Syntropy Journal
www.sintropia.it/journal
ISSN 1825-7968
2023: 23-39

Addendum 9: Holographic evolution

José Díez Faixat[1]

In this addendum we are going to present an intriguing coincidence that has arisen unexpectedly during the present research about the pattern of evolution. From the outset, this enigmatic coincidence raised the question of whether it was simply a mere chance or whether, on the contrary, the matter had truly profound and revolutionary implications. The question has been hanging around for quite a few years until, recently, surprising investigations carried out in theoretical physics on the holographic principle have opened the possibility of a fascinating solution to that intriguing synchronicity that appeared fortuitously in our work.

To focus the issue a bit, we are going to briefly recall a central point of the previously developed research. Readers who have read the article *Beyond Darwin: The hidden rhythm of evolution*, will have been able to see how a very precise harmonic-spiral-fractal pattern is revealed in the deployment process of the successive evolutionary levels of the integral spectrum of energy-consciousness that punctuates both human phylogeny and ontogeny. All trajectories start at a breakneck rhythm at their origin (A), slow down progressively as they move toward a certain level of the spectrum, and then speed up again until they reach breakneck speeds again when they start approaching the final moment (Ω).

In the following Figures 7-A and 7-B this idea is schematized.

[1] José Díez Faixat: jose@vjarquitectos.com

ISSN 1825-7968 2023: 23-39

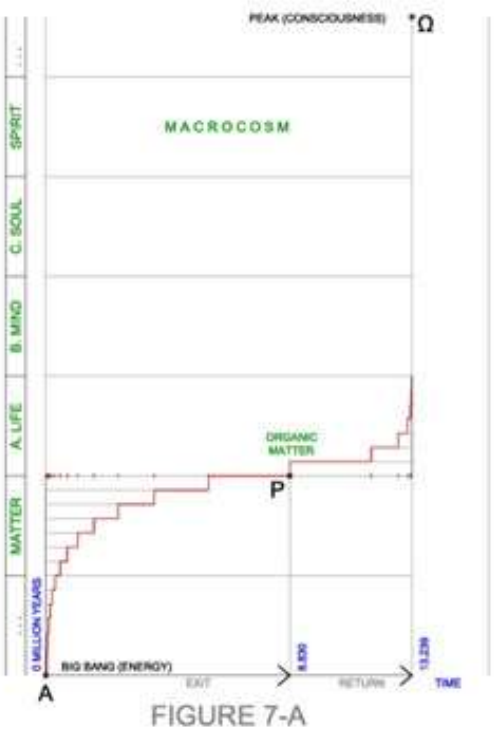


FIGURE 7-A

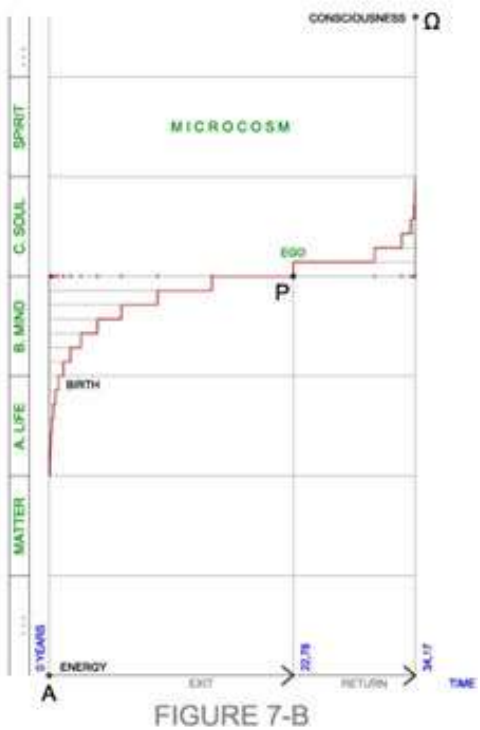


FIGURE 7-B

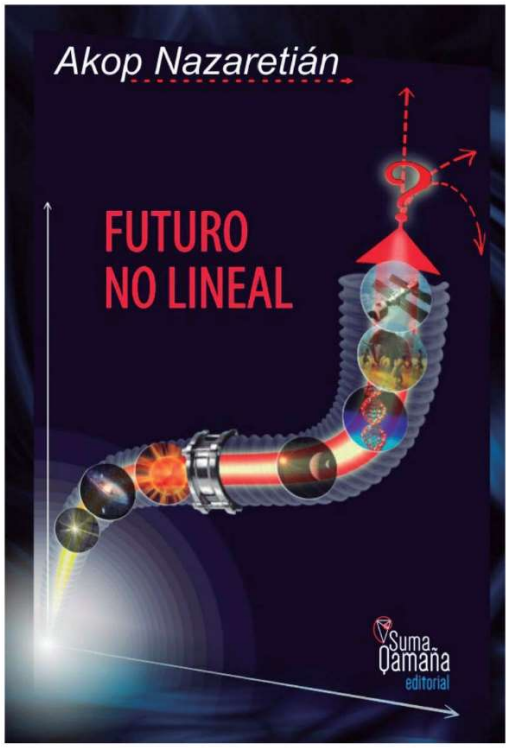
Recently, two Big History scholars, Leonid Grinin and Andrey Korotayev, have edited a book entitled *Evolution: Trajectories of Social Evolution*, which has been published in Russia by "Uchitel". In one of its chapters, titled *Non-Dual Singularity*, we have been able to outline the core of our research and its ultimate implications: https://www.sociostudies.org/upload/sociostudies.org/book/evol_8_en/08_Faixat.pdf. The following is the *Abstract* that heads this chapter:

"The Universe emerged in a violent Singularity —basically of energy— generating vertiginous transformations. Later, due to cooling, the emergence of novelties slowed down gradually. After the formation of the solar system and the subsequent emergence of life on our planet, the rhythm of creative transformations began to increase progressively, first through biological evolution and, later, through human development and expansion of civilizations. Currently, the emergence of novelties is again dizzying and everything seems to indicate that we are fast approaching another imminent Singularity —basically of consciousness— of infinite creativity.

In this paper we propose that both Singularities —A and Ω— are nothing but the polar expression of the fundamental Void always present, 'prior' to its apparent dualization as energy and consciousness. The initial and final Singularities would not be, in this way, but the points of exit from and entry to this eternally self-evident non-dual Emptiness that, instant after instant, manifests itself in and as the world of forms."

ISSN 1825-7968 2023: 23-39

This same evolutionary deceleration-acceleration scheme is clearly reflected on the cover of a book entitled *Futuro No Lineal* —*Nonlinear Future*— written precisely by another Russian researcher of Big History, Akop Nazaretyan, published in Spanish by the Argentine publisher Suma Qamaña:

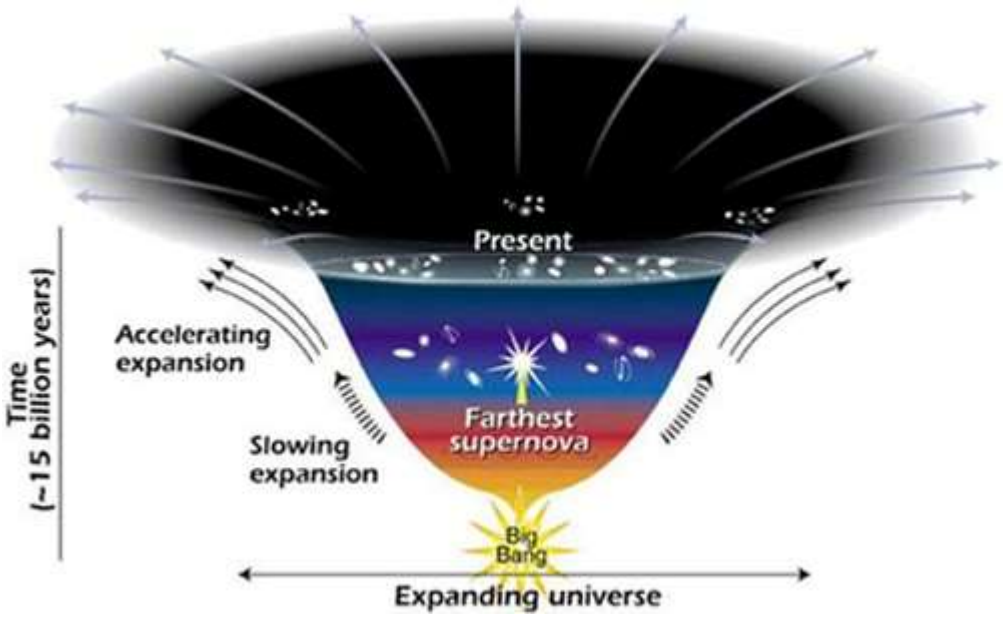


1

Without apparent relation to all this, the American astrophysicists Saul Perlmutter, Brian P. Schmidt and Adam G. Riess received the Nobel Prize in Physics in 2011 for providing evidence in favor of the acceleration in the expansion of the universe through observations of distant supernovae. This discovery was completely unexpected, since until then it was thought that, although the universe was certainly expanding since its origin, the rhythm had been decreasing due to the mutual gravitational attraction between distant galaxies, albeit slowly due to the low density of matter-energy present in the universe. Evidence from Perlmutter, Schmidt, and Riess conclusively demonstrated that about 4.5 billion years ago —about 9 billion years after the Big Bang— the slowing rhythm of expansion reversed, and from then the universe began to expand at an ever-increasing speed, starting an era dominated by an alleged and mysterious "dark energy" that causes the "accelerated expansion of the universe". In the framework of general relativity, an accelerating

ISSN 1825-7968 2023: 23-39

expansion can be explained by a positive value of the cosmological constant, usually denoted by the capital Greek letter lambda (Λ). While possible alternative explanations exist, the description assuming dark energy (positive Λ) is used in the current standard model of cosmology, which also includes cold dark matter (CDM) and is known as the Λ-CDM model. In relation to the subject, we are dealing with, we would like to point out here that, precisely, in the Wikipedia article on the "cosmological constant", the text that appears at the bottom of the initial graph is, literally, the following: "*Sketch of the timeline of the Universe in the ΛCDM model. The accelerated expansion in the* ***last third of the timeline*** *represents the dark energy dominated era.*" (The bolds are mine.) Next, we include an image, also taken from Wikipedia, which clearly expresses the slowdown and acceleration phases in the expansion of the universe:



It is enough to observe the shape and chronology of the global trajectory resulting from the recently discovered expansion of the universe, to realize its complete parallelism with the shape and chronology of the global trajectory of the evolutionary process of the "macrocosm" revealed in our research. The inflection point between the deceleration and acceleration phases in the expansion process of the universe —at the beginning of "***the last third of the timeline***"— exactly coincides with the inflection point between the deceleration and acceleration phases of the process of emergence of the successive evolutionary levels that we have analyzed in this paper, since, as we can remember, it takes

ISSN 1825-7968 2023: 23-39

place in the second node of the standing wave corresponding to the second harmonic, that is, precisely at the beginning of the *third third of the global trajectory*.

Was all this a mere coincidence or did the matter have a deeper meaning?... At first glance, it did not appear that the expansion of the universe had anything to do with the evolutionary process of matter, life, mind and spirit, through which progressively complex and conscious organisms develop, but…

Recently, reading the beautiful book *Cosmometry* by the American researcher Marshall Lefferts —from Nassim Haramein's team— I found the following text on page 120: "*Both Haramein and the cosmologist Jude Currivan propose that there is an informational aspect of universal expansion, wherein the total information content of the universe is constantly increasing, thus requiring a growing volume of pixelated spacetime within which to accommodate this informational evolution.*" And, at the bottom of that same page, I was also able to read: "*In a personal conversation with me, Currivan elaborated that in every Planck-scale moment the universe adds another set of information that is encoded into the expanding field of spacetime, and that the expansion of space and flow of time* is *evolution, without which there would be no evolutionary experience of consciousness.*" Eureka! At that moment I had the feeling that, finally! the long-awaited explanation of the "mysterious" parallelism found between the accelerated expansion of the universe and the accelerated deployment of the evolution of consciousness, began to be within reach.

This new understanding of the universe that has begun to be considered in recent decades revolves around what is known as the "holographic principle", in which some of the most eminent theoretical physicists of our time are involved, such as Leonard Susskind, Gerard 't Hooft, Jacob Bekenstein, Tom Banks, Ted Jacobson, Juan Martín Maldacena or Raphael Bousso. There is now a broad consensus among physicists working on string theory and loop quantum gravity that the most fundamental scientific concept we have in physics is the holographic principle. In fact, this principle is probably the best guide we have at this time to achieve the long-sought unification of relativity theory with quantum theory.

The history of this approach dates to the early 1970s, when Wheeler and Bekenstein tried to understand what happens to an object's encoded information when that object falls into a black hole. In the mid-1990s, 't Hooft and Susskind relaunched this research by framing black hole event horizons in terms of Planck area-sized pixels, each of which encodes a single quantized bit of information. They called this idea the holographic principle. Its basic postulate could be summarized by saying that all the information contained in a certain volume of a concrete space can be known from the codifiable information on the border of said region. In its broadest sense, the theory suggests that

ISSN 1825-7968 2023: 23-39

all the information that makes up our space-time universe would be contained in a two-dimensional surface located on the observer-dependent cosmological horizon, in such a way that the three-dimensional world we believe inhabit would ultimately be basically illusory, like a holographic image projected from the far reaches of space.

American science writer Amanda Gefter —author of the award-winning book *Trespassing on Einstein's Lawn*— has laid out with great clarity the startling logical implications of the holographic principle in the context of the discovery of dark energy and the accelerating expansion of the universe. She claims that if we want to move towards a true theory of quantum gravity —capable of unifying the general theory of relativity with quantum mechanics— perhaps we should abandon the notion that we all share the same universe and instead posit that each observer has his own universe, a complete and singular reality. Next, we are going to summarize some basic ideas that Gefter develops in her article *Cosmic Solipsism*.

According to the theory of relativity, no information can escape from a black hole, however, according to quantum theory, it inevitably has to. How to explain this inconsistency? In a flat space-time of a world without gravity all observers would agree on the definition of the objects contemplated, but when an event horizon is introduced, the (accelerated) observers outside that horizon and the (inertial) observers that who fall through it will perceive incommensurable realities among themselves. The accelerated observer will see the information radiating from the event horizon, while the inertial observer will see the information falling into it. That is, according to the accelerated observer the horizon produces particles, and according to the inertial observer, the horizon does not even exist and does not perceive any radiation in the process. Faced with this tangled crossroads, the holographic principle found a way to solve it by stating that no observer can see the inside and outside of a black hole at the same time, so that when it comes to horizons, we can talk about the world of the accelerated observer or the world of the inertial observer, but never of both simultaneously. We must, therefore, restrict ourselves to a single local point of view, because, in case of not doing so, we would be violating the laws of physics. This radical limitation in our description of reality has been called "horizon complementarity".

If horizon complementarity applied only to black holes, it could be considered a simple curiosity, but the fact is that its field of application is actually much broader. Einstein's equivalence principle put gravity and acceleration on an equal footing: the effects of the force of gravity are completely identical to the effects of accelerated motion. Thus, if gravity can form an event horizon —as it does in black holes— acceleration can under

any other circumstances as well. So, when it is space-time itself that is expanding rapidly driven by the negative pressure of dark energy —as we have seen at the beginning of this addendum—, any observer within that space-time will find themselves surrounded by an event horizon. Given, then, that the location of the horizon is always relative to the location of the observer, everything seems to indicate that quantum gravity, ultimately, does not allow a unique, objective and complete description of the universe and, therefore, it will be necessary to formulate its laws with reference to a specific observer, not more than one at a time. If we respect the complementarity of the horizon in an rapidly expanding space-time, we will have to replace an incoherent global description of reality with a local description accessible to a single observer. The existence of dark energy makes each frame of reference a universe unto itself, the end and all of reality. In other words, we may have to accept the notion that there is *my* universe and *your* universe, but there is no such thing as *the* universe.

In this same line of thought, the American theoretical physicist and neurologist James P. Kowall has delved into the holographic principle to its ultimate implications —without letting himself be carried away by the materialistic prejudices that grip many researchers—, finally reaching a revolutionary understanding of the reality that, unexpectedly, is completely in tune with the central message of all the great non-dual wisdom traditions. Next, we are going to summarize some of the ideas that Kowall exposes in the numerous and clarifying articles of his. [The reader interested in knowing the more technical details of his approach can consult the *Science and Nonduality* page: https://scienceandnonduality.wordpress.com/].

The holographic principle is a radical idea that things do not actually exist in three-dimensional space, but that the appearance of things in any region of space is a holographic projection from that region's two-dimensional bounding surface to the point of view of a central off-screen observer. The observer's horizon thus acts as a holographic screen that encodes the entangled qubits —quantum bits— of information about all the things the observer can see in that bounded region of space. The expression of dark energy allows the universe to expand and cool as entropy increases, the cosmological constant changes to a lower value, and the observer's cosmic horizon increases in radius. This is how more information qubits are encoded for the universe as the observer's cosmic horizon increases its surface area.

The bounding surface of space arises naturally as an event horizon every time the observer enters an accelerating frame of reference, like a cosmic horizon that arises every time dark energy is spent, and space appears to be expanding at an accelerating rate from the point

of view of the observer located at the center of the singularity. The nature of observation is thus reduced to three components: *the bounding surface of space*, which arises in the observer's frame of reference and acts as a holographic screen, *the observer's consciousness* at the central point of view of that limited region of space, and *the holographic projection* of the images of all things that the observer can contemplate. These things, therefore, do not really exist in three-dimensional space, but arise from the configuration states of the information encoded on the observer's holographic screen and are therefore nothing more than mere virtual images projected from that screen. The observer, ultimately, is only the perceptive consciousness present at the central point of view, that is, a single point of consciousness.

The whole process of observing can only start when *the energy* is spent and *the observer* enters an accelerated frame of reference. If this does not happen, there is no observation of anything. There can be no creation without perception. Creation and perception are simultaneous events. The state in which no energy is expended is the state of a freely falling observer, in which there is no acceleration and no boundary surface of space, and therefore in which nothing is observed. In fact, modern cosmology reveals that the total energy of the observable universe is exactly zero. This is possible because the negative potential energy of gravitational attraction can cancel all forms of positive energy such as dark energy, mass energy, or kinetic energy. Ultimately, therefore, nothing really exists. The apparent existence of everything is simply an illusory manifestation of nothingness. The space-time totality is, finally, this holographic disguise of nothingness appearing as something.

There are three big questions: where does the observer's *consciousness* come from?, where does the *energy* inherent in the observer's accelerated frame of reference come from?, and where does the *information* encoded on the observer's holographic screen come from? The perceiving *consciousness* of the observer, viewing his own holographic world from that world's central vantage point, and the expression of dark *energy*, placing the observer in an accelerated frame of reference that creates that holographic world, arise together, simultaneously, from the true vacuum state. The emptiness of nothingness or the true state of emptiness that gives rise to the creation of the *physical universe*, is also the primordial nature of the *perceiving consciousness* of the observer who contemplates his world. Emptiness is not only the potentiality *to create* all things, but also the potentiality *to perceive* all things. The observer's consciousness cannot arise in a brain within a body, since a body is simply another perceptible thing in that world, no more real than a holographic image projected from a screen to the observer's central point of view. The source of the observer's *perceiving*

ISSN 1825-7968 2023: 23-39

consciousness must be the same void of nothingness that gives rise to the creation of the observer's *perceptible world*. This void of nothingness is limitless, and, for lack of a better description, we could call it limitless consciousness. Somehow, this nothingness is also infinite unity, undifferentiated and formless. Emptiness is the primordial or ultimate nature of existence.

Correctly interpreted, the holographic principle tells us that the physical world is only an expression of the potentiality of the void. Through its geometric mechanisms, the void has the potential *to create* a world for itself and *to observe* that world from its central vantage point. The observer and the holographic world of him always arise together in a subject-object relationship of perception. There is no objective physical world out there, but everything emerges in a subject-object relationship that occurs when the observer enters an accelerated frame of reference and their event horizon emerges, acting as a holographic screen when encoding qubits of information. Whatever the observer beholds is both an objective reality and a subjective reality. There is no way to remove the subjective observer from the observation. Everything that can be perceived in the world, which quantum theory refers to as an observation or measurement of the world, occurs in a subject-object relationship. By its very nature, the quantum state of *potentiality* is an unobserved state until it is observed, at which point it is reduced to an observed state of *actuality*. It just doesn't make sense to talk about the quantum state as an objective physical reality. The quantum state is just a state of potentiality. It describes what can probably be observed, not what is observed. When the observer focuses their attention on their own holographic world, the observer's consciousness becomes focused on one point of view and the observer's holographic world appears to come into being. The observer's holographic world can only appear to come into existence when the observer focuses their attention on that world. The observer must be present as a presence of consciousness at the center of his own world for that world to appear to exist.

Unifying quantum theory with relativity theory is the problem of making sense of the observer in both theories. Relativity speaks of the observer observing or measuring the relativistic properties of their objects in an accelerated frame of reference, whereas quantum theory speaks of the observer observing or measuring the quantized properties of their objects as those properties arise from a quantum state of potentiality. The key point is that these observations always occur in the subject-object perception relationship. Neither quantum theory nor relativity theory really has anything significant to say about the nature of the observer, other than that the observer sees some property of an object in a subject-object relationship. The problem that physicists seem unwilling to face is that

everything perceptible arises in a subject-object relationship when the subject perceives some observable property in an object. The only logical conclusion that can be drawn from all this is that not only the *perceptible object* arises from the void state as an excitation of energy and information, but the *perceiving subject* also arises from the void state. This tells us fundamentally that the vacuum state is not only the source of all the energy and information inherent in objects, but also the source of the consciousness that perceives the properties of all those objects. The triad of energy, information and perception of consciousness have to arise together in a subject-object relationship of perception, and they do so simultaneously from the state of emptiness.

The origin of universal manifestation occurs when the void is projected as the perceiving consciousness of all observers present at the central point of view of their own holographic worlds. The only reason different observers view different worlds is because each observer is in its own coordinate system that moves relative to other coordinate systems. In any case, the perceiving consciousness in each one of the determined points of view is the same and unique consciousness, only that, being located in different points of view, it contemplates different universes. Each observer has his own bubble and is at the center of his own world. The various observers do not exist within the same world, but each have their own world defined on their own viewing screen. How, then, can one explain a consensual reality shared by many observers, each present at the central point of view of their own holographic world? The answer lies in the fact that when their holographic screens overlap, they can share information. Information encoded on one display screen is correlated with information encoded on another screen due to quantum entanglement. Each display screen defines an information state that includes all the possible ways that information can be encoded in all the different pixels. What seems to happen in any one bubble is connected to what seems to happen in the other bubbles as bits of information in those different states of information interact with each other, align, and share their content. Holography demonstrates that consensus reality is made up of multiple interlocking worlds, each defined on its own viewing screen and each viewed from its own point of view. Consensus reality is not a single objective reality, but many intertwined worlds that share information with each other. The quantum state of potentiality of the universe is a sum of all the bubbles in the vacuum.

Every time an observer makes an observation of something in your holographic world, the tangled information encoded on your holographic screen is disentangled and the quantum state of potentiality is reduced to an actual observed state. Until observed, everything in that holographic world only exists at the level of entangled qubits of

information encoded on the observer's own holographic screen. Each observation is thus a perceptible holistic event in which the entangled quantum state of that holographic world is disentangled, and thus the observation of anything in that world affects the observation of everything else. The coherent organization of the form develops naturally because all the information qubits encoded on the observer's holographic screen are entangled and those entangled information qubits tend to align. The coherent organization of information allows the development of observable forms of information, which self-replicate over a sequence of events. In the sense of quantum theory, each event is a decision point where the quantum state of that world bifurcates, due to the different ways that bits of information can be encoded across all the pixels on the display screen. The observed events of that world are not predetermined, but rather encoded in a quantum state of potentiality, best understood as the sum of all possible paths.

For an integral understanding of the holographic world, it is essential to highlight the distinction between unlimited consciousness —which is the nature of the undifferentiated void that has the inexhaustible potential to create endless finite worlds of forms— and limited consciousness —which is the nature of an individual observer and his observed world—. This limited consciousness arises from the illusory self-identification of the unlimited consciousness with the central character of a given movie. This is a peculiar aspect of existence in a holographic world. The fact that the observer places the focus of attention on the life of his character is what creates the hypnotic spell of self-identification. With personal self-identification, there is the mistaken assumption that the source of the observer's consciousness is that central character appearing in the perceived holographic virtual reality world, which is logically impossible. The observer's body is just one more form of information that appears in his holographic world. When the observer emotionally identifies with a body and takes himself as such, it is as if that body were the subject in the subject-object perception relationship. The observer's body is taken as the perceiving subject, and all other objects that appear in the observer's holographic world are considered as objects of perception. The observer himself is the subject, and his body is just another object of perception that appears in his holographic world among all other objects of perception. Behind all this illusory game of self-identifications, the ultimate reality is that there is only one consciousness in everyone, but there are many different points of view within that consciousness, each perceiving their own mind and their own world on their own screen. As we have said, the observer must be present so that the quantum state of potentiality can be actualized, from instant to instant, as a concrete state of the manifested world. Thus, when the observer is no longer present, his world and his mind disappear from apparent existence and his limited consciousness returns to the

ISSN 1825-7968 2023: 23-39

undifferentiation of unlimited consciousness. As Nisargadatta Maharaj stated: "*All limited existence is imaginary. Even space and time are imaginary. The pure being, which fills everything and beyond everything, is not limited. Only the limitless is real.*"

Having outlined so far, the basic characteristics of the holographic principle, as well as its solipsistic implications, exposed by Amanda Gefter, and its non-dual implications, revealed by Jim Kowall, we believe that we already have the necessary tools to clarify the intriguing parallelism found between the accelerated expansion of the universe and the accelerated unfolding of the evolution of life, which we have raised at the beginning of this addendum. To focus the issue, then, we are going to summarize below some basic points that we have developed in previous addenda or in the initial article.

To reach a truly integral understanding of the subject we are dealing with, it is completely necessary to refer to at least three different facets in the All-One: non-dual absolute reality, potential relative reality, and spatiotemporal relative reality.

—**Non-dual absolute reality**: Since all manifested reality inexorably appears in the form of interdependent dualities —subject/object, inside/outside, origin/end—, we can understand them as polar manifestations of a reality that transcends them and that it is "prior" to that dualization. Physicists speak of infinite potential energy in the original quantum void, and sages speak of infinite transparent consciousness in the final mystical void. Our proposal is that these two voids are the same and unique absolute Emptiness, perceived objectively by physicists and subjectively by contemplatives, but which, in itself, is neither objective nor subjective, but unity, identity or indifference of both facets simultaneously.

—**Potential relative reality**: Since non-dual Emptiness is completely devoid of the slightest separation between subject and object, it cannot be perceived in any way. For this reason, if it wants to contemplate itself, it has no choice but to unfold as an original objective pole —basically of energy— and a final subjective pole —basically of consciousness—, fully maintaining its empty essence. Between both poles a wide spectrum of balances is generated between both polar facets, which covers the entire range from the most basic states —of enormous energy and little consciousness— to the highest —of little energy and enormous consciousness—. When this illusory distance of energy-consciousness generated between both poles enters into vibration —like a guitar string— a characteristic fundamental sound and all its unlimited range of harmonic sounds (standing waves) are instantly produced. This means that, let's look closely, from the very originary moment the entire archetypal spectrum of energy-consciousness is already fully

present in an entangled and resonant way. The successive second harmonics that arise with the vibration of the original "string" of energy-consciousness are, precisely, the potential levels of stratified stability that will be updated, one after the other, along the successive steps of universal evolution.

—**The spatiotemporal relative reality**: In a previous addendum we have outlined the basic characteristics of the nested toroidal dynamics through which the potential reality of the archetypal foundation is actualized and unfolds in the illusory holographic world of space-time forms. The departure and return, instant after instant, from and towards that foundation, through its finite and fleeting manifestation in and as the holographic space-time, allows one to actualize, one after another, the successive potential levels of stability of the spectrum of energy-consciousness. This intrinsically creative recursive dynamic between "potential reality" and "actualized reality" is mediated by the unified field of memory that, step by step, is gestating at a fundamental level. All the information collected at any point-instant of the manifested world is immediately introjected into the basic field of collective memory, which, in this way, increases, moment by moment, its creative potential. The ultimate claim of the universal evolutionary manifestation consists in reproducing in a broken down and integrated way, in the world of finite appearances, the non-duality of undifferentiated energy-consciousness, characteristic of fundamental Emptiness. It is, finally, the inexhaustible attempt of Nothingness to contemplate its invisible face in infinite ways.

In non-dual absolute reality, the object and the subject —energy and consciousness— are *undifferentiated*, in potential relative reality the object and subject are differentiated but *entangled*, and in spatiotemporal relative reality the object and subject they are differentiated and (apparently) *separated*. We can exemplify these three possibilities by representing non-dual absolute reality with 0, potential relative reality with a qubit (unit of quantum information) —which not only has the basic states of 0 and 1, but can be found in a state of quantum superposition, with the simultaneous combination of both states—, and to the relative reality manifested with a classical bit —which can represent one of those two values: 0 or 1, like, for example, in the case of a light bulb, which can be in one of these two states: either on or off. That is, a bit can contain a value (0 **or** 1), a qubit simultaneously contains both values (0 **and** 1), and absolute 0 lacks any type of information... or, rather, it includes everything in an undifferentiated way. The passage of potential relative reality —Kastner's "*quantumland*", Bohm's "implicate order", Jung's archetypal "*unus mundus*", Sheldrake's "morphogenetic field", Laszlo's "akashic field" or the Haramein's "unified spatial memory network"—to the actualized relative reality —the holographic

spatiotemporal universe that we believe we inhabit— can be schematized, as we will see below, through the interactive dynamics between the objective (energy) and subjective (consciousness) poles in which the non-dual Emptiness unfolds —the simple absolute Presence, the mere Consciousness-of-Being, the pure Self-Evidence without form, the diaphanous ultimate Identity of everything and everyone—.

What so far, we have called potential relative reality bears a suggestive similarity to what students of the holographic principle known as the holographic plate. In both cases, we are talking about a potential field of entangled information that is holographically projected to the eyes of a determined observer as a space-time universe. That is to say, the holographic plate (or potential relative reality) is not located in any place or moment in space-time, but, on the contrary, it is the entirety of space-time that is potentially located in the holographic plate. As we have seen above, potential relative reality is the common archetype of all possible world lines unfolding in holographic space-time. All these lines of the world —the different modes of vibration of the "string" of energy-consciousness that runs through the illusory distance between the objective and subjective poles, which we have posited at the heart of our evolutionary hypothesis— start from the same original pole —basically of energy— and are oriented towards the same final pole —basically of consciousness—, but their trajectory can be "tuned" in many different ways, at any of the levels of the energy-consciousness spectrum, from the most basic or material to the highest or spiritual. In the addendum on entropic-syntropic evolution we have explained how potential retarded waves (starting from the original energy pole and flowing forward in time) and potential advanced waves (starting from the final consciousness pole and flowing backward in time) resonate with each other at a certain level of the spectrum —standing wave or musical harmonic—, which acts as a fundamental sound, and with this "handshake" between both flows the transaction is completed —wave function collapse— that manifests itself in a concrete event in space-time. Put another way, "every time an observer makes an observation of something in his holographic world, the entangled information encoded on his holographic screen is disentangled and the quantum state of potentiality is reduced to an actual observed state."

As we have suggested a moment ago, the passage from potential relative reality —the holographic plate— to actualized relative reality —the holographic space-time universe— can be unraveled through understanding the mutual dynamics between the objective pole (energy) and subjective pole (consciousness) in which the non-dual Emptiness is apparently dualized. The key is to understand that the separation process between both

poles can be interpreted in two different ways. In one, the object moves away from the subject. In the other, the subject moves away from the object. Let's see each one of them.

From the perspective of the holographic principle, there is no objective physical world out there, but rather everything emerges in a subject-object relationship that occurs when the observer enters an accelerated reference frame, and their event horizon acts as a screen holographic when it encodes qubits of information. This accelerated movement is usually interpreted as referring to the expansion of the universal bubble in the eyes of the observer located in its center. What is amazing about the observer's consciousness is that relativity theory tells us that the observer's central point of view is exactly the singularity of the Big Bang event. So, each observer has their own Big Bang event that creates their own holographic world. All the observers of the universe are in the immovable center of the cosmic expansion and have remained there since the beginning of time. At the time of the Big Bang, the universe had a diameter of about one Planck length (10^{-33} cm), and space has been expanding outward at an exponential rhythm ever since. Each observer contemplates this accelerating expansion of the universe relative to his own point of view at the center of the universe. What we call the universe is an observer's own holographic world. As we have said, the expression of dark energy allows the universe to expand and cool as entropy increases, the cosmological constant changes to a lower value, and the observer's cosmic horizon increases in radius. This is how more and more qubits of information for the universe are gradually being encoded as the observer's cosmic horizon increases in surface area. In this sense, as we have commented, Haramein and Currivan explain that there is an informational aspect of universal expansion, since the fact that the total information content of the universe constantly increases requires a growing volume of pixelated space-time within which to accommodate this informational evolution.

Next to this perspective in which it is stated that the objective universe is rapidly moving away —outwards— from the observing subject, we can make another reading in which it is the observing subject that is rapidly moving away —inwards— from the objective material universe. Instead of speaking, then, of a progressive *expansion* of the objective universe, we will speak of a progressive *internalization* in the realm of subjective consciousness. To expose this alternative approach, we are going to recall here, briefly, an idea that we have exposed in our article. We can summarize the entire evolutionary process stating that in the original moment and during the first stages of development of *matter*, the facet of consciousness was absorbed in the facet of energy. With the emergence of *life*, the facet of consciousness jumps inwards, separates itself from mere matter, perceives it, and thus can act on it. With the emergence of the human *mind*, the facet of consciousness

jumps inwards again, self-consciousness appears, which is separated from the simple subconscious life, thus increasing the capacity for action on the natural world. With the emergence of the rational *intellect*, the facet of consciousness jumps inwards again, which allows us to think about thought and, in this way, the understanding of how things work and, therefore, the ability to intervene increases exponentially about them. All this process is possible due to the presence, from the very originary moment, of pure consciousness —the "witness" of which the Hindu tradition speaks— as the final pole of the process. Therefore, it should be clarified that this final pole of pure consciousness does not evolve at all —because it remains full and immutable at all times—, but its reflection and identification with the different entities and organisms that develop throughout the process —atoms , molecules, cells, multicellular organisms, vertebrates, mammals, primates, apes, humans...— it does evolve in terms of its ability to actualize that full consciousness, which allows progressively increasing the ability of organisms to capture, store, process and respond to information from the environment. This accelerated evolutionary process has been described by the British theoretical physicist and experimental psychologist Peter Russell as a spiral movement through a "*white hole in time*", which, displaying increasing levels of complexity, connectivity, and consciousness, is heading towards a next final Omega Point.

We have said before that the observer and his holographic world always arise together in a subject-object relationship of perception. For this reason, we propose that the two interpretations of the universal dynamics that we have just exposed —the accelerated expansion of the external world and the accelerated evolution of the internal world—, far from representing two independent realities, are, on the contrary, two complementary descriptions of a same and unique process. When, at the beginning of this addendum, we highlighted the surprising synchrony between the process of expansion of the universe and the process of evolution of life, we suggested that, at first sight, the two phenomena did not seem to have anything to do with each other. But, once the fundamental characteristics of the holographic principle have been exposed, we have understood that these two processes are not only closely related, but that they are, even more, two perspectives on the same and unique reality. The increase in the number of information qubits as the observer's cosmic horizon expands is nothing but the objective expression of the growth in the capacity to actualize subjective consciousness in the successive organisms that unfold throughout evolution. Viewed in this way, the total formal and chronological similarity —described in the first paragraphs of this addendum— between the global expansion trajectory of the universe and the global evolutionary deployment trajectory, far from being a mere coincidence, is the expression logical and natural from

ISSN 1825-7968 2023: 23-39

the fact that both processes are only two partial perspectives of the same and unique subject-object process. So, we can say, indistinctly, that the universe expands because life evolves or that life evolves because the universe expands. Ultimately, subject and object are not two, but the simple illusory appearance through which the non-dual Emptiness tries to contemplate its eternally invisible face.

(Note: The English version of this Addendum 9 used Google translate)