels interwoven into one conscious system. Communion with the whole. Understanding of universal harmony. Collective consciousness. Holographic connections. Transpersonal mentality. Cosmic spirituality.

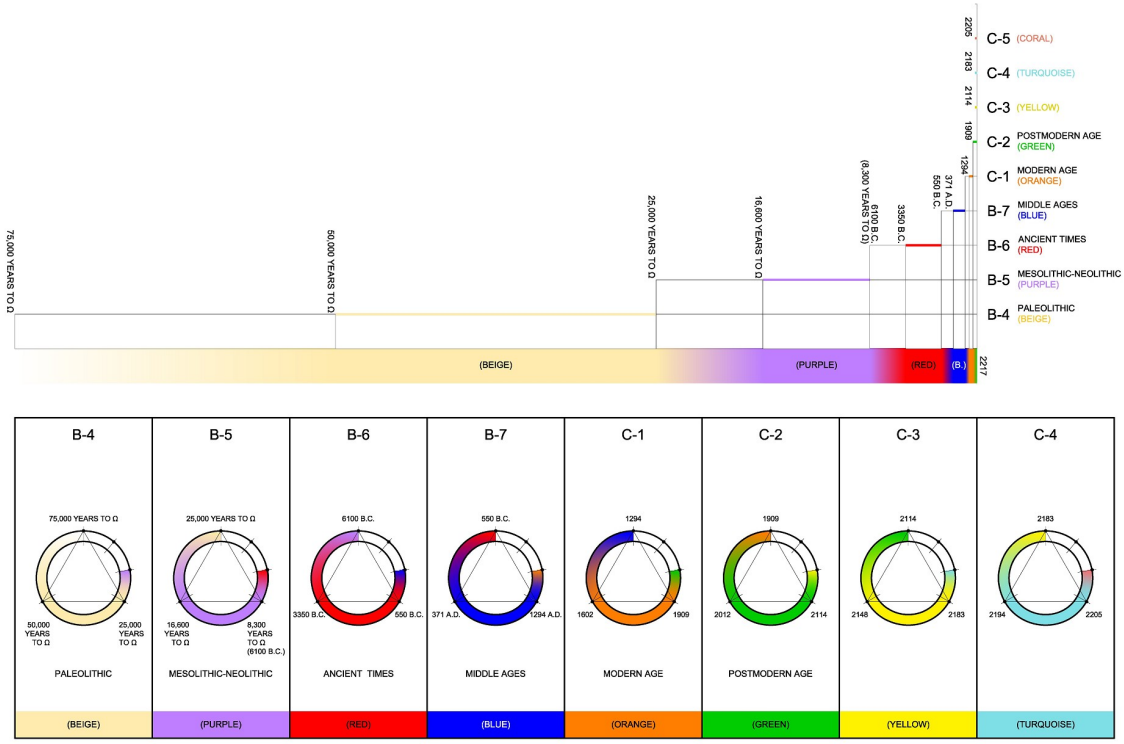


FIGURE 13

Fig. 13 shows the successive vMemes (colours), both individually and collectively, illustrating the historical periods in which each began to emerge (increasing gradation of colour), the stages during which they dominated the collective panorama (continuous colour) and the phases during which their predominance waned (decreasing gradation of colour). The conclusions to be drawn from the graph are evident. On the one hand, we have said that spiral dynamics is expansive and therefore with each twist –transcending and integrating all previous stages–, its level of consciousness and ability to embrace greater complexity increases. On the other hand, we have found that the duration of the successive stages decreases, one after another, at a dizzying rate, and that within a couple of centuries a moment of infinite creativity will thus be reached. At that moment, in that Singularity, consciousness will have transcended and included the entire spectrum of reality and will thus become manifest in the world of forms, the ever-present truth in the timeless Emptiness or Void: the non-duality of energy and consciousness, of object and subject, of origin and end.

Ray Kurzweil, one of the most prestigious researchers of technological acceleration, locates the moment of Singularity in 2045. He states that the non-biological intelligence created in that year will be a thousand million times more powerful than all human intelligence today. However, that does not seem to really be the true evolutionary summit, because, subsequently, in his book *The Singularity Is Near*, he states that our civilization will expand outward, turning all the dumb matter and energy that we comprise into highly intelligent (and transcendent) matter and energy. So, in a sense, we can say that the Singularity will eventually imbibe the universe with its spirit. Kurzweil specifies that we will manage to saturate the universe with our intelligence before the end of 22nd

century and states *"Once we saturate the matter and energy of the universe with intelligence, it will 'wake up', be conscious, and sublimely intelligent. That's about as close to God as I can imagine."* Accordingly, it thus seems that the real evolutionary summit will not take place in 2045, but will occur in the late 22nd century, when all the energy and intelligence of the universe will be experienced in a unified way.

Seen in this way, the coincidence with my proposal seems quite clear, in terms of both date and content. As we have posited in this article, at the **beginning of the 23rd century** –around the year 2217– **energy** and **consciousness** will reveal their ultimate non-duality. According to Ray Kurzweil, at the **end of 22nd century**, all the **energy** of the universe will be saturated with intelligence and the Singularity will eventually imbibe this universe with its spirit. Doesn't that all sound very similar?

Addendum 5: Further coincidences (David J. LePoire)

I have been fortunate to find recently some articles by American software engineer David J. LePoire, in which he investigates the global pattern of evolution, fundamentally in the fields of energy, the environment and technology. Although his starting point and final forecasts differ from my proposal, the coincidences between our respective analyses of the evolutionary process are truly surprising. Therefore, I do not wish to miss the opportunity to include in these pages at least a reference to these suggestive coincidences with LePoire's work.

In the initial abstract of his article *Potential nested accelerating returns logistic growth in Big History*, Dave states the following:

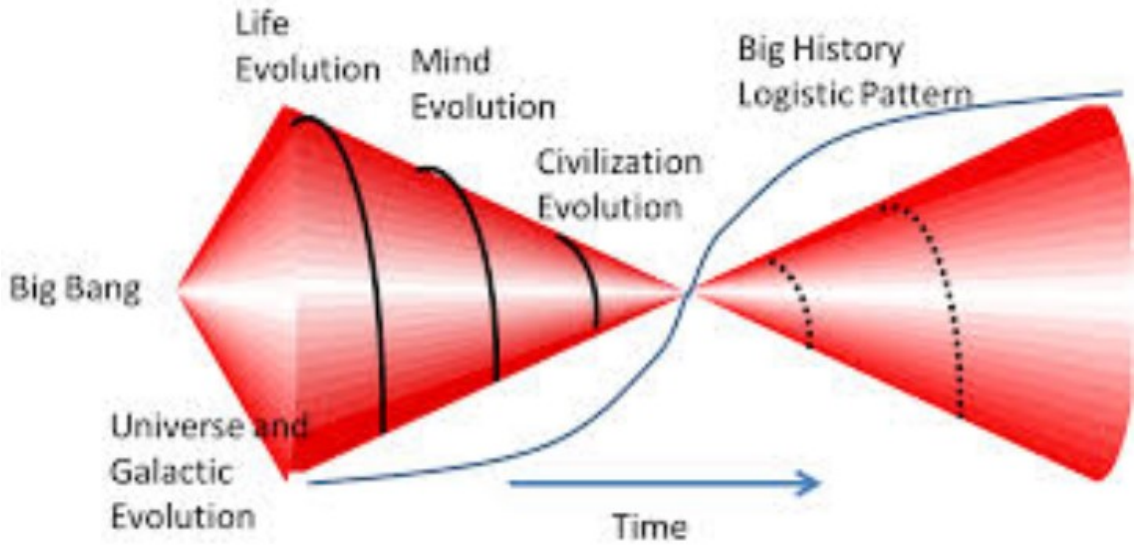
"*The discussions about the trends in rates of change, especially in technology, have led to a range of interpretative models including accelerating rates of change and logistic progress. These models are reviewed and a new model is constructed that can be used to interpret Big History. This interpretation includes the increasing rates of the evolutionary events and phases of life, humans, and civilization. These three phases, previously identified by others, have different information processing mechanisms (genes, brains, and writing). The accelerating returns aspect of the new model replicates the exponential part of the progress as the transitions in these three phases started roughly 5 billion, 5 million, and 5,000 years ago. Each of these three phases might be composed of a further level of about six nested transitions with each transition proceeding faster by a factor of about three with corresponding changes in free energy flow and organization to handle the increased generation rate of entropy from the system. Nested logistic transitions have been observed before, for example in the ongoing exploration of fundamental physics, where the progress so far suggests that the complete transition will include about 7 nested transitions (sets of subfields). The reason for this number of nested transitions within a larger transition is not known, although it may be related to the initial step of understanding a fraction of the full problem.*"

In Table 1, LePoire describes, one by one, the different evolutionary stages, defined by the successive changes in energy flows [I indicate in brackets the correspondence with our evolutionary

cycles]: Gravitational [Big Bang], Planet/Life [Formation of the Earth], Complex Cells [A-1], Cambrian [A-2], Mammals [A-3], Primates [A-4], Hominids [A-6], Humans [A-7], Speech [B-1], Fire [B-2], Ecoadaptation [B-3], Modern Humans [B-4], Agriculture [B-5], Civilization [B-6], Commercial Revolution [B-7], Scientific/Exploration, Industrial [C-1], Information [C-2]. The parallelism is practically total!

Coinciding with our hypothesis, Dave proposes a temporal contraction factor between the successive evolutionary cycles of 3. He states, "*A time contraction factor of about 3 is similar to time and energy contraction factors found by Snooks (2005) and Bejan and Zane (2012). […] Note that just one time contraction factor was realized from the Big Bang to the beginning of life on Earth.*" He then adds, "*Alexander Panov (2011) also organized evolutionary history with 19 evolutionary crisis transitions with decreasing duration (by about a factor of 3). This is called the scaling law of evolution*."

In the article *Interpreting Big History as Complex Adaptive System Dynamics with Nested Logistic Transitions in Energy Flow and Organization*, LePoire represents the global dynamics of evolution by means of the following figure:



In the text he states, "*The overall logistic of the Big History might be viewed as consisting of three spirals on one side of a double cone representing the evolution of* ***life***, ***mind*** *and human* ***civilization*** *[see Figure]. Each spiral would consist of six to* ***seven nested smaller logistic growth phases*** *with* ***time durations decreasing by about a third***. *The* ***astronomical period*** *before life began (i.e. 13.8 billion to 5 billion years ago) is a factor of* ***three times the duration represented in the cone***. *This period was driven by gravitation and expansion as the universe's temperature dropped, at first quickly but then slowing down. This can be represented by a cone pointed in the opposite direction. After the inflection point, a reflection in the duration of phases might occur.*" The **bold lettering** is mine].

As can be appreciated, our descriptions of the overall pattern of evolution coincide practically totally. Dave talks about THREE spirals that represent the evolution of life, mind and civilization

(recall our three series: "life", "mind" and "intellect"), with SEVEN stages of smaller logistic growth nested in each one (recall the seven cycles that each of our series encompasses), the temporal duration of each stage being a THIRD of the preceding one (recall the length of 1/3 of our successive second harmonics). Moreover, the astronomical period is THREE times the duration represented by the three turns of the cone (as we have observed in our research). It is fascinating to see how the aforementioned paragraph by Dave is a perfect summary of the hypothesis we are proposing!

Nonetheless, it would also be appropriate here to add that LePoire's interpretation of the direction of the vertex of the evolutionary spiral differs from the one we are proposing in this book. Instead of foreseeing a final singularity of infinite creativity, as we have done, Dave predicts a simple inflection point in the evolutionary pattern, at which the accelerated process of evolution reverses its direction, thus initiating a gradual slowdown in the rhythm of transformations.

In the article *An Exploration of Historical Transitions with Simple System Dynamics Models*, Dave focuses his research on the six main social and technological transitions of human evolution, i.e. between hunter-gatherers [B-4], agricultural societies [B-5], early civilizations [B-6], market development [B-7], industrialization [C-1] and sustainable societies [C-2]. We have included in brackets the correspondences with our cycles, because, as can be seen, they coincide completely]. He states, "*The more recent periods arrive after shorter durations about 1/3 the time between the transitions. This factor of 3 is also an approximation for changes in accelerating periods for both natural biological evolution and cultural human evolution as well as this human historical revolution heavily influenced by technology*".

LePoire interprets the whole series of evolutionary stages as a chain of nested logistic curves (S), and points out, in each one of them, an "inflection point" –or change of curvature– at which the stage begins its decline at the moment of greatest creativity. These "inflection points" coincide precisely with the "second nodes" in each of our cycles, in which, as we have explained, the old paradigm reaches its peak and then starts to decline as the seed of a new model arises. To visualize these coincidences, we will indicate LePoire's proposals below in three specific cases that he cites in his article *An Exploration of Historical Transitions*:

In the section on "**agricultural societies**", he states in the text: "*The inflection point was about 9,000 years ago*" and Figure 9 clearly illustrates this change of curvature. (Recall that the "second node" of our cycle B-5 took place approximately 8,300 years ago).

In the section on "**early civilizations**", he states in the text, "*The inflection point of this process occurred at about 600 BCE which is known as the Axial Age*", the corresponding figure clearly illustrating this change of curvature. (Recall that the "second node" of our cycle B-6 took place approximately in the year 550 BCE).

In the section on "**industrialization**", he states in the text, "*Analysis of a different set of data show the peak in innovation per capita at around 1900*" and the corresponding figure clearly illustrates this change of curvature. (Recall that the "second node" of our cycle C-1 took place approximately in the year 1910 AD).

It is truly fascinating that the coincidences between our separate investigations not only refer to the overall list of cycles of evolution and history, but also include minor details such as the specific dates of the "inflection points" between these cycles. It is even more fascinating bearing in mind the different perspectives from which our work has been proposed. We are sure that the reader will be aware of the profound implications of these coincidences.

LePoire, D.J., ***An Exploration of Historical Transitions with Simple System Dynamics Models***. First International Big History Conference, Grand Rapids MI, Aug 2-5, 2012.

LePoire, D.J., ***Potential nested accelerating returns logistic growth in Big History***. In *Evolution: From Big Bang to Nanorobots*. Edited by: Leonid Grinin and Andrey Korotayev. Volgograd: 'Uchitel' Publishing House, 2015.

LePoire, D.J., ***Interpreting Big History as Complex Adaptive System Dynamics with Nested Logistic Transitions in Energy Flow and Organization***. Emergence: Complexity & Organization, accepted 3/28/2015.

Addendum 6: Toroidal evolution

Everything written so far has basically focused on unraveling the overall pattern of the evolution of life in the universe, in general, and the human being, in particular. As we have seen, the result of this integral research clashes head on with the predictions of the materialist paradigm of classical science. Surprisingly, however, ground-breaking lines of research have started to appear in recent years in different branches of science —physics, chemistry, biology, neurology, among others— that are clearly in tune with the world view that emerges from our evolutionary research and can hence provide key data capable of explaining this unexpected universal pattern that we are revealing here.

To show this suggestive harmony between different cutting-edge research in distinct fields of science, we will begin this addendum by outlining the fundamental characteristics of the universal dynamics that emerge from our inquiry into the rhythm of evolution. To this end, let us start out from the flat images represented in Figures 7-A and 7-B. These, we recall, summarized the overall pattern of universal evolution and the individual development of the human being from pole A (original energy) to pole Ω (final consciousness).

On the vertical axis of these graphs, we represented the entire spectrum of energy-consciousness, from the base —with a maximum of energy and a minimum of consciousness— to the summit —with a minimum of energy and a maximum of consciousness—, with all the range of possible intermediate equilibria between these two fundamental facets of manifested reality, traditionally known as "the great chain of Being" and which can be summarized as the "matter-life-mind-soul-spirit" series. The horizontal axis of these graphs simply reflected the overall temporal scale, both of the universe and of the human being, from the origin (A) to the end (Ω).

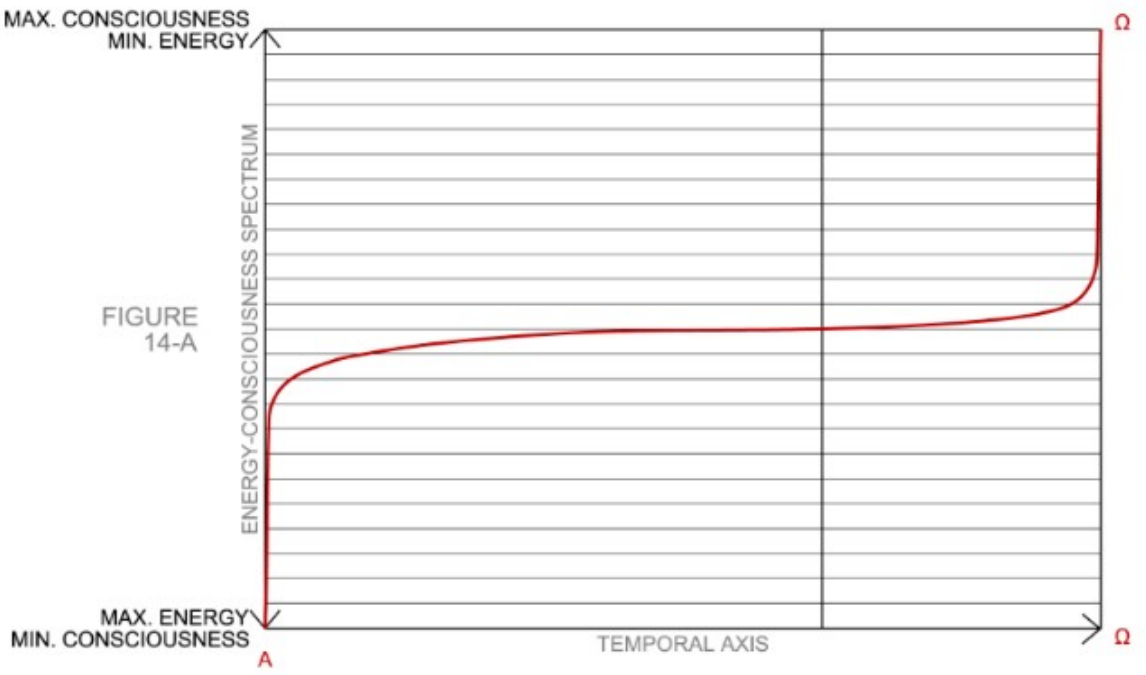
Let us recall at this point a couple of ideas that we have discussed previously. We stated that all manifested reality inexorably appears in the form of dualities —there can be no object without subject, no energy without consciousness— and that, as all opposites are mutually dependent, these can be understood as polar manifestations of a reality that transcends them and is "prior" to this dualization. We then argued that the original quantum vacuum posed by physicists and the final mystical void experienced by contemplatives are the same and unique Void, perceived by physicists objectively and by contemplatives in a subjective way, but which, in itself, is neither objective nor subjective, but rather "prior" to this dual perspective. We finally explained that this Void does not allude to a distant metaphysical reality, but to the simple and pure Self-evidence of each present moment, which encompasses in itself all the manifestations of energy and consciousness that are observed in the spatiotemporal universe.

The other idea that we wish to recall here refers to our statement that, as there is no separation between subject and object in the aforementioned Self-evidence and therefore it is not "something" that can be seen by "someone", in order to manifest itself relatively, it needs to polarize in appearance as subject and object, just as 0 can dualize in +1 and -1 without changing —other than formally— its absolute value. We thus proposed that, in its attempt to see itself, this Self-evidence apparently dualizes as an original pole (basically of energy) and a final pole (basically of consciousness), thus generating an illusory distance between the two, which, on vibrating —like the guitar string of our hypothesis—gives rise to a whole range of harmonics, which are precisely the levels of stability that the cycles of evolution that we have studied run through. We insist, however, that the presumed temporal distance between both poles is completely illusory, as in fact everything happens in the timeless Now of the ever present Self-evidence.

If we wish to graphically reflect these two ideas in the aforementioned Figures 7-A and 7-B — which, as we have seen, summarize the overall patterns of universal evolution and the individual development of the human being from the A pole of original energy to the Ω pole of final consciousness— we need to perform a couple of maneouvers on the flat surface on which we have represented both graphs (see Fig. 14-A).

First, having proposed that energy and consciousness are not two different realities, but rather the objective and subjective aspects of the same and ever present Self-evidence, we should unify the horizontal lines at the bottom and the top of the graph. As we have stated, these respectively represent the levels of maximum energy and maximum consciousness that are one and the same in fundamental reality. To do so, it will suffice to fold the flat surface of the drawing in on itself, aligning the upper line with the lower one, thus obtaining a cylinder (see Fig. 14-B).

Then, having affirmed that the temporal distance between the original moment (A) and the final moment (Ω) is illusory —as everything happens in the timeless Now— we should also unify the vertical lines on the left and the right of the graph. As already stated, these respectively represent the original and final moments of all evolutionary and developmental processes. To do so, once again we will fold our cylinder over onto itself, until the extreme vertical lines coincide, thus obtaining a figure similar to a "doughnut" in which the central hole is reduced to a point without dimensions. It is what is called in geometry a "horn torus" (see Fig. 14-C).



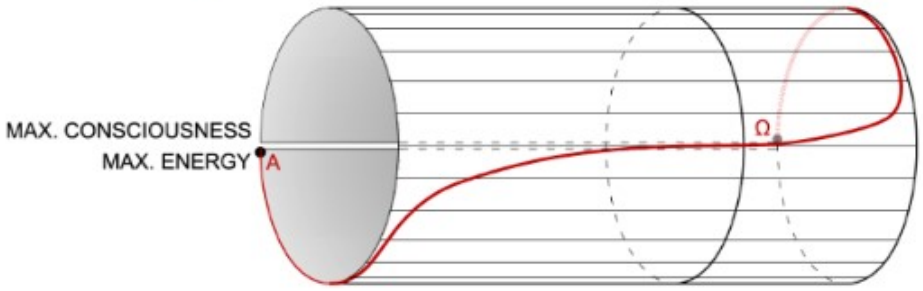


FIGURE 14-B

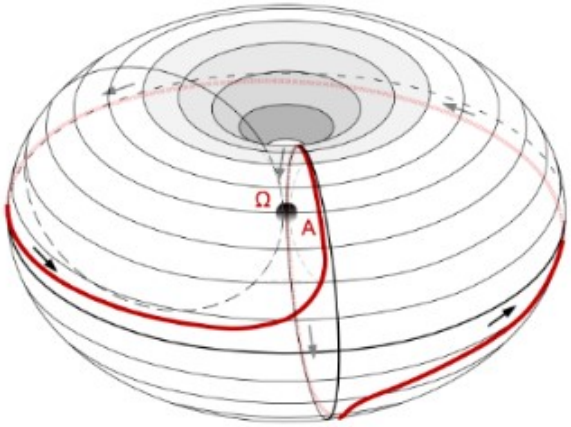


FIGURE 14-C

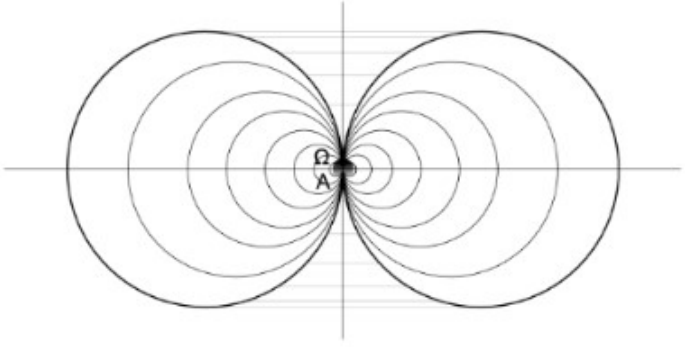


FIGURE 14-D

FIGURE 14

Bearing in mind what we have just explained —taking the guidelines that have been revealed in our research to their ultimate consequences—, everything points towards a fascinating toroidal dynamic of energy-consciousness, both instantaneous and eternal, as the key element for integral comprehension of the universe. According to this scheme, the flows start out from a Center without dimensions —in its facet A—, follow a spiral path —divergent vortex—, reach the external surface of the torus, and return to the same Center —in its facet Ω— via another spiral —convergent vortex—, to subsequently restart its endless process from there. Next, we will try to outline the fundamental aspects of this dynamic that is beginning to be glimpsed, as we are possibly on the verge of solving many of the enigmas and blind alleys in which official science and its obsolete materialistic paradigm are trapped.

From the outset, it is crucial to understand the ultimate meaning of the central point of the "horn torus" that we are proposing, as it is where the germ of everything else lies. As we have seen, this center is deduced, on the one hand, from the unified understanding of the infinite potential energy of the quantum vacuum and the unlimited pure consciousness of the mystical void, and, on the other, from the perception of the illusory character of time and hence of the absolute simultaneity of the original pole (A) and the final pole (Ω) of all processes. The center of this toroidal dynamic, which manifests itself as the spatiotemporal universe as a whole and as each and every one of the structures that compose it, is hence the same and unique non-dual Self-evidence, without form, unlimited, timeless, ineffable, both empty and full, the source and goal of all worlds, absolute potentiality. Let us insist once more, this non-dual center is one and the same in everything and in all, its true nature, its ultimate identity.

Accordingly, for this faceless, pure Self-evidence to contemplate itself, it needs to dualize —at least apparently— in the roles of eye and mirror, subject and object, because this allows it to update its infinite potential in the world of finite forms. In this way, as we have seen, the non-dual center, without ceasing to be so, manifests itself in polar form as the original source of energy and the final attractor of consciousness, generating an illusory temporal distance between both facets. Let us take a good look at this idea, because within it may lie the solution to many of the enigmas that science is encountering. The absolute Void, in which there is no trace of separateness, manifests itself dually in the world of forms, so that the presumed spatiotemporal distances that the "subjects" observe among the "objects" are, ultimately, purely illusory.

Previously we proposed that the vibration of the illusory "string" of energy-consciousness that is created between the A and Ω poles, generated, from the very same original moment, a particular fundamental sound and a whole range of harmonics, which constituted the entire spectrum of potential archetypal levels, which, as we have seen, are updated, step by step, throughout evolution and history. We must now apply this very same multilevel energy-consciousness scheme that we proposed in the "string" of our hypothesis to the vibrant "torus" that, as we have proposed, generates the entire universal process. We will thus have a toroidal dynamic deeply nested in a myriad of levels —like a "matryoshka" or nested dolls—, from the tiny scale of Planck to the cosmic totality, thus reflecting the radical fractal structure of the universe (see Fig. 14-D). The

fundamental characteristic of this fascinating nested torus lies in the fact that the center is common and identical in all its levels. Thus, all the universal flows, whatever the height of the energy-consciousness spectrum through which these unfold, start out from and end in this ineffable non-dual center that unites in itself the facets of both source —A— and receptacle —Ω— of all the worlds.

This fractal, toroidal structure of reality greatly facilitates the understanding of the evolutionary process. Thus, starting out from the idea that, in the final analysis, the sole protagonist of all the processes is the same and unique Self-evidence, we will now describe how the dynamics of evolution unfolds, step by step.

We stated earlier that the non-manifest Void apparently polarizes as subject and object to perceive itself subjectively-objectively in infinite ways. Via this artifice, Self-evidence can delve into the furthest corners of its own infinity —illusively and fleetingly identifying its absolute Here-Now with any relative point-instant of pixelated space-time and, from there, contemplate itself from a certain perspective —at any level of the energy-consciousness spectrum of the nested torus—, returning instantaneously to its original fullness. Given that, as we have stated, the temporal dimension is purely imaginary, everything in fact occurs from instant to instant. This exit and return, moment-by-moment, between the non-dual foundation and its finite and fleeting manifestation in space-time allows us to update in the relative world of forms the potential levels of stability of the energy-consciousness spectrum, i.e. the entire hierarchy of "harmonics" generated at the same original moment.

This recursive dynamic between the infinite Void and all its spatiotemporal forms is intrinsically creative and is facilitated by the unified field of memory that is gestating, step by step, at a fundamental level. All the information gathered at any point-instant of the manifested world is immediately introjected into this basic field of collective memory, whose potential is logically increased moment by moment. Thus, any entity, whatever the level of the spectrum in which it develops, has deep down in itself free access to the entirety of this unified field of memory, although it only connects with certain aspects of this field depending on its characteristics specific. The toroidal dynamic thus possesses a holographic structure, in the sense that each "part" of itself has information of the "totality", and is, in fact, a particular reflection of that totality.

From the perspective that we are proposing here, the evolutionary process can be understood as a natural expression of a toroidal, integral, non-dual, fractal and holographic dynamic of fundamental energy-consciousness. Via this recursive dynamic, the ever present Self-evidence is focused, moment after moment, on the successive levels of the "harmonic" spectrum, beginning with the most basic ones —primarily energy— and ending at the highest levels —primarily consciousness— . On each plane, it updates the specific potential of that level, integrating it with the aspects that have already emerged in previous levels. In each turn, starting from the resources available in the unified field of memory, it is projected in each concrete situation of space-time, it perceives that determined situation according to the possibilities of its structure, and, immediately, introjects that information into the field of collective memory of the fundament. When a specific entity has unfolded the full potential of the stratum in which it basically develops and has integrated it with

everything that has emerged in the preceding stages, once it has reached a specific level of complexity, it can resonate with the next "harmonic" of the energy-consciousness spectrum, and thus ascend to a new rung of the long ladder of evolution. And so on.

This toroidal, non-dual, fractal, holographic dynamic of the fundamental energy-consciousness that we are proposing has clear affinities with ancient intuitions of the wisdom traditions —the yin-yang of Taoism, the Celtic triskelion, the Egyptian seed of life, the Greek caduceus, the Hindu kundalini... even the symbol of ∞ is no other than the cross section of a horn torus!—. However, as we have stated, it is practically unacceptable for the materialist paradigm of classical science. In the wake of the emergence of quantum physics and relativistic theory, the landscape has changed drastically, with numerous innovative proposals emerging throughout the past century that, in these first decades of the new millennium, have begun to crystallize into a ground-breaking unified theory of fields that, in many aspects, is in tune with the toroidal evolution we are proposing here. Below, we provide a brief recap of some of the work, carried out in very different fields, that has shone new light on the landscape of science.

First, it is important to recall the pioneering proposals on toroidal dynamics by **Walter Russell** —*The Universal One*—, **R. Buckminster Fuller** —*Synergetics*—, **Arthur M. Young** —*The Reflexive Universe*— and **Itzhak Bentov** —*A Brief Tour of Higher Consciousness: A Cosmic Book on the Mechanics of Creation*—. Concerning the creative trend of universal dynamics, it is necessary to mention **Jan C. Smuts'** "holism" —*Holism and Evolution*—, **Pierre Teilhard de Chardin's** "Omega Point" —*Le Phénomène Humain*—, the notion of "syntropy" proposed by **Luigi Fantappiè** —*Principle of a unitary theory of the physical and biological world*— and **John A. Wheeler's** "participatory anthropic principle". As to the nested character of the world, reference should be made to the concept of "holon" put forward by **Arthur Koestler** —*The Ghost in the Machine*—, that of "fractal geometry" proposed by **Benoît Mandelbrot** —*Fractal geometry of nature*—, and **Ken Wilber's** "holoarchical evolution" —*Sex, ecology, spirituality*—. With respect to the holographic principle, it is essential to recall **David J. Bohm** —*Wholeness and the Implicate Order*— and his theory of the "holomovement" between deep reality or "implicate order" and superficial reality or "explicate order", the "holographic brain" proposed by **Karl H. Pribram** —*Languages of the Brain*—, **Rupert Sheldrake's** "morphogenetic fields" —*A New Science of Life*— , the "Akashic field" of information proposed by **Ervin Laszlo** —*The Akasha Paradigm: Revolution in Science, Evolution in Consciousness*—, and the work of **Gerard 't Hooft** —*The Holographic Principle*—, improved by **Leonard Susskind**. Regarding the relationship between the micro and macro scales, it is worth recalling the work in quantum neuro-bio-physics by **Stuart R. Hameroff** and **Roger Penrose** —*Consciousness in the universe: A review of the 'Orch OR' theory*—, and that by **Dirk K.F. Meijer** and **Hans J.H. Geesink** —*Consciousness in the Universe is Scale Invariant and Implies an Event Horizon of the Human Brain*—. We will finish this rapid list of research on the cutting edge of science that are in tune with some key points of our proposal, making special mention of the ground-breaking work by **Nassim Haramein** and his collaborators **William D. Brown** and **Amira Val Baker** —*The Unified Spacememory Network : from Cosmogenesis to Consciousness* [https://holofractal.org/spacememory.pdf]—, as their

"Holofractographic Theory of the Unified Field" brilliantly integrates the fractal, holographic and toroidal approaches that define our hypothesis.

(There are currently numerous pages on the internet that echo this emerging perspective of a toroidal, holographic and fractal universe. Readers who are interested in this topic are recommended to consult the following websites: "The Fractal-Holographic Universe", by **Andreas Bjerve** [http://holofractal.net/] and "Cosmometry", by **Marshall Lefferts** [http://cosmometry.net/]).

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