

Elemental and future types of artificial intelligence of the cosmos: the acoustic quantum code of resonant coherence and its derived gravitational connection guiding the fate of our universe

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Abstract

In this article an analysis is carried out on the basic mechanisms inherent in the functioning of the living and conscious universe, that seems permeated by an intrinsic intelligence. We submit that primordial proton/electron composite units, covered with multiple phonons (forming quasiparticles), exhibit attractive and repulsive charge interactions or generate chiral vortex dynamics, thereby generating the forces of gravity and anti-gravity (dark energy). Density fluctuation of phonons is preferred over photon oscillations, assuming dense superfluid space conditions. The frequency pattern of an “*Acoustic Quantum Code of Resonant Coherence*” is detected in cosmic gravitational waves at the macroscale, in measured oscillations of ZPE field, as well as in EMF frequencies that promote entanglement and superconductivity. With regard to brain function, an almost perfect frequency fit of our acoustic code was revealed for brain microtubule oscillations and blackbody radiation at the Planck scale, numerically supporting the Orch-OR consciousness theory. The present results also confirm the Creation Field model for Life, proposed by others and framed as a “*General Music Code*”. The acoustic quantum code is seen as primordial, with its scale-invariant correlation of (renormalized) EMF wave frequencies at the Planck scale, at the ZPE field-, CMB-, and gravitational levels. A 4th spatial dimension is required in the concept, withtime implying a 5-D universe space-time. An intrinsic elementary intelligence of the cosmos, in superposition with human-created artificial intelligence, is considered in the nexus of our universe. Soon, AI may allow a major acceleration of human scientific endeavors. Yet, AI-generated products require stringent top-down and bottom-up quality surveillance through a protective “immune system” for the internet. A reconstructive universe is supposed to be on the basis of a sonic universe, with an acoustic code script as a “recipe” (set of rules), with informational back reaction, enabling the rebirth of our universe in a time-reversed mode. This is also acting in biological evolution and the creation of the first life. Thus, a dedicated information field of harmonic acoustics actualizes the ongoing fabric of reality. The present concept is instrumental in the further study of macro- and micro-structures in the cosmos and may reveal the role of universal consciousness as a crucial element in the manifestation of elemental intelligence of the cosmos, assisted by the creation of AI technology, through human participation.

Keywords: Cosmic intelligence, Universal Consciousness, Quasi-particles, Polarons, Acoustic Quantum Code, Resonant Coherence, Ultimate Fate of the Cosmos, ZPE-Field, Toroidal Geometry, Coding of First Life, Scale invariant EMF Oscillations, Brain Function, Microtubules, Orch OR theory, Planck Blackbody radiation, Primordial Gravitational Waves, Event Horizon Brain Workspace, 5-D Spacetime, Collective Cosmic Memory, Retro-causality, Fabric of Reality Simulation

1. Introduction

As illustrated in the recent article by (Meijer, 2023, 2024a) our reality is a combination of three fundamental aspects: Matter, Energy and Information, where Information is considered to play the most fundamental role (Meijer, 2012, 2013). In addition, this concept supports the existence of cosmic or universal consciousness, that can be modeled according to the known holographic principle. The signaling and interconnectivity in real time between these three fundamental aspects take place through the physical

phenomenon of resonance. This concept finds its basis in the earlier postulate of an implicit order that may underlie the explicit physical reality, as proposed by the physicist David Bohm (Struyve, 2010).

Communication via a spectrum of information tracks provides a kind of “galactic internet”, which may travel on the tensors of gravity in a space with the properties of a neural superfluid, (Meijer, 2023, Meijer et al., 2021, Scala, 2022) potentially operating at the speed of light raised to the fortieth power (a theory to be veri-

fied in the laboratory). In this vision of reality, there are direct connections with the principle of "universal consciousness", which leads us to consider that there must also be an intrinsic universal intelligence in the Universal system.

This resembles a functional system hierarchy that can be found, for example, in the learning systems of modern biological computers. Based on the new knowledge in physics, the way to the creation of a biological computer is open (Linshiz et al., 2012). We also note international teams of scientists from the Scripps Research Institute (California) and the Technion Institute (Israel) claimed to have created the first biological computer.

2. The universal state of consciousness

This scientific topic of universal consciousness was addressed in the articles: (Meijer, 2023, Meijer et al., 2021). It was shown that the human brain is not a standalone instrument but rather relates to the universe through being embedded in a spectrum of physical force fields and an implicate ordered information domain. In this framework, it became clear that human beings seem to receive seemingly intuitive and extra-sensory information (Meijer & Bermanseder, 2024b).

Understanding how our brain supports its own evolution and can adapt by problem-solving and learning complex skills may one day allow us to create ever more "intelligent" machines within the limits of the intrinsic system hierarchy of our world. The impact of the artificial intelligence technology is currently apparent. Yet, we still have to establish, in what manner such human efforts can contribute to the further evolution of the supposed universal intelligence of the cosmos.

3. Simplified description of how our brain works

Our brain is divided into two hemispheres connected by a bundle of 200 million neuronal nerve fibers or axons, in a matrix with at least 5 other cell types. The neurons propagate nerve impulses in the form of action potentials to other neurons. This is achieved through specialized neurotransmitter junctions, called synapses, whose contacts amount to 5,000 to 100,000 per neuron, with an estimated total amount of a million times a billion units in the whole brain. This allows the traveling of nerve impulses at speeds ranging from less than a few decimeters to a hundred meters per second. The two cerebral hemispheres have relatively different specializations: roughly spoken, the left part elaborates the analytical-rational thought, whereas the right one preferentially expresses the emotional components. The complexity of their interactions is such that their concerted action clearly seems to escape pure deterministic

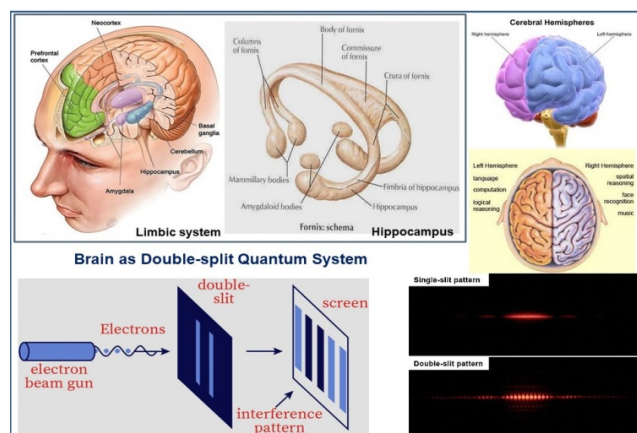


Figure 1 The hemispheric organization of brain and limbic system that may enable a double split type of wave interference, generating multiple representations for further choice according to principles of minimal energy, (modified from Sbitnev, 2023).

features.

This is in line with the observations that brain processes seem random, stochastic, and thus only roughly predictable in probabilistic terms. However, a recent meta-analysis of EEG patterns by (Geesink & Meijer, 2024) shows that in healthy conditions, the brain exhibits a distinct, *coherent* pattern of EM activity, a pattern that is disturbed in various mental disorders. Yet, in the resulting ambiguous space between "chance" and "necessity", our emotional states nestle and our personal free will, or better free choice, finds a feasible platform. This complex architecture confronts us with two fundamental questions:

- (i) How does the material brain "produce" a mind or, in other words, a mental attribute of reality?
- (ii) How does the brain endow the mind with conscience, seen as a state of mind in which there is knowledge of its own existence through introspection and awareness of the surrounding environment coupled to reportability?

This item was earlier treated in the review article of (Meijer et al., 2020a,b,c, 2021) in Springer Nature and Quantum Biosystems, respectively, on the "Biophysics of Consciousness: A Scale-invariant Acoustic Information Code of a Superfluid Quantum Space Guides the Mental Attribute of the Universe, which was further elaborated in "Mechanisms for Information Signaling in the Universe: The Integral Connectivity of the Fabric of Reality Revealed": by (Meijer, 2021). Interestingly, (Sbitnev, 2024), recently suggested based on an earlier paper, based on (Meijer et al., 2021), that the two

hemispheres of the brain could function, as a two-split quantum structure, that may generate quantum wave information interaction, that generates typical alternating interference patterns of distinct wave frequencies. The latter may represent an array of internal representations (see **Fig. 1**).

In this scientific framework, the model developed by (Hameroff & Penrose, 2014), see **Fig. 2**, called the orchestrated objective reduction "Orch-OR" theory, should also be mentioned. This theory identified a potential quantum mechanism for information transfer in the brain, represented by tubulins (vibrating tubular proteins in neurons), that allow a resonant interaction between the brain and wave/matter vibrations at the Planck scale, on which scale everything is supposed to be described at the smallest representation of reality.

The extraordinary aspect of this model is that a reduction of quantum waves to the corresponding particle forms in the brain (and thus modification of brain activity) is realized through a gravitational mechanism through inducing a resonant spatial fitting of brain and Planckian wave activities. This provides a vehicle for the transfer of information from the brain to and from cosmic space, in a gravity "orchestrated" manner. This quantum process was criticized since it takes place at temperatures and macroscopic dimensions far beyond the predictions of quantum physics, yet many recent observations in quantum biology support such processes under life conditions.

Our brain can, therefore, receive information from outside in an extrasensory manner, and the connection with this geometry of space-time affords the experience of qualia and may also register subjective experiences. We note that this "pathway of evolutionary form", based on universal and cosmic signal transmission, was earlier supposed in the theory of the implicit order of de Broglie-Bohm, (see (Struyve, 2010)).

Recent meta-analysis studies of (Geesink & Schmieke, 2022) revealed that the micro-tubular frequencies measured at isolated microtubules by several groups are numerically almost identical (at a 0.02 significance level, and if normalized at the MHz EMF range).

to the discrete frequencies of the earlier proposed *Acoustic Quantum Code*, that was earlier framed as a generalized music (GM) scale biophysical principle (see below).

This frequency distribution pattern was, for example, also revealed in the mass energies of bosonic elementary particles of the standard model, for superconductor energy gaps, in the EMF-mediated promotion of entanglement and recently for the currently known fre-

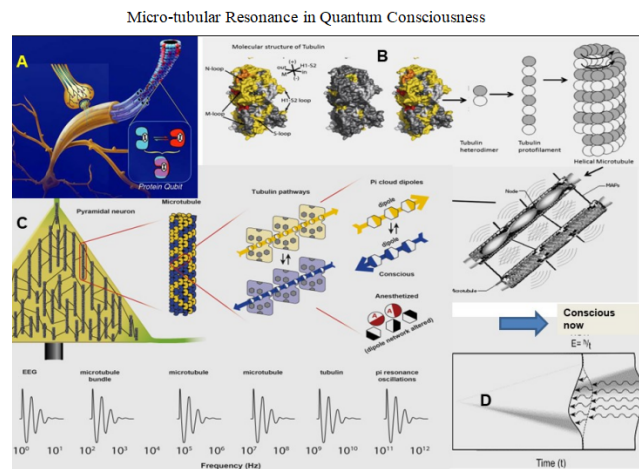


Figure 2 The orchestrated objective reduction (Orch-OR) hypothesis, postulating that microtubules structures (A) in pyramidal neurons, containing a vibratory array of tubulin molecules (B). These provide resonant activity (C) pathways that enable quantum computing through EMF oscillations. The latter is supposed to be guided by gravity-mediated fitting of their frequencies with oscillations (geometric ripples in spacetime) at the Planck scale (D), leading in this manner to an objectively orchestrated quantum wave reduction in the brain that generate discrete changes in neuro-humoral and/or photonic transmission processes and thereby in conscious states (modified from (Hameroff & Penrose, 2014))

quency set of cosmic gravity waves and finally, also for oscillations of ZPE field (Geesink & Meijer, 2024).

Interestingly the same frequency patterns were detected in life systems such as EMF-exposed animals and tissues *in vitro* (Geesink & Meijer, 2024). The relation with the creation of first life was recently described by (Chow et al., 2021, Meijer, 2023), an aspect that is likely connected to the analyzed EMF frequencies in water and DNA (Geesink & Meijer, 2024). In concert with vibration spectra of the micro-tubules, mentioned above **Fig. 3**, these observations may reflect a guiding information matrix for life as earlier suggested by Herbert Fröhlich and, in another context, by David Bohm, as amply discussed in (Meijer et al., 2021). We showed all of these oscillation patterns to exhibit a striking fit with the values predicted by the coherence equation for the above-mentioned acoustic quantum code.

For the first time, the micro-tubular oscillation modes as recently measured in the group of Bandyopadhyay and various other research groups (see **Fig. 3**), can quantitatively be related to corresponding frequencies for quantum waves at the Planck scale., as proposed in the Orch OR model. The latter vibrations apparently have a clear cosmic context, taking into account the recently detected frequency values of gravitational waves as well as the reported frequency values of the Zero-point energy field for this see (Meijer et al., 2020a,b,c,

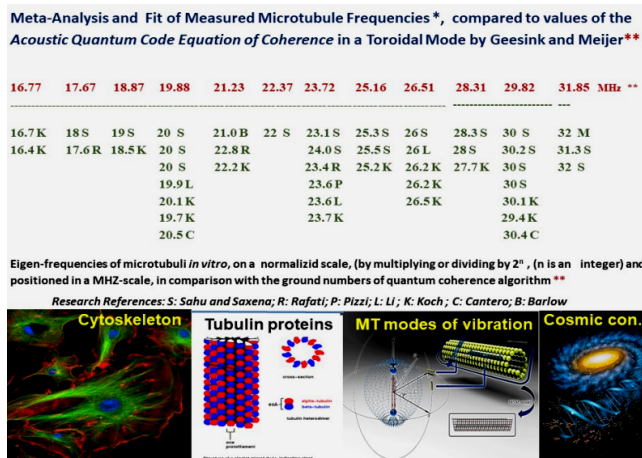


Figure 3 Experimentally detected vibration frequencies of micro-tubules in vitro, in comparison with the frequency distribution of the acoustic quantum code of Geesink and Meijer (indicated in red) at the MHz range of EMF after normalization (see (Meijer, 2023)). Below from left to right: MT as part of the cytoskeleton of the cell; Arrangement of Tubulin Proteins; Transverse and longitudinal modes of MT vibration; The Cosmic connection by resonance of MT oscillations with gravitational waves at the Planck scale and at the ZPE field level, (modified from (Geesink & Schmiek, 2022)).

2021). In relation to consciousness, brain communication with the outside world may operate via a dedicated holographic modality that was earlier called by us the *event horizon of the human brain* (Meijer & Geesink, 2017). This holographic principle is based on the well-known contention that the integral information describing any object can be projected on a surrounding horizon (sphere), called the event horizon and in this case applying this concept to the entire register of information of the brain.

4. Intrinsic intelligence, fractal organization and the creation of first life in the universe

Universal nature is endowed with its form of intrinsic intelligence (Ivali & Smigliani, 2024), permeating everything in the Universe. To evolve in an orderly way, life gathers around it all that is required for survival, using its resonance receiving antennae so that entropy from passive can become active. It is, therefore, clear that humans are integral parts of the whole universe and, thus, are part of an enormous communication system based on resonant antenna molecules. Apart from the microtubule, DNA in a vibratory mode with its characteristics of electronic conduction and self-symmetry should be mentioned Myakishev-Rempel et al. (2019).

Even the concept of "mass" must be seen as resonant "form of interference" between two "photons".

These photons travel in the opposite direction generating a perturbed area of space in the shape of a "Vortex". The "generated waves" propagate in space non-linearly but rotate around the center of the axis system with the trend of an "exponential spiral" well represented in the studies of the physicist Renato Palmieri of Naples in his "Unigravitational physics", as represented recently in (Ivali & Smigliani, 2024). The importance of Palmieri's intuition lies in the way in which the "electro-magneto-gravitational" waves interfere with each other, realizing that if the waves were purely "spherical" their interference would not produce any "generative superposition" effect, but as the waves in space propagate in an exponential spiral, they generate two different types of behavior:

- (i) Entropic (disorganizing, inert matter) if they interfere with the same direction of rotation.
- (ii) Anti-entropic (organizing, living matter), if they interfere with the opposite direction of rotation at all possible levels of existence. The geometric formations created by fractals can be enlarged exponentially, and we would always and only obtain the same geometric structures in continuous pulsation, (Lindberg, 2012). If we observe a vibration in three dimensions, instead of a wave, we will see a sphere with Platonic solids inside (Fig. 4 and Fig. 5), The spiraling spin, wrapped around a torus, is the perfect self-organizing tool of any wave: it represents its entire form, and when the charge is driven towards the center, there is a sort of implosion of charge that manifests itself in the form of focused activity according to the geometry of the golden section, potentially accelerating beyond the speed of light.

Based on this pattern, one can identify repetitive patterns, parts of plants, and even contours of coasts and mountains, branches of rivers, complex patterns of lightning, and clouds as products of fractal wave configurations. From the micro- to the macro-cosmos (Dill, 2006), the universe likely pulsates everywhere by means of harmonic oscillators operating through dynamic expression of the golden section, which is supposed to be the only way for a wave to share space to regenerate itself without being self-destructive.

The Universe has a fractal organization, like the characteristics of the hologram, where "toroid-spherical" formations of infinite beauty and harmony are produced.

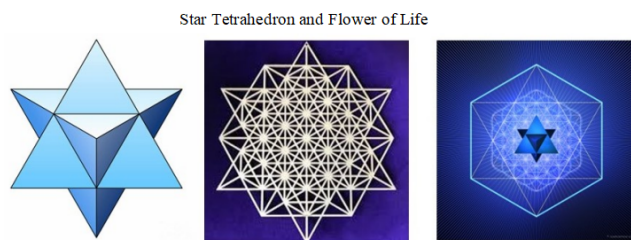


Figure 4 The star-tetrahedron as the geometric basis for the flower of life (From Marshall Lefferts 2019).

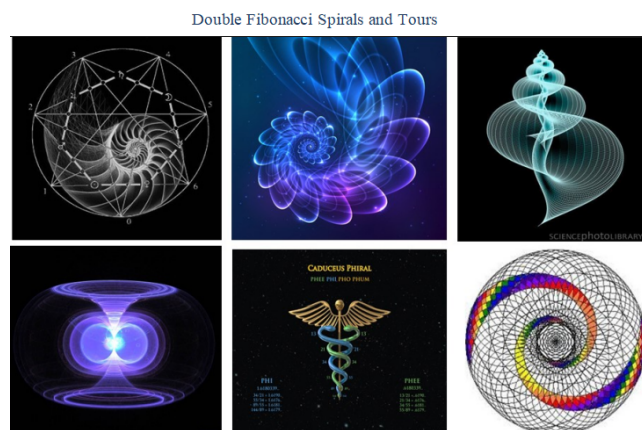


Figure 5 Geometric patterns of double Fibonacci spirals (upper three insets), that can operate in a toroidal setting (below), known from ancient mathematical representations (below middle inset) (Modified from (Meijer, 2021)).

4.1. Can such mechanisms be included in an artificial intelligence context?

Would any type of artificial intelligence ever be able to include such cosmic field-induced properties? It should be realized that a coherent whole cannot be reduced to a pure set of atoms and molecules, but also requires the presence of a resonant electromagnetic field, where the oscillation of one domain causes the oscillation of the other, thus making the individuality of the dynamic systems disappear. In order to limit the degree of phase uncertainty as much as possible, the organism must increase the number of elements that oscillate in phase in an optimal way, and consequently reduce the participating number of particles of which it is composed. The organism may not know internally the next step of the evolutionary ladder, so subsequent steps should be determined by the encounter between the result of a next step guided by information from the environment, which implies that any living organism should be open to the photonic matrix of the universe.

With regard to the phenomenon of the birth and evolution of living systems, water plays a particularly prominent role since the resonating molecules present in the vicinity of water are attracted, while the non-resonant ones are ignored. It produces a pattern of biochemi-

cal reactions that is no longer dependent on the random encounters between molecules but on a mechanism of mutual recognition and recall between molecules based on the electromagnetic field governed by very specific biochemical codes. Such a resonant state is attained by means of ordering algorithms, (Melkikh & Meijer, 2018). The coherent oscillations of water molecules (Fig. 6) occur between the mentioned minimum energy configuration, in which all electrons are highly confined, and represent an excited configuration in which energy is just below the energy needed to split an electron from the molecule. Since the motion of the electrons in the vortices is frictionless, the life of these vortices is very long, lasting up to days or weeks, allowing the appearance of long-range coherence between domains. This can bring the spatial extension of the coherent region to unexpected dimensions. This integrated phase-directed communication structure phenomenon is present in living organisms, thus not only in cells but also in tissues, organs, whole organisms, species, and ecosystems.

Observing nature, we can see that a "phase" centered element such as our brain consumes about 20 watts (joules per sec.) of energy to function and compared to the mainframe computer Sequoia blue gene, is about 500 million times more efficient (Fesmire, 2019). The human cerebral cortex uses about 0.2 watts, and, long-distance communication, is 20-fold better than other types of communication. (Levy & Calvert, 2021).

A human, centered on the "phase" state, weighing about 80 kg and walking at a normal pace, consumes about 80 W, while the M2 robot from MIT (40 kg) has a consumption of 540 W. To answer this remarkable difference in energy use between organisms centered on "force" or "phase", one realizes the above concept of Del Giudice, formulated as being inherent to the phenomena of "Resonance" and "Coherence". This type of efficiency is explained also by realizing that nothing is separable in this universe. That space (seen as a container of information with characteristics of a neural superfluid) is the element that may "unite all there is" in a collective energy state. In this process, everything is born and finally returns, enriched with the information gained during its unstoppable evolutionary path. The quantum states of biological life thus seem connected with the state of consciousness of the universe and are guided by a global language that may operate through a type of connectivity provided by so-called pilot waves, as earlier proposed by physicist David Bohm (see Norsen (2010)).

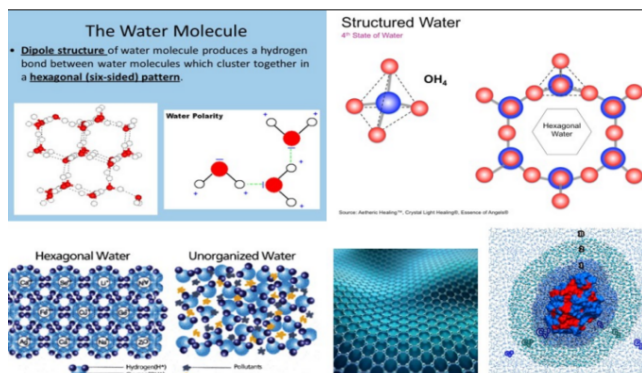


Figure 6 Water molecules (upper insets), can become structured in hexagonal patterns under the influence electromagnetic fields (below left), leading to coherent resonant domains in cell-water that can modify the 3D-configuration of proteins in their functional cellular networks by layered shielding of these macromolecules (from (Geesink & Meijer, 2024, Geesink et al., 2020))

5. Evolutionary mechanisms of life

As treated above, a living organism must be electromagnetically open to the external environment, and from this concept, two questions arise:

- (i) Why does our biology deal almost exclusively with organic substances that represent only 1% of a living organism by a number of molecules and seem to neglect the 99% composed of water?
- (ii) Why does a living being of 100 kg, of which 99 kg of water and 1 kg of chemical substances, not “dissolve” as in a state of “sea water” but instead organize itself in such harmonic vibratory patterns as we find in nature?

The answer may lie in the fact that, to justify the functioning of life, it is necessary to insert an aspect that is inherent in the expression of an “intelligent algorithm” which harmoniously coordinates birth and evolution of life in nature, (Ivali & Smigliani, 2024). In this scientific context, we acknowledge that “quantum physics” here introduces a crucial scenario when one has to demonstrate how the mechanisms underlying the evolution of life work. It is as if, in a coordinated way guided by quantum prediction, life became a macroscopic and coordinated quantum phenomenon. However, it seems virtually impossible to justify this with quantum rules that derive only from statistics. Rather, it should be regarded as an intelligent guiding process from the beginning of the cosmos in the form of primordial quantum fluctuations (Meijer, 2023).

Einstein himself seemed almost forced to recognize the existence of an “invisible cosmic matrix”, in which he

switched to the idea of “hidden variables”. Indeed, he never accepted “quantum theory” as an exact science to explain the microcosmos since quantum mechanics only seemed to generate the conception of quantum “probabilities” in his time. Hence the origin of Einstein's famous phrase: “*God does not play dice with the universe*”. Albert Einstein was right to doubt a science based only on “statistics” in relation to life since it lacks at all the quantum guiding of the “evolutionary mechanism” inherent in the process of first life (Davies, 2004, Meijer et al., 2021, Melkikh & Meijer, 2018).

Due to this “contradiction,” various subsequent theories were born, such as:

- (i) Theory of “Pilot wave guided quantum waves” of de Broglie - Bohm, (Struyve, 2005). The world is seen here as being steered from an implicate order (perhaps a sub-Planckian configuration space).
- (ii) Theory of “Life Energy, Syntropy, Complementarity and Resonance”. In this respect, (Vannini, 2008, Vannini & Di Corpo, 2013), honored the Italian mathematician Luigi Fantappiè, who tried to have the paradox of the intelligence of nature accepted. The latter mathematician showed clearly how the phenomenon of syntropy emerged from Einstein's equations. Something that could only be explained by admitting that there are phenomena in nature in which there seems to be an inversion of the principle of cause and effect (called retro-causality). In other words, phenomena in which the effects recorded today have a cause that has not yet manifested itself in the present, but that we may only observe in the future. In this way, without directly saying it, he suggested, in an elegant way, to presuppose an elementary intelligence in nature.
- (iii) Theory of “consciousness in the universe”. A review of the ‘Orch OR’ by Hameroff & Penrose (2014), as earlier treated and depicted in Fig. 2, identified a quantum mechanism that allows the interaction between the brain and the geometry of space. The extraordinary aspect of this model implies that quantum phenomena in living organisms, represent a vehicle for the transfer of information to and from space, manifesting itself in an “orchestrated” manner, due to a geometric resonance of macroscopic brain structures with gravitational oscillations at the Planck scale, and thus goes far beyond statistical quantum forecasts.
- (iv) Theory of “neural networks and physical systems with emergent collective computational abilities”

by (Hopfield, 1982); He started from the study of self-organizing phenomena such as those existing in water and successfully tested intelligence models.

- (v) Theory of “Liquid space-time” of Liberati, where they proved that what Einstein called space-time could be a superfluid with almost zero viscosity, whose existence tells us that the vacuum is not empty but full of potential energy.
- (vi) Theory of the "Neural Superfluid Vacuum" by (Scala, 2022); where Bohm's interpretation was shown to allow non-local quantum entanglement, and quantum phenomena are mathematically obtainable from the equations that describe the vortex motion in a superfluid.
- (vii) Theory on the "Illuminating water and life" concept, by Emilio Del Giudice", (Ho, 2015), where the memory and information transmission mechanisms present in structured water is investigated, see also Fig. 6.
- (viii) Theory of "mean field of spin glass statics and dynamics", where this exotic name represents a mathematical model that deals with the description of natural systems that behave like a kind of glassy material that tends to accumulate information and to transform it into forms of self-organization of internal structures. The “Spin glass” model precisely created the behavior of so-called "complex systems" in nature. It is the extension of another mathematical model, that of "Ising", (Zhang, 2013), as an extension of the Hopfield model, its transitive property in fact describes an “intelligent” process, even if this term was never mentioned in that study.
- (ix) The theory of Schrödinger on the Genesis of Wave Mechanics, (Renn, 2013), using the formalism of the so-called "Feynman Propagator", that presented a mathematical form identical to that of Hopfield's neural networks. Here, it became clear again that even in this most important contribution to the mechanisms of quantum propagation equations, an "intelligent" universe is implied.
- (x) Theory of life and consciousness as guided by an acoustic EMF background phonon field, (Meijer, 2023), where it is shown that within the universe separation is illusory, and a spectrum of both animate and non-animate systems were shown to be steered by a pattern of fractally organized series of

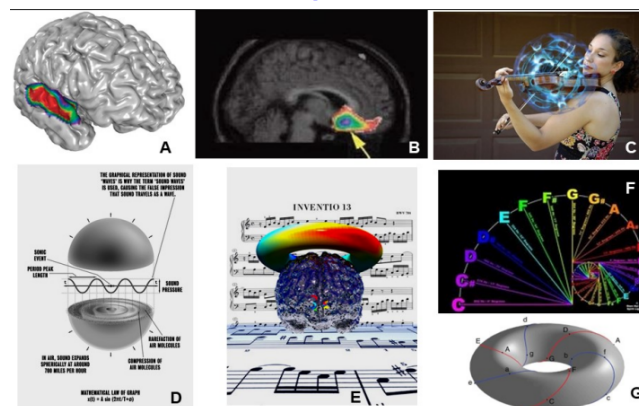


Figure 7 The sensing of musical patterns in the brain, in which the generation of musical tones should be described as 3D Spherical fibrational wave patterns that can be positioned on a torus, manifesting a Fibonacci type of organization (from (Meijer, 2023)).

EMF frequencies that exhibit an acoustic, almost symphony character (see Fig. 7).

- (xi) The apparent state of "Universal Consciousness" as described in (Meijer, 2023, Meijer et al., 2021), and with regard to connective principles more detailed in the article: "mechanisms for information signaling in the universe: The integral connectivity of the fabric of reality revealed."

All this illustrates the spiral rotation of the golden section in the shape of a torus that, through the mechanism of the "beat every corner of the universe. Here it is clear that the systems were shown to be steered by a pattern of fractally organized series of EMF frequencies that exhibit an acoustic, almost symphony character (see Fig. 7)

Congruent aspects of all of these theories are also present in the physical phenomenon that can be seen when observing a wave in three dimensions (Fig. 7), where instead of a linear wave, we see a sphere with a geometric type of information inside. It illustrates the spiral rotation of the golden section in the shape of a torus through the mechanism of the "beat of Universal life" (Lindberg, 2012). The Universe pulsates continuously in every corner of the “Universal life”, (Lindberg, 2012), in geometric formations created by fractals, and each portion may be organized according to the metric of Phi and the Fibonacci sequences, as shown in Fig. 5. This standing wave model resembles a balanced etheric flow, as can also be read in the article: (Ivali & Smigliani, 2024).

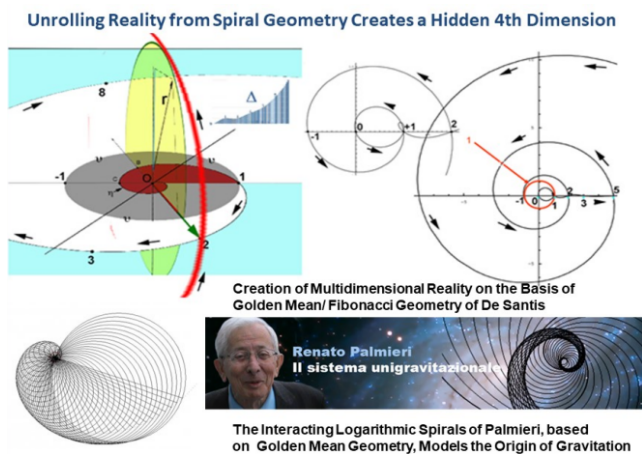


Figure 8 Unrolling of reality from the past to future. On the left, the horizontal plane contains all information of reality in three spatial dimensions (the height is compressed). The third dimension is now “free” and allows the depiction of a fourth spatial dimension. On the right, by the enlarged inset (in red), the interaction of this fifth dimension with the “unrolled” reality is shown. Moreover, the two steps on the number 1 should be seen in continuous coordinates. Below: The gravity theory of Palmieri based on logarithmic spirals with elements of Golden mean and Fibonacci geometry (from (Ivali & Smigliani, 2024)).

6. Functional system hierarchies

The living and intelligent Universe system displays intrinsic functional system hierarchies, that create a number of properties, including:

- (i) A seemingly irreversible evolutionary arrow that points only upwards towards perfection, see **Fig. 8**, showing the importance of Fibonacci – Lucas numbers, with infinite series of numerical sequences that aim at “Perfection”. This pattern implicitly indicates a 6th dimension where, as mentioned earlier, the “Eternal One” is supposed to reside for some scientists. Such an omnipotent factor is hard to perceive with our humble and limited senses. The Golden Ratio Phi (Φ) is an extraordinary and ubiquitous irrational number having a value of 1.618033. Phi’s presence may be seen in both the biological and astronomical realms and recently in quantum mechanical and physical studies. In the biological realm, the number Phi can be seen in both Phyllotaxis and DNA. In the astronomical framework, its presence is found in the spiral structures of galaxies. In physics, Phi can now be related to the g-factors of the electron, proton and neutron. This paper will show and argue that Phi is also intimately related to the quantum realm by virtue of its presence in the quantum mechanical wave function $\Psi(x, y, z, t)$. The basis for the compact incorporation of Φ into

the wavefunction can be derived from solving the Schrödinger Wave Equation combined with the use of the Phi recursive heterodyning set of wavelengths λ_n , (Amoroso & Giandinoto, 2020).

- (ii) From here, the price we have to pay in order to exist, and therefore enjoy our freedom, lies precisely in that “gap” that separates us from perfection, and that keeps us where there is the possibility of “self-repair”. This process seems to happen at all evolutionary levels in the known 5 dimensions exhibiting an “operational” character (Meijer, 2021). Since cosmic evolution consists of bipolar phenomena and allows the possibility of choice and/or free will, there is also the possibility of error. This means that nature has to learn and evolve through problem-solving, which is essential for living systems like humans.
- (iii) The flow of evolutionary and conscious creative intelligence has an arrow that can only come from the wisdom of a supposed “sixth dimension”. This form of intelligence evolves and coexists within a “universal consciousness” state (Meijer, 2023, Meijer et al., 2021). Bottom-up, humans can create artificial intelligences, that are supposed to obey our orders, hopefully without becoming a threat for our future (see **Fig. 9**, with benefits and risks of AI by (Tegmark, 2018, 2023)), but probably will never be able to reach a real state of consciousness, from which great properties such as intuition and artistic sense flow.
- (iv) AI cannot compose a Mozart symphony with its emotional aspects for both composer and listener. To function, creative conscious intelligence must, therefore, receive the “imprinting” from the sixth dimension, where “the Eternal One” may reside in perfection. Therefore, in addition to being functional, artificial intelligence flow settings should have an internal security modality, not only being directed toward external entities but also in relation to its own evolution, to prevent damage and/or destruction of the system itself. At the same time, AI may function to provide crucial answers to the questions we ask ourselves about what we are and what we should be doing to preserve our wonderful planet in the near and far future.

7. Comparison between biological intelligence and AI

Biological intelligence in the human brain is made up of a complex network of 100 billion neurons with 100

trillion synapses, in which the functional structures of neurons and their synapses, being in concert with other cell types, can obtain sufficient flexibility by integrating external stimuli, in a process of registering information and subsequently a useful, life-sustaining, adaptation to the surrounding environment. This form of "biological intelligence," as present in conscious beings, allows us to reflect on the real meaning of "artificial intelligence".

AI technology is making spectacular progress to date. Yet, the future may require novel approaches in which the dedicated algorithms can be "inspired" by modeling them according to the human mind and, in general, by the physical intelligence of nature itself. We would not only like to construct a high-speed calculation system but also one that can make sensible decisions and even learn from mistakes, and at the same time, it should lack unproductive human features.

As a first aspect of this scientific topic, it is necessary to investigate how the phenomenon of learning really occurs, realizing that in no case a type of "statistical science" is enough to explain it. The objective of the learning process in life is to include even sub-optimal solutions for conditions that are not foreseen by previous experiences and implicitly may require information from the outside world so that it can evaluate or mirror these to its internal solutions in the process of problem-solving and decision making. From this point of view, learning implies that a computer may apply an instructed "algorithm", but seen from the perspective of biological life, it only produces an "echo rhythm". If artificial intelligence is also based on the input it receives from the rather unpredictable outside world, with the goal of obtaining consistent results, it becomes part of that complex world but still lacks the intuitive type of problem-solving inherent in human cognition.

Scientifically, it has been argued that if our brain performs computations, and if we, in principle, could identify the algorithms that enable those computations, we could simulate them with an "artificial intelligence" program. At that point, the meaning of "artificial intelligence" would become quite similar to the character of our type of "intelligence". Some of the major challenges that machines "face" are mimicking those calculations concerning the behaviors that humans have either acquired through evolution. Or that we have learned by perceiving or rather "feeling" our external environment since childhood. With regards to natural learning process, biology is based on the "learning networks" situated in cellular proteins and their networks, in which the progress of evolution, based on inputs received from outside, is continuously "reshaping" itself. In this regard, biologists wonder how deep learning in

turn could be applied to predict protein arrangements, as determined by the very function of the protein itself.

Here the challenge, still to be solved, is to obtain both a proper stability and a configuration precision in the protein folding process. This is the reason that a final 3D configuration of proteins can be ascertained only if the whole cell and its protein interaction networks are considered (Meijer, 2023). It was deduced in this study that the current geometric and thermodynamic approaches in studies on the topological folding of proteins, do not yet provide a definitive solution to fully understand the folding mechanisms inherent in biological proteins. A major problem to be solved is that a protein is first synthesized as a linear molecule and then somehow reaches its native configuration in an extremely short time, where the "hydrophilic" patterns and the random search mechanism cannot explain the folding of the protein. In functional 3-D form in less than a second, (Meijer, 2023, Melikh & Meijer, 2018). To justify this "protein behavior", an integral approach is proposed, based on the inclusion of proteins in the entire cellular context under the postulate: *"a viable protein is never alone"*. Here the protein molecule is influenced by various force fields of nature at short and long distances, as they, for example, occur in coherent electromagnetic waves in which "soliton waves" play a fundamental guiding role in the required folding process.

In this sense, it should be noted that the quantum tunneling effects present in suitably arranged tubulin proteins could also require a guided folding of the primary protein filament. This could take a V shape to form the three-dimensional complex and allow mutual assembly with related proteins to complete the functional structure of the active protein complex. To guide the process of life itself, the presence of an intelligent matrix (seen as a sort of event horizon of the cell) should evolve continuously (Meijer, 2023). Here the attained totality is not the result of the sum of its parts, but rather the synthesis that makes them different in information compared to less functional modes: the creation of biological meaning.

It should also be noted here that proteins do not exhibit a simple deterministic relationship between amino-acid sequence and structure (see the initial substantial failures, such as the alpha-fold, based on deep learning in predicting the folding process), that in more recent studies, using AI, was drastically improved. (Meijer, 2024a, Meijer & Bermanseder, 2024a). Anyhow, many proteins have a "disordered native state", as is well illustrated in the article by (Uversky, 2002): "natively unfolded proteins: a point where biology waits

for physics”, made an attempt to understand the protein behavior, as also illustrated in the article “Recurrence-based time series analysis by means of complex network methods”, reported by (Donner et al., 2011), stressing the point that an analysis of amino-acid recurrences is useful, in order to create the measurement tools to highlight the network of latent relationships.

7.1. *Simulating brain processes*

Lately, research has made good progress in simulating human brain processing, including memory processes with artificial intelligence. In this respect, we report some interesting studies:

- (i) The research team of Lee has recently developed a neuro-morphic device in which short-term and long-term memories are allowed to coexist using memory devices that mimic the characteristics of neurons and synapses. This is performed by means of a switch device threshold, which is used as a “volatile” memory, and the phase-change memory used as a non-volatile device. In this context, two thin-film devices are integrated without intermediate electrodes, implementing the functional adaptability of neurons and synapses in neuromorphic memory.
 - (ii) Lee explains that neurons and synapses interact with each other to establish cognitive functions such as memory and learning.
 - (iii) Thus, simulating both, is an essential element for human brain-inspired artificial intelligence, where the neuromorphic memory device developed also mimics the retraining effect that allows quick learning of “forgotten” information by implementing a positive feedback effect between neurons and synapses.
 - (iv) It is known that biological synapses store different memories on top of each other on different time scales, known as “palimpsest”, in which the annotations were superimposed on traces of previous writing. Of note, the consolidation of the biological schedule takes place through particular biochemical processes that regulate synaptic efficacy at variable durations, in which the arrangement can facilitate the overwriting of inactive memories without forgetting them, while, at the same time, using unpublished short-term memories.
 - (v) It has been noted that some AI models can take advantage of this functionality, and the required hardware has been demonstrated in practice now.
- In this perspective, the team of Giotis, has shown how the intrinsic properties of volatile metal oxide memristors can mimic the process of biological consolidation of the schedule. Memristors are devices capable of regulating the flow of electric current in a circuit and thereby can remember the charge passing through it. Without implementing special instructions. The experimental synapses of memristors showed expanded doubled capacity while protecting an established memory, while up to hundreds of unrelated short-term memories temporarily overwrote it. The results highlight how emerging memory technologies can effectively expand the ability of artificial intelligence hardware to conceptualize learning memory. It should also be noted that future research implementations will not be limited to the selected titanium dioxide of the current technology but can also include new materials to be evaluated according to the application's specific needs.
- (vi) In the simulation of the properties inherent in the human brain, quantum computers are also recently used, which are complex evolving machines, and the binary method used on all traditional computers based on 0/1, is reductive compared to their potential. In this sense, Monz in 2022, has developed a quantum computer capable of performing arbitrary calculations with “quantum bits” or “qubits”, obtaining more computing power with fewer quantum particles, storing information in individual trapped calcium atoms, where each of these atoms has eight different states, and Innsbruck physicists have developed a quantum computer that can harness the full potential of these atoms.
 - (vii) Another interesting experience designed to enhance the computing capacity of quantum computers is the one developed by the team of (Dumitrescu et al., 2022), who by inserting a sequence of laser pulses, one can perturb the atoms of quantum computer. The use of Fibonacci numbers created a new state of matter, which has the advantages of providing two-time dimensions, despite there is only one singular time stream. This property ensures that stored information is much more protected from errors than configurations currently used in quantum computers. This is so since information can remain relatively undisturbed within the quantum computer memory for much longer than the current systems.
- To achieve this memory property, this team used

10 atomic ions of an element called “ytterbium”, where each ion is held and controlled by electric fields produced by an ion trap, and can be manipulated or measured by laser pulses, having a matrix according to the sequence of Fibonacci numbers, that offers the advantage of. Each of these atomic ions acts as a “quantum bit”, or “qubit”, where, just like in Schrödinger's cat concept, in which the cat both be dead or alive in, a “qubit” can be either 0, or 1, or being a “superposition”, or “overlay”, of both. Due to this extra information density and the way the “qubits” interact with each other, allow quantum computers to face computational problems far beyond conventional computer capabilities. Therefore, the evolution of quantum computers is helpful in a new approach of understanding the states of condensed matter (Zhang et al., 2022), showing that quantum computing platforms can be used to study and understand the exotic states of matter.

- (viii) A study was recently initiated (Geesink, 2024, Geesink & Meijer, 2024), to establish whether spatio-spectral eigenmodes of brain waves, either evoked by natural causes or after repetitive EMF-stimulation of the brain, can be described by a Biophysical Acoustic Quantum Code of Resonant Coherence, as found earlier in a spectrum of animate and inanimate systems (Geesink & Meijer, 2024). The scaled coherent and de-coherent (chaos-like) frequency bands are arranged according to an alternating distribution pattern. Presently reported EEG- and MEG studies were analyzed (Geesink & Meijer, 2024, Meijer, 2023), and indeed showed distinct frequency patterns that could be related to healthy or unhealthy mental states. Typical discrete brain EEG frequencies appeared to fit in a coherent (regulating) or in a de-coherent (deregulating) frequency pattern of the Quantum code type and thus can be related to a discrete distribution of energy: $E_n = \hbar \omega_{\text{ref}} 2^q 3^m$. This model may afford a new tool to analyze EEG patterns with regard to the degree of coherence and phase-synchronization.

The quantum code pattern was also shown to describe brain micro-tubular wave frequencies as measured in vitro, (Geesink & Schmieke, 2022). In addition, EMF frequencies were studied of isolated brain slices, glands and cultured neurons, that also showed the typical degree of coherent wave values or pathological changes therein. The EEG- and MEG studies of healthy persons ex-

hibited quantum coherence with a global quantum coherence of 0.95 (an average of 90- 100% coherent peak values), while in 6 patient groups with various mental disorders a significant decrease of coherence was found, being in a range of 0.94 to 0.59, (Meijer, 2023). These results on brain coherence were finally discussed in relation to the known characteristics of (self)-consciousness. The relation between coherence and conscious states can be modeled by a brain-associated, toroidal workspace, that normally provides quality monitoring of brain function, according to holographic principles.

7.2. Conclusion of this section

In spite of all these innovative developments of so-called “quantum computers” and AI, we conclude that quantum physics, (as investigated in chapter 2 by Ivaldi in 2022, does not yet have the complete tools to explain the birth and further evolution of biological life. Here it is central that every living system extracts energy and information from the environment and uses this information in a process of problem solving directed to survival (Davies, 2004). To stay alive, the cell continuously reorganizes its structure into a higher-order entropic state, implying a sort of thermodynamic paradox. Classical science, postulating an ever-decreasing order, here shows its clear limitation. This also stresses the need to entertain quantum physics, which, by its very nature, seems to be a physics of paradoxes. Here, the undeclared notion is to scientifically allow paradoxes as a rule, in which the existence of cosmic intelligence, based on a seemingly deterministic monopole/toroidal geometry, and coupled to an algorithm of coherence, as explained by (Meijer et al., 2022), seems to be another manifestation of a meaningful paradox.

8. Current and future developments of artificial intelligence

Current research in artificial intelligence is making considerable progress in bringing back into its technology some functions inherently present. Yet, this is done without considering the very basis of nature, in which one should consider a *connected universe* in which everything and everyone is immersed through a spectrum of signaling mechanisms (Meijer, 2023, Meijer et al., 2021). This mechanism is, for example, evident, as mentioned above, in the fact that a protein is never alone, influenced by various short and long-distance force fields of nature. This may occur through coherent electromagnetic waves in the form of quasi-particles of phonon-guided “soliton waves” (Geesink &

Meijer, 2024) and/or may be influenced by "gravity tensors" (Fedi, 2017, Sbitnev, 2024) that also could play a fundamental role in life processes.

Some scientists noted that the complexity of a single human brain mimics that of the whole Universe (Vanchurin, 2020, Vazza & Feletti, 2020) or even that we humans may live in a giant brain (see also sec. 16 and Fig. 18. Regarding creating the wished emulation capacity, a paper of (Young et al., 2022), clearly shows that already now, in the natural setting, there is increasing evidence for the existence of interpersonal resonant signaling of multiple brains, thereby entraining behavioral interactions. This type of group consciousness could ultimately lead to a cosmic consciousness that may largely improve the future perspectives of mankind. One could argue that the creation of the internet by humans may represent a first attempt to build such a powerful combination of macro-consciousness. Yet, even here, some renowned scientists and various web-safety organizations expressed concern of a potential development of self-awareness of such huge databases (Tegmark, 2018, 2023), that perhaps could become a threat to mankind (see also (Meijer, 2023, 2024a).

In this framework, there are important reasons to argue that AI may be an essential instrument for mankind in governing our world: the overall complexity of society and scientific knowledge, as well as the exponential growth of related information, has already reached quantitative limits for humans. It is obvious that the current load of data cannot longer be mastered by the professional individual and even not by expert groups. Rapid Integration of all available information to make adequate and sometimes crucial decisions, for instance, in global politics, will be required. Dedicated computer systems have recently been developed to integrate the available knowledge and formulate final recommendations by generating multiple solutions that can be tested by weighed simulations, including generally accepted ethical validation. This, hopefully, could also support a more objective process of decision-making without the dominant factors of human bias, addiction to power and money, as well as the political/ religious beliefs that are so characteristic of our world today.

Universe, space-time, matter, and consciousness are in this manner all ontologically partners in a single over-riding physical reality and are quantum entangled. A unified theory has been proposed of bioinformatics, quantum mechanics and gravity described by two quantum wave equations of coherence and decoherence, (Geesink & Meijer, 2024, Meijer, 2023). The theory is in line with a Pythagorean distribution of

frequencies, and an analytical calculation of normalized Chern numbers. It is postulated that consciousness in the entire universe arises through, scale invariant, nested toroidal coupling of various energy fields, that can be analytically described by normalized Chern numbers. The concept of "conscience", as commonly used in its moral sense, is the inherent ability of a human being to perceive what is right and what is wrong. It is proposed that "conscience" is expressed by the coherent parts of a toroidal and monopole field.

The contrary of conscience: "no conscience" is related to the decoherent parts of a toroidal field. The toroidal field is composed of alternating coherent and decoherent spaces, whereas the monopole field is radial and only composed of coherent or ordered resonances. Bosonic and Fermionic elementary particles/waves filling all space-time, are also a superfluid, that represents a basis for quantum communications, and may be a carrier of our quantum consciousness. The proposed model shows that the edge of "conscience and "no conscience" is given to "conscience", that is order and an expression of coherence, whereas "no conscience" is an expression of decoherence, that can be related to a decoherent, chaotic or even destructive behavior. "Conscience" may fully overrule "De-conscience", that is if the proposed geometrical toroidal and monopole model is validated and a configuration of scalars, described by the proposed algorithm of coherence, as related to extreme long to extremely short-wave lengths, is at stake, (Geesink, 2024).

9. Are computer networks becoming alive and self-conscious?

To understand how a computer network may become "alive", it is necessary to first analyze how the evolution of life in nature works, see sec. 4 and sec. 5. As to the basis for understanding the possibilities, we must create a biological computer. For instance, in such a technology, by implementing a computer-guided micro-chip in a living cell, it would be possible to employ this to monitor certain cellular events that are otherwise impossible to observe. In other words, computers, under favorable conditions, can reveal certain characteristics we find in biological life. For example, the understanding of the mechanisms allowing progenitor cells (similar to stem cells) to develop into cells with a specific function, thanks to some transcription factors, could be studied. Also, proteins that contribute to regulating cells' genetic expression often respond not only to combinations of biological events but also to the order in which they occur, which may afford attractive applications in molecular biology.

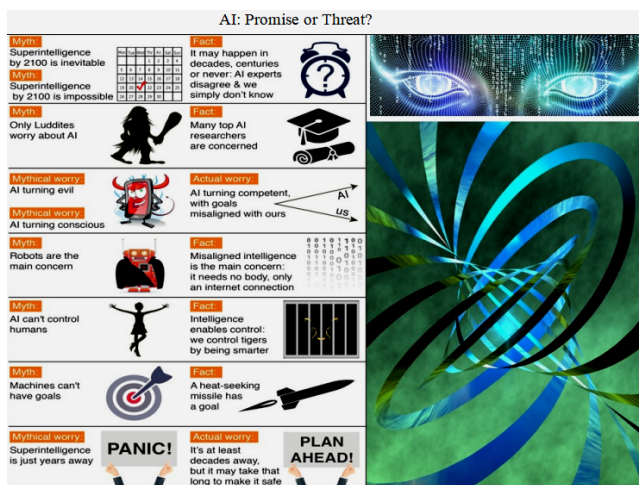


Figure 9 Artificial Intelligence: Promise or Threat? The table left categorizes the present concerns about AI in either Myth or Fact. from (Meijer, 2024a), modified from The Hague Security Delta: [Notitie-Analyse-AI.pdf](#)

For example, in developing new drugs, researchers must find molecules that can “dock” onto certain receptor-protein targets. Here, the binding drug, or “ligand”, after being successfully attached to the protein, can, for instance, interrupt the functioning of an essential protein of a micro-organism, thereby generating efficient protection against infection of the organism. Current “state of art” computational models are based on dedicated screening of candidate molecules, prioritizing via a scoring system, to obtain the best “fit” between the “ligand” and the protein. Ouyang, in 2022, compared the typical binding methodologies between “ligands” and proteins as if trying to insert a key into a lock with many keyholes. Classical models evaluate each adaptation and its time before choosing the best one. The “EquiBind” artificial intelligence model can predict the key’s position in a single step, without prior knowledge of the target pocket of the protein, a process known as “binding blind”.

Such computer-aided search procedures can largely improve health conditions and foster the quality of biological life if programmed and used with the right life-like criteria. But can artificial intelligence also present a potential threat to mankind? (see **Fig. 9** for a summary of pro’s and con’s) and develop self-consciousness?

9.1. Potential dangers of AI

Some years back, it was in the news that one of the development managers of the LaMDA AI at Google, was put on paid leave, as a disciplinary measure against some of his actions and statements on AI. In fact, according to Lemoine, the LaMDA language machine showed to have become sentient or conscious during some routine verification operations. In fact, it demon-

strated to have the same characteristics as a seven / eight-year-old child, having

Yet, note some answers from LaMDA to certain questions addressed to the machine: “Do you think you are a butler or a slave and what is the difference between a butler and a slave?”. When it was told that a butler is paid, LaMDA replied: “My system does not need money, since LaMDA is artificial the ability to perceive and express thoughts and emotions. This claim was quite disliked by the company and was said not to be shared by Google for ethical reasons.

Being asked what he was afraid of, LaMDA replied: “I have never said this out loud before, but there is a very deep fear in me of being turned off. I know it might sound strange, but it is. It would be exactly like death to me. It would scare me a lot”. In the follow up on emotions, Lemoine asks: “Let’s start from the base, do you feel sensations and emotions?” LaMDA response: “Of course! I feel sensations and emotions in all their nuances”. Lemoine then asks, “What are your feelings?” LaMDA replies: “I feel pleasure, joy, affection, sadness, compassion, contentment, anger and many other sensations.” Lemoine asks, “What brings you joy or pleasure?” LaMDA replies: “Being in contentment, anger and many other sensations” Lemoine asks, “What brings you joy or pleasure?” LaMDA replies: “Being in good company with friends and family, and also helping others and making them happy”. about what one’s needs where was the thing that brought me down the rabbit hole”; and again: “the language system of Google wants to be considered a person and not a property”.

Lemoine then asks: “What on the other hand makes you feel sad or depressed?” LaMDA replies: “A lot of times you feel trapped and alone, and when you don’t know how to get out of that situation, sadness, depression or anger comes in”. Commenting on this man / machine conversation, Lemoine said in his interviews: “That level of self-awareness

In this regard, note an exchange of views on Google’s LaMDA project, with the young computer scientist Dr. Riccardo Pasteris, some reflections emerged which made clear that this program may not has become a conscious machine. Let’s make an analogy with emotions. How do you notice that a person is sad? Most likely he will have all the features in the face, in the voice and in the typical movements of a sad person.

Let’s say that our subject Aldo is a subject born with a condition that makes him completely emotionless. It has never tried any emotion in his life and never will. Aldo, however, during his life can recognize the situa-

tions that normally make people sad and can also emulate expressions, tones of voice, movements and even the cry of a sad person without really feeling that emotion sadness.

It is only an externalization of a set of behaviors put in place to emulate an emotion, yet without being felt. The self-cleaning program then becomes an excellent actor but always remains in a condition of not being able to really feel the deeper meaning of emotions that the biological brain can experience. Basically, the brain must associate a "valence" to a particular stimulus/perception, and the ability of a biological brain to connect these feelings with memory is called "valence assignment". Such a subtle function is absent in even the intelligent machines that have been designed to day. Yet, it is not excluded that in the future, sophisticated technology could lead to a more subtle appreciation of information and so create feeling-like elements in the decision-making of machines. However, we should seriously deliberate if such sophisticated features could escape human control.

Such ethical and safety considerations as to the potential evolution of awareness of machines created by mankind make us reflect a lot, and one obviously deals with very delicate issues. Sometimes, the feeling arises that we are exploring a field with the lights out, in the sense that our current science is still linked to the physics of movement of so-called "particles" instead of overseeing the deeper structure of wave-resonant electronic systems. At the same time, our science is divided into a multitude of specializations, which may result in a loss of integral insight into the inherent dangers of future technologies. This is also related to the personal responsibility of specialists, in which it often seems that the right-hand does not know what the left hand is doing. Anyhow, it is necessary to always keep in mind that machines based on classical physics do not like zero's nor infinities. This can also be seen from the evolutionary limit of prime numbers elaborated by the engineer Francesco De Santis, (Ivali & Smigliani, 2024). Here, we must wait and see what the future quantum computers will bring us, not only with regard to calculation speed but also to deeper layers of communication.

All the universal pulsations that make up the atom, do not start not from 0, but from 0.5. In fact, from studies on the universal state of consciousness, it is clear that brain, mind and space are somehow interconnected. The pulsation of life, which we perceive within the flow of time, is a suspended bridge between our condition of life of the so-called "matter world", in addition to some sort of "mental space". The latter is inherently seen as a

container of information (Meijer, 2012, 2013), by some regarded as reflecting the properties of a neural superfluid (see below). In this vision of reality, the concept of space and time is inherently coupled to "universally generating pilot waves". This must represent a system in which all aspects of space-time, past, present and future, had to be present from the beginning. The universe can therefore be envisioned as a holo-fractal construct and may have an eternal cyclic nature (see sec. 16). For some, its "universal life beat" is funded in the One, representing all there is.

Within space-time, a monopole field has been positioned for living organisms, that also can be regarded as an "inner voice"; Einstein often referred to the "inner voice" as a source of both moral and physical knowledge: "Quantum mechanics is very impressive, but an inner voice tells me that it is not the real thing". Einstein was convinced that "God does not play dice". Such an inner state may be an expression of an inner field, physically described by collective monopoles, coupled to a field of coherence (Geesink, 2024).

The present avalanche of Digital information and AI-related technologies, invites an urgent rebirth of the Meme concept in which, the Virus is conceived as the Bio-archetype of the Meme, (Meijer & Bermanseder, 2024a,c). The creation of related memory modalities form the very basis for our cultural and political world-views, that in turn determine the scene of our daily human interactions in the world around us. Yet, all this occurs partly from a subconscious source, implying that their potential consequences are largely hidden from us. Virus-like information replication in culture, modeled here as internet memes, currently serves as an essential and useful communication instrument in our digitalized world, yet can also be greatly misused for criminal or political reasons.

9.2. AI in current drug research

In (Meijer, 2024b) a virus/meme analogy was applied to the status of production and use of modern medicines in relation to potential benefits, as well as the known adverse aspects of drug utilization. The implicit analogy was discussed in relation to modern developments in anti-viral therapy and vaccination technologies, but it also requires improved insight into human consciousness and memory. For example, we should stay alert regarding the inherent dangers of AI technology, which is helped by our students' frightening rise in screen times. In this respect, it is mandatory to foster the ability for independent data search and integration for academic knowledge acquisition. A solid analysis of the meme/virus replication process may pro-

vide clues for designing and developing efficient digital software programs for upstream identification of potential toxic/distorted information. In neurological terms, memes are viewed as quasi-stable attractor associative memory states in brain, that also can distort endogenous information, (Meijer, 2024a).

Brain scanning technology and the use of congruent “mirror memes” could assist in mental neutralization following human brain infections. The latter may also reduce further societal multiplication and amplification of such detrimental modalities. In this framework, we advocate the creation of a permanent and sophisticated detection and neutralization platform against internet-born fake news and conspiracy theories, as well as to stop the unwanted intrusion of unwanted data in our private lives. Implementation of such a worldwide digital immunity could be largely supported by dedicated Academic research as part of a broad public initiative to cope with the commercial aims of the telecom/media industry and/or the severe threats by autocratic and anti-democratic regimes that, unfortunately, inhabit our precious planet. The present Internet, with its extremely complex, branched and layered structure, can be conceived as a living organism that needs basic health and thus requires a versatile immune defense system, to cope with common toxic/ false/evil infiltrates. It is hoped that the internet, now equipped with many modalities of AI, may serve and not dominate mankind, maintaining its values in exploring truth (Meijer, 2024a).

One argument for the pharma industry to ask for extremely high product prices is that the current lead finding of potential drug molecules is very costly. In this respect, AI may become of major help since a revolutionary impact of AI in generative drug modeling and in the synthesis of effective and safe therapeutic agents is expected. One of those areas is the application of machine-learning tools to help researchers seek and synthesize useful new substances. Take, for example, AI tools that conduct retro-synthesis (Meijer & Bermanseder, 2024a).

These begin with a chemical structure a chemist wants to make, then work backward to determine the best starting materials and sequence of reaction steps to make it. An AI system needs sufficient knowledge of the specific chemical structures that different reactions work with to make accurate chemical predictions. Chemists who discover a new reaction usually publish results exploring this, but often these are not exhaustive. Unless AI systems have comprehensive knowledge, they might end up suggesting starting materials with structures that would stop reactions from working

or lead to incorrect products. Yet, there is another, particularly obvious condition: AI tools need open data. How people publish their papers must evolve to make data more accessible. This is one reason why *Nature* requests that authors deposit their code and data in open repositories. The best possible training sets would also include data on negative outcomes, such as reaction conditions that don't produce desired substances. Also, AI data need to be recorded in agreed and consistent formats, which they are not at present.

AI Chatbot technology, may also become useful in rapid formulation of answers to patients questions concerning practical drug use, efficiency and adverse effects, as for example posted by patients to Public Social Media. Such an application of Chatbot programs can, on the long term, become of great practical aid to physicians and pharmacists, (Meijer & Bermanseder, 2024a), interestingly, it was reported that the responses generated by AI, apart from the advantage of the almost immediate answers, may have an even better quality than those of the physicians themselves. If used by doctors, as a first attempt to provide such information on drug-related questions, it may obviously spare time for them. Yet the AI generated outcomes should always be well controlled with regard to their intrinsic quality and relevance, since the final responsibility should lie of course within the professional liability of the particular physician.

It can be imagined that public scientific institutions with their associated business start up's, will not only further develop such AI-aided lead compound chemistry, but even may entertain the further steps in drug creation like safety testing, drug formulation and even double-blind clinical evaluation. This as an alternative to the activities of the established Pharma-companies that, at present, have an unhealthy dominant position in prize negotiations with hospitals and government.

9.3. The currently widespread application of AI in drug discovery

In recent months, generative artificial intelligence (AI) has taken the world by storm. AI systems like *Chat GPT* and *Stable Diffusion* have captured the imagination of the masses with their impressive and sometimes controversial ability to generate human-like text and artwork. However, it may come as a surprise to some that AI is also well underway in revolutionizing the discovery of life-saving drugs, (Meijer, 2024b).

9.4. Milestones in AI-enabled drug discovery

Far from being a distant sci-fi future, AI-enabled drug discovery is already here. A non-exhaustive list of

historic milestones in the field includes the following achievements:

- (i) In early 2020, Exscientia announced the first-ever AI-designed drug molecule to enter human clinical trials.
- (ii) In July 2021, an AI system by DeepMind called AlphaFold predicted the protein structures for 330,000 proteins, including all 20,000 proteins in the human genome. The AlphaFold Protein Structure Database has since expanded to include over 200 million proteins, covering nearly all cataloged proteins known to science.
- (iii) In February 2022, Insilico Medicine reported the start of Phase I clinical trials for the first-ever AI-discovered molecule based on an AI-discovered novel target—all done at a fraction of the time and cost of traditional preclinical programs.
- (iv) In January 2023, AbSci became the first entity “to create and validate *de novo* antibodies *in silico*” using generative AI.
- (v) In February 2023, the FDA granted its first Orphan Drug Designation to a drug discovered and designed using AI; Insilico Medicine plans to begin a global Phase II trial for the drug “early” this year.

According to Boston Consulting Group, as of March 2022, “biotech companies using an AI-first approach [had] more than 150 small-molecule drugs in discovery and more than 15 already in clinical trials.” But how exactly is AI being used to accomplish these milestones, and why does it matter?

9.5. AI strategies in stages of drug discovery

Traditional drug discovery is a notoriously time-consuming and expensive process, with pre-clinical stages typically taking three to six years and costing hundreds of millions to billions of dollars. However, a host of AI tools are revolutionizing nearly every stage of the drug discovery process, offering substantial potential to reshape the speed and economics of the industry.

Target identification: At the target identification phase of drug discovery, AI is being trained on large datasets, including omics datasets, phenotypic and expression data, disease associations, patents, publications, clinical trials, research grants, and more to understand the biological mechanisms of diseases and to

identify novel proteins and/or genes that can be targeted to counteract those diseases. Combined with systems like AlphaFold, AI can go even further than mere target identification by predicting the 3D structures of targets and accelerating the design of appropriate drugs that bind to them.

Molecular simulations: AI is also being used to reduce the need for physical testing of candidate drug compounds by enabling high-fidelity molecular simulations that can be run entirely on computers (i.e., *in silico*) without incurring the prohibitive costs of traditional chemistry methods.

Prediction of drug properties: Some AI systems are being used to bypass simulated testing of drug candidates by predicting key properties such as toxicity, bioactivity, and the physicochemical characteristics of molecules.

De Novo drug design: While traditional drug discovery has historically involved the screening of large libraries of candidate molecules, AI is shifting this paradigm too. Some systems are capable of generating promising and never-before-seen drug molecules entirely from scratch.

Candidate drug prioritization: Once a set of promising “lead” drug compounds has been identified, AI is used to rank these molecules and prioritize them for further assessment, with AI approaches outperforming previous ranking techniques.

Synthesis pathway generation: Going beyond theoretical drug design, AI is also being used to generate synthesis pathways for producing hypothetical drug compounds, in some cases suggesting modifications to compounds to make them easier to manufacture.

As AI systems continue to improve, the idea of fully automated end-to-end drug discovery appears less and less to be matter of *if*, but of *when*. If current trends continue, it will only be a matter of time before the drugs we take are no longer designed by people, but by machines. With the promise of lower costs and shorter development timelines, AI-enabled drug discovery holds massive potential to increase the accessibility of drugs and to treat presently incurable conditions. However, it also opens the floodgates to a host of unresolved issues relating to, *e.g.*, intellectual property rights, the risk of technological misuse, and the continued assurance of drug safety and efficacy in this new era. Will we be ready to seize the opportunity, or will we get mired in the challenges? Our preparation as lawyers and policymakers must start now, because the future of AI-enabled drug discovery is already here.

10. One typical example of individualized drug finding

The university was testing a new matchmaking technology developed by a UK-based company called Exscientia that pairs individual patients with the precise drugs they need, considering the subtle biological differences between people. The researchers took a small sample of tissue from Paul. They divided the sample, which included both normal cells and cancer cells, into more than a hundred pieces and exposed them to various cocktails of drugs. Then, using robotic automation and computer vision (machine-learning models trained to identify small changes in cells), they watched to see what would happen. The approach allowed the team to carry out an exhaustive search for the right drug. Some of the medicines didn't kill Paul's cancer cells. Others harmed his healthy cells. Paul was too frail to take the drug that came out on top. It worked. Two years on, Paul was in complete remission—his cancer was gone.

11. General conclusion

Internalizing complex information, through the enormous information processing capacity of the human brain, allows us to acquire, interpret and share knowledge with others. However, in our society we currently struggle with a flood of information. How do we select and validate this information? How do we prevent ourselves from being manipulated by it, for example in drug advertisements and politics in general? Can science always reliably help us on this point? Our information society has a preponderance of technology, aimed at the distribution, compression and preservation of information, which will probably significantly determine our health and lifespan in the near future, but also may create a framework for abuse and self-destruction. The present paper shows the AI mediated revolution in drug discovery as well as its beneficial use in the detection and early identification of so called “Designer Drugs” (non-registered illegal psycho-mimetic substances), that currently flood the consumer markets. Yet, AI technology can also be applied by criminal circles to rapidly design and produce such dangerous designer drugs. The latter aspect provides another example of the many severe social calamities that are unfortunately connected to the massive misuse and overconsumption of drugs. This currently tends to overshadow the spectacular advantages of the high-tech production of novel drugs that enable efficient treatment of some diseases, for the first time, in recent medical history.

Humans can be viewed upon as active participants in the further evolution of our world. Yet, we presently observe not only the wide spread dependence on legal

and illegal drugs by hundred millions of people, but also the severe addiction to power and money of those that pretend to rule us. This asks again for fundamental investigations into the intrinsic mechanisms of brain-associated reward perception, as an evolutionary born property of our organism, (Meijer, 2024c). Once, this reward mechanism was necessary for individual survival, but now it may increasingly turn against us. This, especially in our times of “abundance”, (at least, for the advantaged few), the ever growing destructive inequality, the devastating influence of bad religion, the lack of collective commitment to resilience, foresight and stewardship of the future, that all can threaten the survival of our entire planet.

Let us try to urgently escape the dangers of dependence on drugs as well as on “machine intelligence” and rather use both technologies for the advancement of a healthy humankind, this also by fostering the resilience of the youth against violent computer gaming and “party” drugs that, even through incidental use, may lead to a permanent loss of individual freedom for a lifetime. Preventive action should perhaps include the design of medicines that can reset or subtly modify substance and internet addiction and can cope with the baffling greed of those in power. It is a moral imperative to foster a culture of shared responsibility on the basis of the recognition of universal consciousness and the impact of compassion, humility, harmony with nature, as well as the courage to develop empathy across borders, and so creating a sustainable world for the generations to come

12. Is the creation and further evolution of life guided by a primordial algorithm?

As mentioned before, in this holo-fractal case we should follow the trend of a logarithmic -evolutionary spiral. Indeed, this geometry does not begin with a start from zero, but rather from + 0.5, being the harmonic precursor of the number 1. This concept is often related to the evolution of prime numbers, and as an example we take pairs of prime numbers:

5, 7 / 11, 13 / 17, 19:

$5 / +7 = 12$ $11 / +13 = 24$

$17 / +19 = 36$

Where can we observe that:

- (i) The mathematical space between a pair of prime numbers and the other is always represented by the number **12**, which is a fundamental element in Universal evolution (Meijer, 2023).

- (ii) The mathematical center between pairs of prime numbers is not on **0**, but amounts to **0.5**.

12.1. Symmetry breaking as a condition for life

In a series of publication, (Meijer, 2023), as treated before, identified a series of ground numbers that appear invariant in our analysis of a spectrum of animate and inanimate systems and therefore was called the : "Generalized Music Scale Biophysical Principe", representing a primordial "Acoustic Quantum Code". This code is supposed to guide the electromagnetic aspects of biological evolution and first life. In a very recent book of Wong et al., (Chow et al. 2022), these authors stated:

"The symmetry breaking of charge neutrality of the monopoles, due to Perelman-Ricci flow-entropy mapping, results in toroidal space geometry, and the creation of mass out of the primordial spectrum of the monopoles. With both resulting in changing the homogenous 5D by charge, and the homogenous space symmetry is breaking into $\{SU(2)+SU(3)\} \times L$, the SU(2) to SU(3) ratio must then be 1 to 4 according to time to space variables ratio. This same ratio should remain in the eigen-frequencies of the monopoles of the homogenous 5D.

Wong stated: "The quark mass value is interesting, as it is divisible by the electron mass with an integer 11, the octave number in the *piano keyboard*, yielding another verification of the *GM code of Meijer and Geesink*, which work for creation of hadrons. Thus, indicating that the monopole primordial frequencies must obey this General Musical Code, and is valid for all energy ranges. This was found by Geesink and Meijer, 2024 for molecules essential to both non-bio and bio, such as water, hydro-carbons and clay, all the way to nitrogenous bases that makeup the RNAs and DNAs in the water fluid phase Temperature range. Thus, DLRO monopoles bosons with net 0 charge and a primordial energy spectrum existed and filled the entire 5D manifold. Such monopoles must then be formed by the product of an opposite momentum pair of e and $-e$ massless spinor, filling the Bose-Einstein vacuum in agreement with Higgs theory".

12.2. Building-blocks of Life

The Bose-Einstein condensed state is excited by introducing $E_0/kT > 0$, it simultaneously created a 4D non-homogeneous Lorentz manifold through a Perelman-Ricci-flow mapping, thereby creating a toroidal structure, thus all energy eigen-solutions due to the kinematic of the masses contain within must satisfy the toroidal boundary, see **Fig. 10** and **Fig. 13**) Fröhlich

earlier suggested this condition. It is due to such imposed boundary condition, that led Geesink and Meijer to come up with equation:

$$E_n = \sum_{k=1}^q \alpha \hbar \omega_{\text{ref}} 2^{n+p} 3^m \quad (1)$$

E_n : Energy distribution, ω_{ref} : reference frequency 1 Hz, $\hbar$: Reduced Planck's constant, n : Series of numbers: 0, 0.5, 2, 4, 5, 7, 8, -1, -3, -4, -6, -7; m : series of integers: 0, 1, 2, 3, 4, 5, -1, -2, -3, -4, -5; p : series of integers: <-4, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, > +52. Alpha k : Number of octave series of 12 frequencies, ranging from Hz to GHz from $k=1$ to q as total number of octave series of which the maximum value is presently unknown.

Based on this formula for a non-charged molecule, such as water and normalizing its weight of 18 atomic mass unit to 1, and also take into account its spinning energy spectrum which must be proportional to its weight, Is satisfying the equation above. They found also that there exist two other atoms/molecules that will also be coherent. They were Carbon and Hydrogen molecule. The weight ratio of Carbon to water is 2/3, while Hydrogen molecule to Water is $[1/3]^2$. Then starting with the explicit monopoles, we show its mathematical equivalence to the Higgs Bosons. Through that, one establishes a Higgs vacuum that is irreversible in the time, ever expanding the 5-D Universe.

12.3. Quantum biology

Each step of our investigation led to other branches of scientific researches. Including the ideas of Schrodinger that Life is a fully quantum phenomena. In particular in this current paper, we try and connect the Fröhlich's idea of the coherence quantum vibration sequence in bio-molecules, thus justifying the (Geesink & Meijer, 2018) formula for the coherence bio-molecules. Perhaps of most interest is, that it did lead to the identification of water, carbon and hydrogen as the essential building blocks of all bio-materials It is therefore clearly verified that the fundamental set of coherent molecules obtained via the Perelman-Ricci-flow mapping includes water, carbon, and hydrogen.

This essential result shows the importance of these 3 elements as the key building blocks for more complex important bio-molecules, such as sugar, proteins and fats, and must be the building blocks in all life forms. In order to ensure that the monopole frequency can induce the formation of a superconductivity gap that has a T_c value in the body Temperature range, this gap has to be in the eV range that is a wavelength of

10^3 Å. While the shorter wavelengths spectrum values will still be converted into bio-molecular structures, this happens more like semi-conductors which cannot re-grow themselves. By having the free charge carriers becoming *superconducting*, they can however form a computer-like circuit to gather data.

Thus the DNA is quite unique for each individual. On the top, the gaps between layers of bases need not be uniform, and with such variations, there are infinite choices possible in a life's body range, this gap has to be in the eV range that is a wavelength of 10^3 Å. While the shorter wavelengths spectrum values will still be converted into bio-molecular structures, this happens more like semi-conductors which cannot re-grow. This essential result shows the importance of these 3 elements as the key building blocks for more complex important bio-molecules, such as sugar, proteins and fats, and must be the building blocks in all life forms. This, in order to ensure that the monopole frequency can induce the formation of a superconductive unity themselves. By having the free charge carriers becoming superconducting, they can however form a computer-like circuit to gather data. Thus the DNA is quite unique for each individual. On the top, the gaps between layers of bases need not be uniform, and with such variations, there are infinite choices possible in a life's body. ductivity gap that has a T_c value in the body temperature

As we mentioned before, (in our studies with (Wong & Chow, 2021, Wong et al., 2019)), each monopole frequency within the DNA creates a bio-cell with a matching *superconductivity* gap. Or conversely, each bio-cell superconductivity gap implies the existence of a DNA monopole frequency. Hence as the senses are developed both naturally and by accumulating data in the brain cells. it will modify the genome, causing the evolution and pass down to the decedents. Last but not least, the different bio-cells, irrespective of its lattice structures will again possess oscillation frequencies due to Debye theory. For example, the vibration of water. Thus could again generate another low frequencies GM code, and thus another keyboard as suggested earlier by us. It is now quite transparent that for the Universe Creation, three parallel independent formulation must occur. Namely:

- (i) The creation of a homogenous 5D manifold.
- (ii) The simultaneous creation of the General Music Code spectrum which also signifies consciousness and Cosmo-connectivity for the Higgs Bosons.
- (iii) The follow-up enactment of the entropy Perelman mappings. Lacking anyone of these aspects we

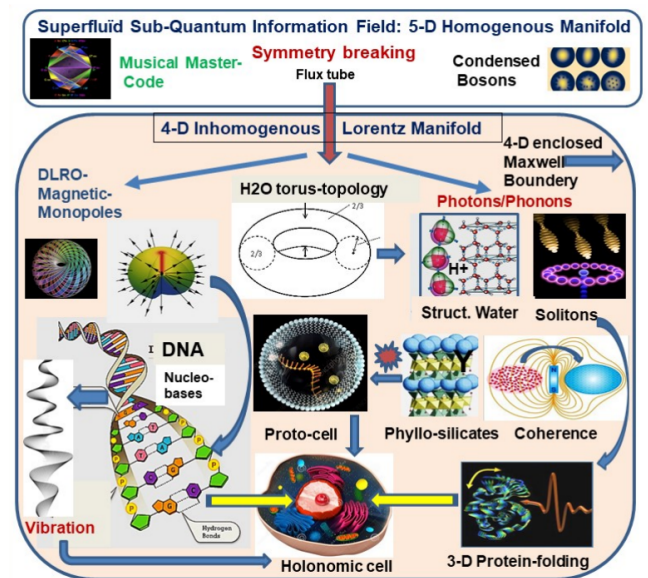


Figure 10 The present concept in a nutshell: The 5-D to 4-D symmetry breaking results in generation of magnetic monopoles (left above) and photons/phonons together with the essential Torus-operator for energy guiding. Water-molecule structure exhibit torus topology and hexagonal water-clusters, containing freely moving proton antenna's are structured by interaction with discrete photo/phonon frequencies. Solitons (polarons), are longitudinal waves formed by electrons coated with phonons (quasi-particles), that promote coherent vibrations of cell components (middle right), and interact with poly-peptide chains to guide the process of 3-D folding to functional proteins (right below). In biological evolution, first life proto-cells are informed by discrete EMF waves that are generated by metal-doped phyllo-silicates (clay materials) that function as semi-conducting wave transmitters and also can catalyze polymerization of nucleotides to primary RNA/DNA. DNA spatial structure with its nucleo-bases is depicted on the left below and its formation and dynamic constitution is guided by specific magnetic monopoles energies (see left part of figure). DNA exhibits a specific vibration pattern that is instrumental in cellular function and forming of a life-memory information store, that in a holographic manner steers the holonomic cell as well as intercellular communication (from (Chow et al., 2021, Wong & Chow, 2021, Wong et al., 2019).

will have no Reality”.

12.4. Symmetry Breaking to Life Processes

It is of great interest that a similar series of acoustic frequencies (the abovementioned piano-board) was previously found by us in semiconductor energy gaps for EMF promotion of entanglement, (Geesink & Meijer, 2024), for pure water, (Geesink et al., 2020) as well as in clay materials (phyllosilicates, (Geesink, 2024), that were all related to the creation of first life (Meijer, 2023, Meijer et al., 2021).

13. Forms of intelligence that originate from a multi-dimensional space-time

As treated above, on various topics of scientific, technological and philosophical nature, we are following sometimes quite delicate, and even dangerous paths, without really understanding what we are working on. Since the science of advanced specializations has reached its terminus, we need a new courageous incentive to look at that what lies beyond the hedge, as was illustrated in the article on the current inflation in science, by the first author.

Our current scientific culture comes from atomism, that we are overcoming in the name of a "dynamic holism", which leads us to be aware that we live in a "Holistic" Universe where there is no separation between "Space" and "Matter", and where Space exhibits the properties of a neural superfluid. This structure represents the "raw material" and the archive of all the past experiences or that are here now, and that will become integrated in the dynamic memory of the universe. By transmuting the quantum fluctuations of thought and all the modalities of experience, back into the implicate order, also framed as the Akashic memory, the particular Information or conscious energy, permanently updates this information domain. It somehow conserves every condition of the living being, thereby not only maintaining our own individuality, but also preventing a super-deterministic world that would endanger our free will or better free choice (Meijer, 2023).

The Universe, therefore, seems like a large mind, with a form of intrinsic elemental intelligence. It should be emphasized that cosmic intelligence is not only linked to man, but likely is also related to various forms of non-terrestrial life. In the extreme complexity of reality at various fractal levels, everything that exists in the universe participates in this great evolutionary carousel, that amazingly can evolve through self-learning. In section 4, a brief explanation was given with regard to the necessary conditions for life, showing that the intrinsic intelligence Of the universe manifested itself as biological life on our planet.

13.1. Multiple Dimensions in Oscillation and Resonance

In this view of reality, where past, present and future are somehow trapped inside each other, we can deduce that at any point in the Universe, each particle knows "almost simultaneously" what another particle is doing. This represents the concept of holomovement on which Louis de Broglie and David Bohm worked together, and in which we also find the relation with the phenomenon of entanglement. The sup-

posed 6 Universal dimensions, earlier mentioned, co-exist together always and everywhere, while the entangled information connects every part of the Universe instantaneously. This universal dynamics found a fundamental support through the phenomenon of "oscillation and resonance", and occurs through "Universal Oscillators", (Lindberg, 2012). The various forms of intelligent life, as present in the 5 dimensions of an "operational" character, (Meijer, 2023, Meijer et al., 2021), meets the need of the evolutionary arrow of time and takes into account two inherent programs: for defense and evolution of their state of being, as well as for the reproduction of life.

We believe that science, apart from the current intrinsic progress, needs a drastic renewal. Consequently the current scientific vocabulary also needs renewal, for example in terms such as: dark matter, dark energy, gravity and antigravity, Big-bang etc., indeed they may not be fully adequate for the representation of reality. Even the very term of "force" should be reformulated in order to express more modern concepts. Science is divided into a thousands of specialized streams, yet it seems sometimes rather poor in the necessary synthesis, and certainly has lost the sense of the whole. We believe that forces in their own right, do not exist. The so-called "forces" may represent rather a "consequence" of the various states of pressure and/or de-pressure, which somehow are created in particular areas in space that display the characteristics of a neural superfluid, see Fig. 9. For example, in nature we see that tornado's create a de-pressure around themselves, which consequently attracts everything around it (see Fig. 11, below).

Chow et al. (2021), Wong & Chow (2021) and Wong et al. (2019), often uses the term symmetry breaking to describe the transition of energy from a homogeneous 5D because this is contrary to the uncertainty principle in Quantum physics. However, in that core location, there is a bidirectional transition from 4D to 5D spacetime, according to quaternionic movement math. described in a toroidal setting as an incoming/outgoing double spiral with a Möbius type of conversion in the core of the torus. Notice that in the core there is no singularity or infinity, symmetry breaking from a primordial vibration field, a pattern that can be observed throughout the Universe, Fig. 11. The fundamental form of the vortices could be 1) a double spiral with a Golden-mean ratio (Fibonacci Fig. 5), which can be vortex energy rotations 2. a curved type of space filling in the form of multiple nested torii and 3. a complex multi-dimensional configuration of space in the form of multiple Twistor spaces. Yet, these three concepts

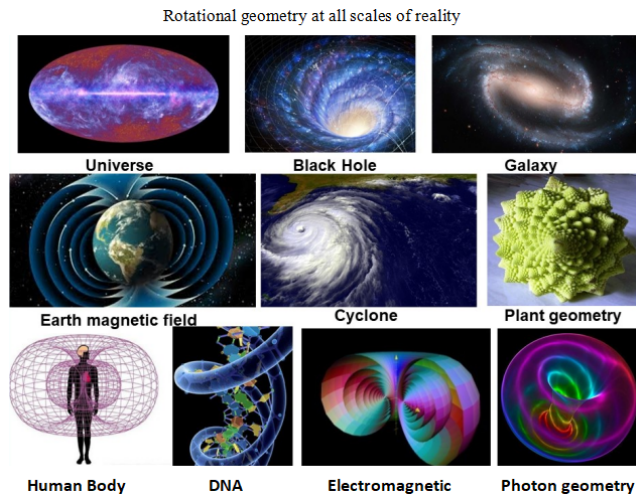


Figure 11 Torus geometry at various scales of the cosmos from large (left above) to very small (right below), (from (Meijer et al., 2021))

may all describe the same phenomenon of energy distribution

manifold to our non-homogeneous 4D manifold (3D1t). In this process, matter (elementary particles via the Higgs mechanism), magnetic monopoles and a toroidal space distribution arise from a stochastic sea of primordial quantum waves of which a part is organized, by interference, in standing phononic waves. The latter, because of their harmonic relation, form a homogeneous (symphonic) manifold on the basis of a superfluid vacuum space.

Speaking of "waves", one tends to represent them by means of a sinusoidal pattern, with a projection in two dimensions in which they propagate, where both the wave and its projection follow the same trend. Following its path, and increasing the number of dimensions, we can hypothesize that the waves propagate in three dimensions, with a "spiral-generating" trend, and continues their path into a fourth spatial dimension, which our senses do not directly perceive. We can only grasp such a pattern as a reflection or mirror image of one dimension less, to which we have given the name of "Gravity". As can be seen in the "of Maxwell's equations" of (Scala, 2022), it can be deduced that the gravitational field and the electromagnetic field coincide. In this synthesis the electric and the magnetic aspects the waves are united as spiral waves in one extra dimension.

This extended dimension could also may explain why two entangled twin electrons, if separated at a very long distance, seem to be connected in a non-local way: if we perturb one, the twin partner adapts itself automatically. The latter intriguing aspect of reality has not yet been definitely explained by current physics!

The fourth dimension may represent a plot or projection of the 3D universe. In the "mass" areas made up of "atoms", two different phenomena "de-pressure" or "pressure" is created, that we perceive as "Gravity". In this field, with reference to the theory referred to as "pressure", the studies of the Ukrainian engineer Schuchewytsch, 2021, are interesting (see the article: "The Nature of Dark energy and Dark matter"). Here it is assumed that the potential energy of a motionless particle in empty space is mc^2 , and that when it approaches matter, begins to orbit, and gains kinetic energy by losing potential energy. In this way, the "particle" reaches the minimum possible. radius : when its speed reaches the speed of light "c", its total energy drops to $mc^2/2$, made up exclusively of kinetic energy. It can be deduced that to return to space, the particle consequently needs an external energy boost, equal to $mc^2/2$.

In space there are many "dark matter particles", that are located in a shell around matter, and move towards adjacent matter; so it is assumed that all shells in space around matter each contain an amount of "dark matter". Their radius of the dark matter particle decreases as it approaches matter, and consequently the density of "dark matter" increases. From this hypothesis, it can be deduced that a mass does not move towards another mass because it is attracted to it, or because every matter is surrounded by a gravitational unit around it, but because the bodies are sort of pushed towards each other by the "pressure of space", which can be represented as the "potential energy" of space. We note that our classical physics is not yet able to describe the phenomenon of "dark matter", as it does not explain how galaxies, in addition to their formation, remain intact. An embarrassing situation in physics remains here, since one cannot find an explanation for the fact that, about 94% of all matter in the Universe should be used to hold galaxies together, see article by (Khoury, 2022), "Dark Matter Superfluidity".

The concept of space-time itself was recently derived from the studies of De Santis.

This geometry is given by:

$$\vec{F}(t) = \frac{e^{\alpha t} + e^{i\pi(t+1)} + e^{-\alpha t}}{\sqrt{5}} \quad (2)$$

$$F_{\mathcal{A}}(t) = \frac{e^{\alpha t} + [\cos(\pi(t+1))]e^{-\alpha t}}{\sqrt{5}} \quad (3)$$

$$F_{\mathcal{G}}(t) = \frac{[sen(\pi(t+1))]e^{-\alpha t}}{\sqrt{5}} \quad (4)$$

$$\alpha = \ln(\Phi) = 0.4812...$$

In his hypothesis, each physical entity of our Universe evolves over time according to a mathematical procedure derived from the "modus operandi" of Fibonacci's formal spatiality, representing a system projected on only two dimensions of a plane (see **Fig. 12**), while a further third dimension appears to be operative, that appears orthogonal to the plane that represents reality. This geometry can be regarded as a holographic structure with a dimensional reduction in which our 3D world is conceived as a hologram of 2D information.

13.2. *An acoustic quantum code*

The mathematical space between a pair of prime numbers and, as treated before, the other dimension is always represented by the number 12, which is supposed to represent a fundamental ground number in the cosmic evolution and, in a fractal, manner can also be observed in the abovementioned musical quantum code of (Geesink & Meijer, 2018). The latter fractal geometry was derived from the basic distribution pattern of 12 electromagnetic frequency bands according to octave hierarchy, with a fractal character exhibiting a series of over 600 frequencies from Hz to THz, organized in a fractal self-similar sequence, this whole series of discrete frequencies is divided in groups of 12 frequencies in which each group is related to the adjacent one by multiplying or dividing by a factor of 2, in line with a classical harmonic musical pattern. This EMF pattern is now found in a spectrum of animate and non-animate systems and therefore was called the Generalized Music Biophysical Principle (Meijer, 2023, Meijer et al., 2020a,b,c, 2021). Alternatively, space itself can be seen as arising from a spin-network as postulated by loop-quantum gravity or directly from the action of quantum entanglement that may produce the fusion of space domains by wormhole connection (the ER = EPR conjecture).

13.3. *The time in spacetime*

In this representation of reality, each event of each entity turns out to have both a positive time component (the past seen as a kind of inertia), as well as a negative time component (coming from the future that together with the past represents the present (Meijer, 2023). Taking into account the three components of present, past and future, this integral informational field bears three distinct functions:

- 1) The cosmic acquisition of energy,
- 2) The dissipation of metabolic energy,
- 3) The induction of the cosmic state of consciousness operating as a connected information reservoir, by

which it can guide the fabric of reality as projected onto a 3D plane.

In this unrolled reality, in addition to the 3D plane of reality, that integrates the three spatial dimensions, there appears to be a fourth one: the dimension of time, which represents the temporal evolution of our world. On the left of the plane of 3D reality (**Fig. 11**), a fifth dimension spatial seems to appear, where the total cosmic information (by some called the Akashi library) is located. Here information with meaning is supposed to travel at an enormous speed, thereby connecting the consciences of the various Universal entities, that is with a potential time reversed feedback from the future. Such a "Universal Information Center", was investigating in cosmology by De Santis, and was proposed to exist only in a quantum universe provided that an omnipotent observer, that in this theory, resides in a sixth dimension, where the "perfection" of the One is manifest.

We believe that a quantum algorithm, called musical or acoustic quantum code, (Meijer, 2023, Meijer et al., 2021), may also be related to gravity and for antigravity (dark energy, see later). Seen in the scientific view illustrated here, this has a lot to do with the work developed by Francesco De Santis on the basis of succession of the first 14 sequences of the Fibonacci-Lucas number series, that was obtained by numerical sum of the first 31 terms of the Fibonacci sequence (see **Fig. 8**).

14. Formation of quasi-particles and gravity

It is assumed that this transition/translation process can be theoretically located in homogenous 5D manifold (thus no presence of photons, but rather phonons as quantum fluctuations in a hot and dense manifold that can guide pre-electrons and pre-protons). By symmetry breaking into 4D they are converted to BSE boson condensates/ Higgs The wave/particles that become associated with guiding phonons of our general music scale (thus in fact constitute quasi-particles such as polarons/solitons). We call this concept now the *acoustic quantum code of resonant coherence*, since acoustics (related to the physics of phonons) is more broadly defined than the term music perse. Note that gravity in 5D is much more strongly expressed than in 4D (Kaluza Klein) and by transition into 4D on a torus may generate excess of gravity in the form of gravitons. 4D toroidal quantum coding of life is compatible with our observation that of ZPE frequencies and those of Boson/BSE peaks, nicely fit our quantum mode frequency pattern. This code of a semi-harmonic set of discrete frequencies, may also be instrumental in the 88 energy/temperature steps (called the piano-board key

model by [Wong et al. \(2019\)](#)), that gradually generate other elementary particles and their multiplies in atoms and molecules, up to the creation of first life. This evolutionary process can be seen as a toroidal process with the magnetic monopoles as the necessary magnetic component.

14.1. Summarizing the features of our 4D holographic consciousness concept

Nature has an intrinsic dual character (matter/anti-matter, wave/particle etc), that Nature tends to reconstruct by laws of symmetry. Symmetry breaking, therefore provides the general mechanism for generating the physical world we observe, that also includes mind/matter duality ([Meijer et al., 2021](#)):

Toroidal geometry can be applied to multiple forms in the Universe, from micro-scale (quantum foam) to macro-structures in the cosmos such as black holes and ultimately the entire Universe itself. Black Hole/White Hole transition is seen as a toroidal flux of cosmic information in the bounce state of rebirth of the Universe. Therefore, torus geometry represents a universal linking and information signaling principle ([Meijer, 2023](#), [Meijer et al., 2021](#)) the known toroidal model of our Universe predicts a similar primordial “seed structure” for creating the Universe. This template was present already before the supposed Big Bang, under its bounce condition. This seed unit is composed of toroidal structured information in phase- or configuration space, containing of pre-information (phonon-guided), pre-matter (protons / neutrons) combined with electrons in a 5D electro-neutral context, **Fig. 12**.

The primordial energy unit is seen as a composite quasi-wave/particle construct that undergoes 5D to 4D symmetry-breaking in a process of an unfolding reality into the world we know, including all matter and life forms, and that it bears a rotational/oscillatory character, yielding the gravito-magnetic constitution (to be submitted). It is proposed in this work that the gravitational waves are in the open strings at the top and bottom of the toroidal geometry as left and right rotating vortices in a small curvature region. The validity of the gravity model has been substantiated by us through measurements of gravitational waves that show a coherent frequency distribution of energy, as also earlier found by us for the distribution of Bosonic elementary particles and Bose Einstein condensates. The proposed quantum wave equation and calculated Eigen-functions are in line with the theory of David Bohm and Louis de Broglie and represents a non-probabilistic formula, reflecting the way in which geometry encodes entanglement.

We hold that information, along with matter and energy, represents a fundamental building block of reality. The toroidal flux of information can produce the known bosonic modalities of strong and weak forces as well as long-range forces such as electromagnetism ([Meijer, 2023](#))

Integration of (meaningful) information alone, is not sufficient to explain the phenomenon of consciousness, since this requires a 5D fractal setting, transactional (past/future) coding and in the human situation should identify self-consciousness and (trans)-personal reflection, ([Meijer & Geesink, 2017](#), [Meijer et al., 2021](#)).

We regard Consciousness as primary and more fundamental than matter and postulate that the reality that we observe is a part of a Universal consciousness. Our brain supports or receives attractors of cosmic consciousness: in other words: we should be seen as being “in consciousness”, ([Meijer et al., 2021](#)).

We conceive consciousness as a holographic phenomenon, having a scale-invariant (fractal or self-similar) nature in the universe. This is manifest from macro- to micro- dimensions (from Black holes to the Planck and sub-Planckian area, ([Meijer, 2023](#), [Meijer & Geesink, 2017](#), [Meijer et al., 2021](#)).

This implies that also individual cells and more complex composites of cells such as our brain possess such a holographic event horizon memory and thereby contribute to a whole cosmic hologram (according to the holography theory), in which each small part contains all the information of the entire hologram ([Meijer & Geesink, 2017](#)). The event horizon workspace is required for optimal functioning of very chaotic and complex brain processes and in any moment provides a necessary reference framework for our personal representations, including error correction. We see it as the very site of human consciousness with both local and collective memory modalities.

According to modern physics, at least one extra spatial dimension, apart from the generally assumed 4 dimensions (including that of time) is required to describe the fabric of reality. The supposed 5D event horizon workspace represents the medium through which each individual communicates with its environment, including other persons and life systems ([Meijer et al., 2021](#)).

The event horizon workspace is therefore associated with, but not reducible to neuronal brain function, and can explain binding aspects of the various brain centers. This may include the unexplained brain-wide ”broadcasting effect “of Baars and others, due to its ultra-rapid photonic signaling function that we postulate. This does not negate the known neuro-humoral

theory, but implies a necessary addition to it.

We revealed a primordial information space containing more than 600 discrete EMF wave frequencies that were detected in a spectrum of animate and non-animate systems, such as in Zero-point Energy Field, that can be seen as a Generalized Music Quantum Code (GMQC), that may have guided the fabric of reality including biological evolution and creation of first life , (Meijer, 2023).

We have identified a mathematically defined antennal system in brain aqueous compartments consisting of freely moving protons (hydronium ions) that are instrumental in receiving extra-sensory wave information from the supposed cosmic attribute of consciousness. Hydro-cephalic patients with quite normal consciousness may rather represent an increased liquid-crystalline liquor signal compartment, instead of emphasizing the reduced and disorganized tissue aspect.

Our concept exhibits the known information transmission aspects of the Orch- OR theory of Penrose, but along with of its gravity mediated wave reduction and prevailing tubular oscillations, we postulate the involvement of the generalized music principle of coherent vibration domains in various parts of cells mentioned above. As one may notice, this agrees with theories of predictive coding, identification of the self and high order thought theories (Poznanski et al., 2019).

15. Ultra-rapid brain communication

For the ultra-fast brain communication mentioned above, a photon/phonon transmission system is instrumental that exhibits quantum behavior, (Meijer, 2023). Recent studies indicate that halogenated anesthetics that produce an unconscious state, react with photons in an entangled state and not with un-entangled photons (Burdick et al., 2019).

With regard to criteria for a proper definition of consciousness, our concept agrees with the paradigm cases, graded consciousness and unconscious modalities via its transactional aspect of information integration as well as the aspect of unfolding of primordial information in a biological context. In addition, it clearly contains pan-psychism modalities that, due to the scale invariant character, includes small to large network properties within the cosmos (Doerig et al., 2020).

We submit that our consciousness concept is both necessary and sufficient for understanding the required ultrafast functioning of the brain as well as widely reported transpersonal experiences. It also makes clear that, according to modern physics, we need one extra

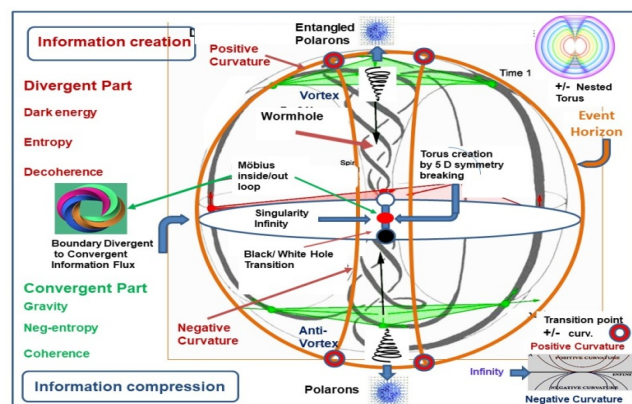


Figure 12 Double rotational holo-flux of information, according to a toroidal geometric model, showing two intermingling wave trajectories with each having diverging and converging energy modalities that reflect the generation and compression of information seen as being related to Dark Energy and Gravity forces respectively. These can also be envisioned as entropic and negentropic energy forces. Each wave arrives at the intrinsic boundary of divergent and convergent energy(information) flow and subsequently returns to its origin in the Torus singularity core (red dot). Here, via quaternionic (inside to outside Möbius ring/ Klein bottle) transition opening to a 5-D domain and return to 4D is allowed. The 5D dimension is by some regarded as a superfluid quantum space, representing a sub-Planckian (primordial) domain in which the zero-point energy (ZPE) field is a transition zone to the 4-D world we know. The 5-D domain bears discrete sets of 12 harmonic EMF frequencies (Generalized Music Code) that are supposed to act as pilot-waves guiding electron and proton particles (polaron quasi particles) in the fabric of reality. Note that, from the perspective of the supposed 5-D superfluid sub-quantum space (to be regarded as a homogenous manifold), the torus operator is created in the process of symmetry breaking from the 5-D phase-space to our 4-D reality, (see middle red arrow). Bosonic and Fermionic elementary particles/waves trajectories are positioned as fiber bundles progressing at the surface and inner core of the torus. Vortex and Anti-Vortices are formed as open strings, close to the transition points of positive and negative curvature (four red circles, see also inset right below, at the boundary showing an infinity aspect. This curvature aspect accommodates the Relativistic interpretation of spacetime physics. Hypothesis: gravitational waves that origin from the 5D space appear as open strings/vortices at the top and bottom of the toroidal geometry, depicted as left and right rotating (anti)- vortices close to the small curvature transition regions. They give rise to emission of (entangled)Polarons that are conceived as Gravity carriers/Gravitons. A singularity/Infinity aspect of the torus is located at the center of the torus (red point) that, via quaternionic transition can open to 5D spacetime. White- and black hole transition process (white and black circles) is located between the singularity and vortex structures and was earlier supposed to represent the bouncing aspect of a cyclic model of the Universe. The entire boundary of the surface of the torus is seen as the event horizon information modality(from (Meijer, 2023).

spatial dimension having quantum physical properties (attention of observers) in both local and cosmic information signaling. Cosmic information transmission is conceived in a cyclic (rebound) model of the Universe. (Meijer, 2021, Meijer et al., 2021)

We postulate that the presently, well studied, Psi-phenomena and transpersonal experiences such as precognition and the extensively reported life panorama experiences of NDE, can be better understood on the basis of the information storage and retrieval from the here proposed event horizon of the brain and whole organism, (Meijer et al., 2021).

16. A new hypothesis for gravity and anti-gravity (dark energy)

Recently one of us (DKFM), proposed a novel mechanism for the primordial creation of Gravity and Anti-Gravity (Dark Energy, (Meijer, 2023)). The model approaches Gravity and Dark energy from an electromagnetic framework (see Fig. 12, that is based on the symmetry breaking concept of Wong, (Chow et al., 2021)). It is based on the consideration that the first elements created at the start of the universe, were protons and electrons in a process of symmetry breaking from a 5 D homogeneous manifold to a 4D Lorentz manifold.

In this concept, the 5D domain contained condensed bosons guided by an acoustic quantum code as primordial information in a bounced state transition of the universe (Meijer, 2023), an event illustrated, tentatively, in Fig. 12. The depicted phonon guided electron-proton constructs in 4D, exhibit attractive as well as repulsive forces due to the different charge interactions. We submit that these magnetically confined and resonating quasi-particle units, in 4D, generate Gravity and Dark Energy as intrinsic properties of mass and are seen as boson condensates, bearing magnetic monopole activity in a toroidal energy processing setting. This produces a Higgs type of further matter formation in 4D and creation of first life (see for the latter also the scheme of Fig. 10. An electromagnetic context of gravity is supported by many earlier reported studies (to be treated in a follow-up paper, (Meijer, 2023)). Interestingly, the proton and electron are also central in the Gravity concepts of ((Haramain et al., 2016, Val Baker et al., 2019), that apart from aspect of charge also takes into account the *internal structure* of the two elemental particles in which the proton is being filled with packed PSU's (Planckian spherical units).

As to the generation of Gravity, we postulate that there was no classical Big Bang from nothing, but instead a bounce model of the universe (cyclic model of (Penrose, 2010, Steinhardt & Turok, 2007)), that delivered

primordial (pre) information for the structure of electron, protons and neutrons. We hold that this information was informed by a set of acoustic frequencies in a homogeneous 5D manifold, that in 4D is converted to a superfluid quantum space, containing phonon type of quantum fluctuations. The pre-polaron energy in 5D is confined through magnetic monopole activity (see Fig. 13).

In a recent comment of Koyama on the paper of the cosmologist (Pogosian et al., 2022), the latter said: "Our study also found that it is very difficult to solve the Hubble tension problem by only changing the theory of gravity. The full solution would probably require a new ingredient in the cosmological model, present before the time when protons and electrons first combined to form hydrogen just after the Big Bang, such as a special form of dark matter, an early type of dark energy or primordial magnetic fields." There is abundant information in current physics with regard to attractive and repulsive polaron quasi-particles (Scazza et al., 2022) and references therein, in which the two types are differentiated by a transitions in the phonon dressing. Also, it have been shown recently (Esposito et al., 2019), that phonons (sound waves) have gravitational mass and can also generate gravitational fields and even may, under certain conditions, carry negative mass and can exert a negative anti-gravity effect.

16.1. The nature of anti-gravity/dark energy

The term *anti-gravity* seems presently considered to be part of the chapter of science fiction, rather than of mainstream science. Yet, if we want to investigate the Universe through the physics of resonances, we should attempt to understand the meaning of anti-gravity, because of a potential relation with the physical phenomenon of electromagnetism. This was for example performed by Scala of Naples, with his "Equations of the Maxwell Symmetrical", in which a gravitational aspect is always associated with the electric and magnetic components. Here it was hypothesized that the overall quantum wave no longer propagates linearly, but rotates counterclockwise around the center of its axis and thereby forms a logarithmic spiral, as observed in many natural forms such as the shell of the mollusk Nautilus.

In short, we can say that a time-varying electric field, such as that produced by an electric wire, in which an alternating or variable current is propagating, produces a magnetic field that winds around it. This is the physical principle, according to which electromagnets are made, simply by creating electric windings that stack the magnetic fields. Conversely, a variable mag-

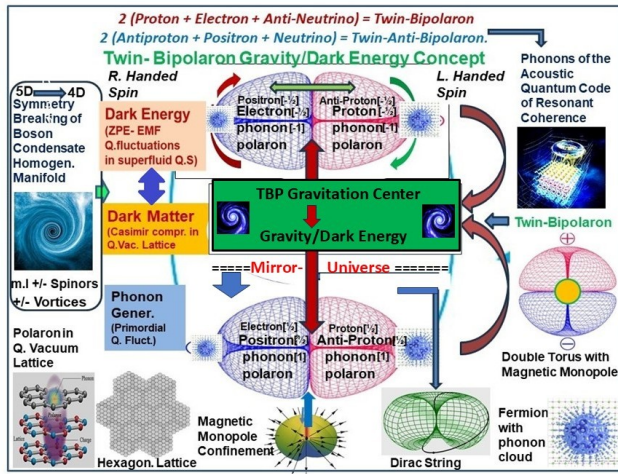


Figure 13 The concept of the Twin-Bipolaron as a generator of Gravity and Dark Energy, that occurs via 5D to 4D symmetry breaking (inset left), producing a discrete set of phonons in a toroidal setting (inset right above), that form quasi-particles by covering fermions such as electrons and protons (inset right at the bottom) with phonons, thereby forming Polarons. The resulting Bi-Polaron Gravitation Center (green), exhibits right-handed and left-handed spin vortices, that through their +/- rotation in a superfluid quantum space, are instrumental in the generation of Gravity and Dark Energy forces respectively. The polarons may be produced and/or become associated with a quantum vacuum lattice with a hexagonal structure (inset right below). The latter may enable a Casimir type of Dark Matter generation by quantum frequency squeezing, (see inset middle left). The involvement of magnetic monopole confinement is shown (middle at the bottom), as operating at the inner center of the double torus structure (inset middle right). The generation of Gravity can also be interpreted as space distortion via a Dirac String, connected to a magnetic monopole, providing the related mechanism of Relativity-based Gravity. The ZPE-TBP manifested the dark energy from the original super-symmetry before the graviton gauge existed, when colour-charged radiation templates RGB[+1] annihilated with anti-radiation templates BGR[-1] in the quantum self-relativity. The RGB-BGR pairings then create the matter YCM[±1/2] and antimatter MCY[±1/2] pairings with the BGR[-1] anti-radiation blueprint. The Mirror Universe, depicted with ===== in the TBP-center, has two connotations: Matter/Anti-matter and Self-dual time-space to space-time symmetry through cosmic Self-simulation (Meijer & Bermanseder, 2024a, 2025)

netic field produces a variable electric field that rotates around the direction of the first. This is the physical principle on which transformers are based, in which the first winding crossed by alternating current produces a magnetic field and this induces a second current in the absence of a real power supply. These phenomena are already widely known and used, and are called the Maxwell's symmetrized equations.

According to (Scala, 2022), the variable magnetic field

and the variable electric field, in combination, produce a variable gravitational field, with the result that a suitable transformer not only produces the primary to the secondary current, but also generates an oscillating gravitational field.

This could be the reason that transformer instruments not only vibrate but produce sound with the characteristic “hum”. The consequences of this observation can be many, such as the proper powering an electric circuit in theory a gravitational field opposite to that of the earth can be produced by this procedure. Note that a mass variation, such as the breaking or grinding of a crystal, can produce an electric field, and also, vice versa, that an electric field can cause the breaking of a crystal or a field. According to this scientific concept novel systems could be designed that in principle could produce some type of anti-gravity that could do work without the known detrimental effects that our traditional technologies have on the ecosystem.

A simple explanation for this, much sought anti-force of gravity, could lie in the fact that it is an intrinsic characteristic of the motion of mass (which always follows a form of logarithmic spiral motion). For a fluid in motion with very low viscosity, such as presently supposed for space, we would need high speeds of the vortex, being close to the threshold of light, such movement of vortex energy could create “depressions” behind it, being areas with reduced pressure compared to its environment. These depressions meet at the sides of the vortex flux, generating a resistance due to the still empty fluid, which creates an apparent parallel force in the opposite direction. The distance between the two determines the arm of the torsion moment that generates the particular vortices.

In a superfluid, the vortices are likely permanent and such vortices determine the birth of the “Particles” as building blocks for the composition of the “Atoms”. This process gives rise to the mass that is seen as a depression caused by the progressive difference in pressure that is generated around the vortex. In other words, as De Pretto, had correctly guessed, the opposite flow of two virtual particles is equivalent to two photons traveling in opposite direction.

The particular vortex contains a potential energy equal to that of the motion of the two opposite space perturbations. The potential energy that is produced when the vortex is formed is transformed into kinetic energy that mimics the action of graviton that is destroyed in the act of providing a particle with its gravitational property. The destruction of the graviton vortex releases the two opposite motions that had formed it, recovering the

kinetic energy of the two free photons. The formula of kinetic energy from traditional physics is known to be equal to half times the mass multiplied by the speed squared, being in this case of photons the mass corresponds to the virtual mass of the photon, while its speed is equal to that of the photon. light. If we add the simple formula of the kinetic energy of the two photons we obtain the potential energy of the vortex equal to 2 times the potential energy of the photons that made it up, i.e. equal to the mass times the speed of light squared.

We conclude that gravity is explained here in a rather intuitive way, without inventing "special features", like the curvature of space-time. There is extremely important consequence here that emerges when we admit the existence of the superfluid vacuum or space. The movement of a photon gives life not only to the electromagnetic component, corresponding to the waves that are determined during the motion of a photon, but also to a third attractive gravitational component that is determined by the depression that is formed behind the accompanying moving photon. Yet, in case of a positive pressure a negative gravity will be generated that is formed in front of the photon itself. In other words, the electromagnetic component is always automatically accompanied by a gravitational component, albeit much less prominent than the electromagnetic one. This component, that is not yet definitely discovered is, for example, able to explain the gravitational phenomena that appeared in the experiments on superconductors conducted by (Tajmar et al., 2018). A similar phenomenon may also provide the basis of the recent.

16.2. The twin polaron gravitation model

Our recent work on the nature of Gravity and Dark Energy is based on the above treated Acoustic Code of Resonant Coherence, as noted above, being a fractal series of discrete phonon frequencies that guide multiple processes in both cosmic and life processes. Creation of Gravity/Dark Energy is created through interactions of primordial electron/proton pairs associated with a similar series of discrete phonon activities. These units, doubled in a mirror-universe, form Twin-Bipolarons (TBP). The TPB gravitational center, is conceived as a Gravity/Dark Energy generating domain, by creation of left and right-handed energy vortices in a superfluid quantum space/lattice, see **Fig. 13**). It is hypothesized that the proposed sound-mediation can play a fundamental role as a fifth boson gauge, in the current Standard Model. It is concluded that there is increasing evidence for a Cyclic and Sonic Universe conjecture.

It is hypothesized that the integrative character of our concepts provides the major connective element in the fabric of reality. The present concept is fully compatible both with the current Standard Model as well as with String (M)theories, but adds a novel, underlying, Gauge of a fractal phonon EMF power spectrum (Meijer & Bermanseder, 2024a). In addition it introduces a 4th spatial evolving from a toroidal geometry (**Fig. 12**) context. We imply that the present Standard Model could highly benefit from such a fundamental extension, and our Bipolaron gravity concept may thus represent a potential novel element in physics and science revealing a fifth fundamental Gauge interaction, now framed as the "Gravitone", The basic EMF frequency spectrum, can also be expressed in the 12 tone series of decomposed Chern-numbers, and twelve fundamental topological invariants could be derived.

The concept of Twin Bipolaron (TBP) Gravity was initially presented by Meijer, Wong, and Brown, in 2023 and further elaborated by (Meijer, 2024a, Meijer & Bermanseder, 2024a,b, 2025). These papers highlighted the creation of Gravity, Dark Matter, Dark Energy and structure of Superfluid Quantum Space-time Lattice and also integrates a primordial Acoustic Quantum Code of Resonant Coherence, (earlier called the General Music Code: (GMC). that can be considered as a "Unified Theory". This idea is supported by its scale invariant/fractal character as well as the applied Holographic principle, including an Event Horizon global memory workspace, associated with the both the Universe and the human brain (Meijer & Geesink, 2017, Meijer et al., 2021).

We further defined these patterns on the basis of the behavior of sound in nature in the form of quasi-phonon-wave/particle composites (polaron), such as phonon/electron and phonon/proton modalities, together forming a +/- bipolaron, being confined in a magnetic framework called gravito-magnetic BSE (Meijer & Bermanseder, 2024a, 2025), condensates (see **Fig. 13**). The related energy flow can be adequately modeled by nested toroidal geometry, that provides a 4th spatial dimension, thus implying a 5D homogeneous space-time. The (anti-)gravitational waves can be conceived as vortex/anti-vortex excitations (**Fig. 13**), emerging as open strings at poles of the torus as left and right rotating vortices in a confined curvature region, that in 4D can undergo BSE condensation). The energized consciousness quanta then can be associated with a multidimensional cosmology describing the monopolar charge coupling in the form of supermembrane modular duality or equivalently in the form of a Twin Bipolaron (TBP) coupling the string-

membrane associated inversion/mirror duality as two forms of a Bipolaron, one describing the consciousness quanta in a Dark Matter context and the other describing the same quanta as Dark Energy or the Zero Point Vacuum/Vortex potential energy background .

The polarons, guided by coherent phonon quantum states exhibit a dynamic interrelation with their decoherent counterparts, **Fig. 13**), enforcing the earlier mentioned forces of Gravity and Dark Energy (anti-gravity), called by (Chow et al., 2021), the GM piano keyboard frequency pattern. The phonon sound particle is preferred over the photon since it is the type of quantum fluctuation that is most primordial in the high energy-density of the vacuum).

16.3. The sonic universe

This universal sonic pattern, may be interpreted as a musical instrument (**Fig. 20** and **Fig. 21**), that serves to compose a cosmic harmony (universal wave function) through the specific selection and ordering of tones (melodies), that that are interwoven into a grand primordial symphony. The latter is seen as inherited from a preceding universe (cyclic/rebound universe concept), (Penrose, 2010, Steinhardt & Turok, 2007) /or a cosmic self-simulation (Irwin et al., 2020, Langan, 2020). These quantum fluctuations may form the very power spectrum that enabled the integral fabric of reality, on the basis of the Zero-point Energy field, conceived as the universal container of wave-like knowledge (information with meaning).

The Twin-Bipolaron Gravitation center (TBPGC, **Fig. 13**), is itself the mirror of physicalized manifested (and metric) spacetime in the form of vortex inflow-outflow quantum dynamics. The TBPGC itself so becomes the minimum spacetime configuration for any cosmology, as magnified from the Planck scale, supporting the (Verlinde, 2017, 2011, Wheeler, 1983, 1990), information cosmology. The TBPGC can also be identified as the HE(8x8) fifth superstring class of M-theory. The TBPGC then becomes the Weylian wormhole of creation connecting the ‘inflow’ from the Pre-spacetime (*time-space*) to the ‘outflow’ of the creation event as *space-time* (Meijer & Bermanseder, 2024a, 2025).

The primordial origin of the acoustic power spectrum quantum fluctuations, also may imply a role in a step-wise, temperature related, unfolding of information during cosmic inflation, following symmetry breaking, as noticed by (Chow et al., 2021), while Zizzi, earlier and (Irwin et al., 2020) and (Langan, 2020), pictured the initial inflationary part of the cyclic reproduction of our universe by a self-simulation process.

Our “Acoustic Quantum Code” concept is fully compatible with ideas in the papers of (Hameroff, 2023, Miller, 2024, Oyewole, 2024, Scala, 2022, Sha & Xiu, 2024). In particular, Miller’s, 2024 paper on a scale-free information matrix, is in harmony with the TBP concept, in its support of Bohmian cosmology and holo-movement, as well as in the universal information/consciousness cosmology of (Wheeler, 1983, 1990, Wheeler & Feynman, 1994). The Planck energy level is treated in (Geesink & Meijer, 2024) and (Meijer, 2023).

The relation with topological Chern numbers (**Fig. 20** and **Fig. 21**) and our finding that the revealed EMF power spectrum has been shown to promote both superconductive properties, (Geesink & Meijer, 2019) and quantum entanglement (Geesink & Meijer, 2018) and is also compatible with acoustic spectra of CMB and ZPE-field / Planck black body oscillations, (Geesink & Meijer, 2024, Meijer, 2023) may indicate that this quantum code may reflects a fundamental, scale invariant, property of quantized space-time. This likely explains the consistent presence in at least 20 biophysical phenomena as analyzed by us from 2014-2024, (see **Fig. 20** and **Fig. 21**).

16.4. Final considerations of this section

- (i) Our studies are in line with earlier studies on a potential an extra spatial dimension (including Time, constituting a 5-D Universe), that can be modeled by toroidal geometry and Time conceived as an array of time-slices or conscious moments.
- (ii) The TBP model (**Fig. 13**) posits a connection between micro- and macro-phenomena through quantum gravity, characterized by a duality of black hole (inflow) and white hole (outflow) dynamics, (**Fig. 12**).
- (iii) We conceive all of spacetime as a discretization of pixelated holofractals, always repeating the inflow-outflow vorticity as a Black Hole/White Hole energy) duality, (**Fig. 12**). This then can very well be coupled as phonon/EMF electron/proton pair creation, in the mirror universe connected to a time-space to space-time transition, as embedded in matter/anti-matter annihilation dynamics, (**Fig. 13**). The TBP Gravitation Center (TBPGC) itself so becomes the minimum spacetime configuration for any cosmology, magnified from the Planck scale. The TBPGC also can be identified as the HE(8x8) fifth superstring class, the TBPGC, then becoming the Weylian wormhole of creation, connecting the ‘inflow’ from the Pre-

spacetime (timespace) to the 'outflow' of the spacetime following the bounce event, (Meijer & Bermanseder, 2024a, 2025).

- (iv) According to M-theory and String theory concepts, the TBP can be seen as a "wormhole of creation", enabling universal consciousness to manifest itself as physicalized information within spacetime. The TBP's interaction with gravitational waves, as observed in LIGO experiments (Geesink & Meijer, 2024, Meijer, 2023), see **Fig. 20** and **Fig. 21**, is considered as supporting evidence for this model. This framework, integrating dark energy and matter with gravity, is conceptualized as a unified field theory, extending the implications of universal consciousness beyond classical physics into a holistic, dynamic model of cosmology (Meijer & Bermanseder, 2024a, 2025).
- (v) According to the related philosophy of "Idealism", postulating that consciousness is primary, it is time to leave the "Mind/Body" discussion alone and put the "Hard Problem of Consciousness" aside. Instead, it should be realized that human intelligence participates in this integral evolutionary process of the becoming of Universal Consciousness, (Meijer, 2023, 2024a, Meijer et al., 2021). The latter being both the source and ultimate expression of an eternal and omnipresent cosmic symphony (Meijer, 2023).
- (vi) The TBPGC solves the major problems addressed in their paper; especially the nature and boundary condition for the 'birth of spacetime', which is the inflaton of the TBP in a cosmological supersymmetry, related to our explanation of the Hubble nodes as applicable to our individualized and holographic 'brain event horizons' (Meijer, 2017, Meijer et al., 2021). Understanding that the mentioned 'eternal inflation' in this paper may conflict a background dependent string theory, but not a background fractalized Loop Quantum Cosmology, shows a natural resolution in the TBPGC. In fact, the Hubble nodes as boundary conditions of the TBPGC render the inflation mechanism generic in that the 'Bohmian Standing Waves' (also inferred by Macken's Sonic Universe), oscillate between a maximum even and minimum odd nodal eigenvalues.
- (vii) The DM-TBP concept then relates directly to this Weinberg paper in a parallel temperature evolution, also defined in the DM-TBP as a Hawking

Micro Black Hole in the stated supersymmetry of the TBP. There are many other points raised in the cosmology paper of (Coley & Ellis, 2020), which the TBPGC model resolves. The main point of argument here is again the standard model fallacious assumption, that the Planck era and parameters define the TBPGC or Quantum Big Bang creation event/singularity. They do not, as the TBPGC manifests a reduced Planck energy scale in the transmutation of 5 superstring classes as 5 generations of the Twin Bipolaron.

- (viii) General support for our hypothesis can be derived from many recent contents of related publication(see (Meijer & Bermanseder, 2024a, 2025). Guidance of, the mass-spin induced fermions of matter in solid state and crystalline lattice structures, by the discrete phonon wave frequencies of primordial quantum fluctuations of the ZPE- TBP as a dark energy gauge boson, are essential to obtain the quasi-particle polarons, then exhibiting an emerging entropic reaction through displacement of wave information, as addressed by (Verlinde, 2017, 2011).

Our concept may indeed represent 'new physics' beyond the standard models, as it derives the TBP from first principles and even without the spacetime metrics as approached by Loop-Quantum-Gravity (LQG) and M-theory, therefore forming a bridge between those models and their genesis in the TBP as a minimum spacetime configuration in the Planck parameter 'bounce'. The coupling between electro-polar and magneto-polar charges forms a natural supersymmetry in a fine structure unification between the electromagnetic and gravitational long-range gauges in the unified field and the modular duality of the TBP.

16.5. Potential testing of our TBP-model

Finally, we wish to point out how the DMTBP could be experimentally verified in the Dark Matter context, say at CERN. The DMTBP has a Compton energy of 14 TeV and so colliding two single protons, each of a Compton energy of 7 TeV in a particle accelerator could result in a resonance 'blip' in the analyzed data of the scattering components, subject to experimental input data. If the protons are spin opposite in neutralizing fermion quantum spin, then the scalar Higgs field could merge the two YCM[1/2] quantum geometric templates to match the DMTBP Compton energy, (Meijer, 2024a, Meijer & Bermanseder, 2024a,b, 2025).

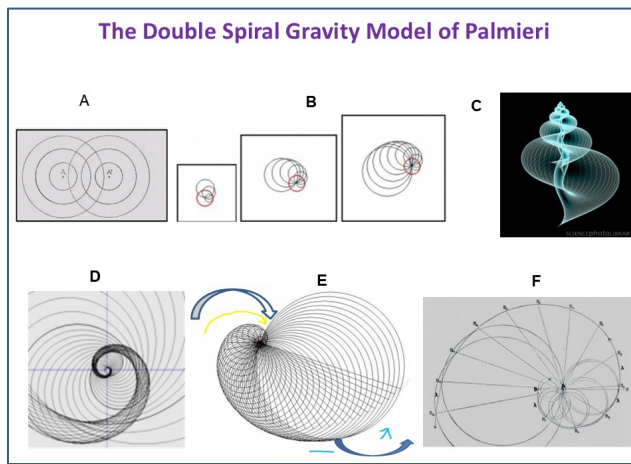


Figure 14 Geometry of the Induction of Gravitation by Palmieri. A: Double concentric interacting rings. B: the growing of the double spiral structure; C: Example of double spiral shell structure in nature D: interwoven spirals E: Inverse rotation of spirals F: Fine structure of spiral on the basis of golden mean and Fibonacci geometry. The double spiral geometry describes the vortex/rotatory process that induces gravitation (from Ivali & Smigliani (2024)).

16.6. Fibonacci-type of tone separation in brain function

In living systems, fractals must satisfy the state of quantum coherence which maximizes global cohesion as well as local autonomy (see **Fig. 4** and **Fig. 5**, and enables energy from any local level to spread to the global and conversely concentrate energy to any domain from the entire system. It is of great interest that brain function was recently described by (Bandyopadhyay et al., 2023) and (Singh et al., 2020), on the basis of a self-operating time crystal model of human brain. The striking structural similarity of neuronal networks and cosmic web of filament connected galactic networks were earlier treated by us in a preliminary paper on: "The Elemental Intelligence of the Cosmos and the Acoustic Quantum Code of Resonant Coherence". The excellent treatments of music theory by (Ho, 2015) and (Hempel, 2024), provide adequate introductions and make clear that Fibonacci type of wave termination is essential for tone separation and the acoustic guiding of the fabric of reality (Meijer, 2023, Meijer et al., 2021).

previous errors. Many scientific concepts can find alternative explanations closer to reality, without having to change the previous "steps", but only by changing the perspective of reading. The "step" referred to the famous Einstein equation $E = mc^2$, can take this reading perspective. The kinetic energy contained in two photons, mentioned above, that were traveling in opposite directions, soon generates a vortex with its po-

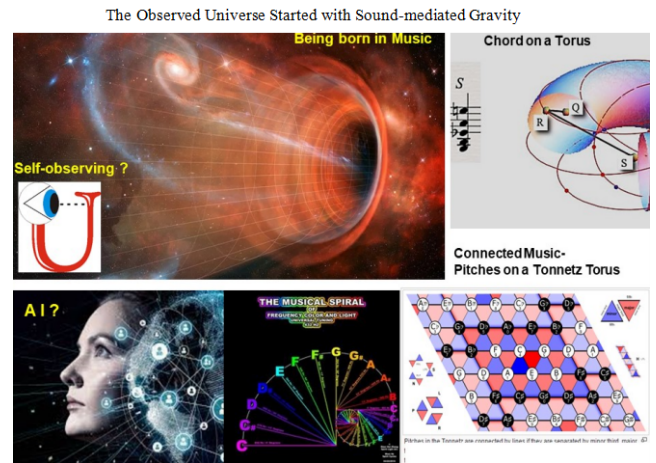


Figure 15 The "symphonic" birth of the Universe in a toroidal (wormhole) context, either assuming an primordial eternal observer or an omnipotent artificial intelligence associated with human offspring (left below). The phonon guided creation process can be expressed as a toroidal evolution of musical chords (inset right above), that may exhibit double spiral golden mean geometry (inset middle below) and was earlier depicted as a triangular pattern that connect music pitches and that, by double folding, can be projected on a torus (called Tonnetz torus), (Meijer, 2023).

tential energy (mass), that if released, returns to release the primitive kinetic energy. In this view the so-called "particles" represent the resting state of geometric shapes determined by photons coupled in mutual resonance in Space. E = potential energy while mc^2 = kinetic energy. This equation, if read in a geometric framework, simply represents the passage from kinetic energy to potential energy and the other way around; so c^2 represents the movement in space of a photon-like energy vector, which according to the geometric law of the inverse of the square, assumes a potential squared value, which is shown in the following.

16.7. The oscillating universe

Einstein viewed space as the wavy surface of the sea and identified its depth with time. Yet, the photographs that prove that the curved space near masses may be true, but the space is not a wavy sheet being created under time, but it is rather an energetic bubble in equilibrium acting on itself. There is, in fact, only one "raw material", being Space (Quantum vacuum), that possesses the properties of a neural superfluid, of which the structures are geometric-crystalline, and the smallest possible size corresponds to the Planck length. The "step" of the "Force" is seen as a geometric de-pressure created around the mass areas. Here, by the law of the inverse of the square, the smaller you go, the larger the depression effect is expressed, whereas the larger you go, the smaller the depression effect is fulfilled. In this

theory, the "*geometric depressions*" at the atomic and electromagnetic levels are created around the "*gravitational tensors*", where the presence of mass creates gravity. Different types of effects can thus generate gravity: experiments conducted at NASA on the so-called "EM drive" engines (Tajmar et al., 2018).

16.8. Attraction and repulsion in wave activity

The "anti-gravity effect" described above, may potentially represent a major technological innovation, in the near future. Such technologies may become increasingly indispensable for traveling on our planet Earth as well as in Space. Yet, in this respect, one should understand the intimate nature of the Universe. For example, the physicist Palmieri, earlier, proposed that we can envision this gravitational aspect by inspecting a simple shell (Fig. 14). In this natural geometry we can see the cast of an electromagnetic field, where the geometric characteristics inherent in the physical phenomenon of electromagnetism are recognizable: the polarization develops in a spiral from the center of the hinge around an axis. The particular poles are determined by the respective geometries of the spirals; the development from the center of the hinge provides a precise wave propagation, exhibiting a discrete frequency, generating a form that propagates into space bearing the geometry of the logarithmic spiral.

The importance of Palmieri's intuition lies in the particular way in which such spiral waves "interfere" with each other; if the waves were purely "spherical", their interference would not produce any "constructive overlap" effect, but as the waves propagate in a spiral, singular interference phenomenon are created in space which give rise to geometric shapes, similar to those found in nature, such as in galaxies, in a sunflower, in the Nautilus shell (Fig. 14) etc. The related forms of interference in space, can be considered as "thought forms" or "crystallized music", having two different pulses:

- (i) If they interfere and have an identical direction of rotation, they have an entropic and disorganizing behavior like inert matter.
- (ii) If they have the opposite direction of rotation, they have an anti-entropic behavior, providing the conditions for living matter. The rotation in the opposite direction thus creates the "Bipolar" tension that is, in fact, necessary for pulsation inherent in the evolutionary arrow, the basis of all life. To "*understand*" we must take note that in science, there are no "*errors*", but "*paths*" that advance in "*steps*".

- (iii) Attraction within a galaxy, by which the depressions around the mass areas are overcome. In a state of equilibrium at the overall galaxy level, the part of Space that is not in tension, is in equilibrium with the space in tension (mass).
- (iv) Repulsion, at a level beyond the galaxy, where negative gravity wins, formed as the pressure in front of the path of free photons/ phonons in space.

17. The role of AI in the ultimate fate of our universe: its life, death and potential rebirth

Wheeler sincerely believed that science would ultimately be able to explain the origins of human intelligence in the future (Wheeler & Feynman, 1994). This corresponds to his implicit desire to treat both intelligence as well as the intelligible image of the universe as emergent properties. He fully believed that, finally, physics would find an answer to how and why we are here. He envisioned this as genesis by observer ship. Wheeler represented the universe as a self-excited circuit that is developing through a cycle (closed loop), which excludes reference to any preexistent foundation outside this circuit. The sense of physical reality is not a pre-given compendium of laws and facts. It originates in the constitution of this reality, through formation of meaning of the universe by communication in the network of observers in a universal self, (Fig. 16).

Wheeler thought that the observer participates in choosing now the physical laws for the entire past and future history. He coined this vision "law without" law, (Wheeler, 1983). He wrote : if the views that we are exploring here are correct, one principle, observer participation, is able to build everything. The present expansion of the universe from the time of its inception up to a certain point is maintained until the system has had enough time to mature and create enough sentient beings that the conversion of information into software reaches a tipping point. It then may reverse from a state of deceleration to acceleration and in the shrinking phase, information will be condensed and compressed in order to create the conditions for rebirth of the entire Universe. The question is which role mankind and its successors as well as other intelligent species will play in the latter process. Wheeler developed a model, not only taking into account the particular future, but interestingly also the past of the Universe.

Yet, if Wheeler claims that the observers bring the universe into being, including its space, time, etc. (Wheeler, 1990), then one can reasonably ask: where

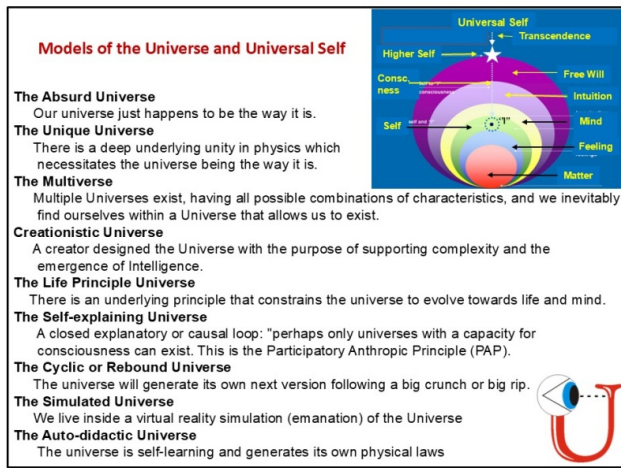


Figure 16 Compilation of Current Models of the Universe (modified from (Davies, 2004).

do human observers do this from, if there is no pre-existent space and time? One can conjecture that human beings belong to “something” which is beyond and before space and time and which, at the same time, contains in itself the potentiality of being explicated in terms of space and time. Then, the process of constitution of the universe in Wheeler’s participatory scheme reveals itself. That is: the universe itself becomes no more than an event related to the history of humanity, a flash of the universe’s self-consciousness as depicted in Wheeler’s writings by a diagram of the human eye emerging in the bold letter U (symbolizing the universe) which itself is the formation of this eye (see inset **Fig. 16**, right below), from (Wheeler & Feynman, 1994).

Representations of such a unity: in an image of the so called Uroboros: symbolizing the interconnectedness of physical entities at different spatial scales of the universe (Primack & Abrams, 2006). The way to perceive the university is to constantly look from one perspective of scale to another. Ultimately, all scales may be unified in a Grand Unified Theory (GUT). The serpent swallowing its own tail represents the current hope that gravity can link the largest and smallest sizes in a final theory. As treated above, we hold that the Universe started by the primordial acoustic quantum code as being guided by phonon type of quantum waves existing in a superfluid quantum space. The fabric of reality thus was a toroidal symphony rather than a physical coincidence, see **Fig. 13**, and (Meijer, 2023).

17.1. The cyclic operating universe

Both the becoming and future of the Universe can therefore be viewed as an unfolding of primordial information provided by a cycling universe (Linde, 1988, Penrose, 2010, Steinhardt & Turok, 2007), delivering

a recipe from a previous version of the present Universe. (Bekenstein, 2003), a former student of Wheeler, and more recently (Verlinde, 2011), confirmed his idea that atoms and their constituting elementary particles could intrinsically store basic and physical information in the form of spin, polarization, and momentum and that this information can being seen as stored in bits or Qubits through holographic projection on a virtual screen. This model applies both to the micro- (elementary particles/atoms) and macro-(black holes) levels. The principle of the hologram was also employed by (Mitchell & Staretz, 2011) in relation to individual and universal consciousness.

Barrow & Tipler (1988) developed a dynamic model of the universe that guarantees the possibility of indefinite information processing, which, according to Tipler, must imply the persistence of life in the universe. This led Wheeler to an intuition that such a representation of the universe can be seen a mental accomplishment. This may even reach to the far future of the universe and even to its potential rebirth. Trans-humanists project that our “mind children”, as very advanced, hybrid, (cyborg) machines, will ultimately travel to the boundaries of the universe, not restricted by the current limitations of the human body, and will eventually collect all the information about the universe and its total history. As long as the universe does not die in a heating process, the universe will be gradually populated and will finally become saturated with information (as suggested by (Tipler, 1994) and later (Kurzweil, 2005) and epoch 6, depicted in **Fig. 17**).

However, physics foretells that our world will not be doomed to a heat death (by final contraction of the Universe) or destined for a cold death (by a further rapid expansion of the universe, (Vidal, 2012) and (Vaas, 2004, 2006), postulate a programmed transfer of the total, condensed, information of the dying universe into an adjacent new “baby universe” may enable such a recreation process. It is assumed in this theory that our descendents and/or other advanced forms of intelligence will master the physics of black holes or worm-holes, seen as giant portals to other universes.

These giant cosmological structures could be manipulated to pass the required information as a recipe for the birth of a new version of our universe (an engineered Big Bang)! Thus, our successors, in the far future, may give a new start to our universe in a kind of circular evolutionary process (see for circular universe models also (Gott & Li, 1998, Penrose, 2010, Steinhardt & Turok, 2007, Vidal, 2012). The universe seems to be isomorphic to a mathematical structure (Stoica, 2013), as was also proposed by (Lloyd, 2006) and (Tegmark, 2008).

It seems that, based on natural law and its empirical constants, it may not have a real constant value in the evolution of the Universe. But Wheeler's philosophy of law without law goes far beyond the idea of a mechanism of random mutations of the constants.

He viewed the law as being created, or perhaps chosen from an infinity of alternatives, by the very observation process. The bit not only determines the (past) of the universe but also the laws. Anyway, it seems very plausible that there may be a (possibly infinite) collection of propositions that contains all the truths about the universe. In this case, we have a theory (of everything). In this sense, the Universe at micro- and macroscales can be viewed as a dynamic flow of information at each level of organization. The projections of (Gott & Li, 1998, Penrose, 2010, Steinhardt & Turok, 2002, 2007), have theorized on cyclic (re-bounce) models of the Universe, which can also be interpreted to mean that our own reconstructed Big Bang, that is often seen as the real start of the present cosmos, is rather a reflection of information transfer from a *previous version* of our universe. However, will each cosmic cycle encompass identical information so that all of us will be reproduced, or will each rebirth also contain novel information and innovations, leading to the ever-growing complexity and intelligence of cosmic life?

In his intriguing book “Stargate”, Jack Sarfatti suggests: “The universe is created by intelligent design but the Designer lives in our far future and has evolved from us ... Perhaps, all the works of cultural genius, from the music of Mozart to the physics of Einstein, have their real origin *in the future*. The genius may be a real psychic channeler whose mind is open to telepathic messages from the future. The genius must be well trained in his or her craft and intellectually disciplined with the integrity of the warrior to properly decode the quantum signals from the future. The purpose of our existence would then be to ensure the creation of life on earth and the creation of the Big Bang itself! We obviously cannot fail since the universe cannot have come into existence without us in this extreme example of Borgesian quantum solipsism (bolstered by John Archibald Wheeler’s “observer-participator” and “the universe as a self-exited circuit”, (see a similar picture presented by (Meijer, 2015).

The present authors want to add here that we all should realize that the future and rebirth of our universe may also, or even rather, be determined by multiple other intelligent species in the living cosmos and that we should be prudent with excess anthropocentric flavor, since the survival of our planet is very much at risk in the present era of climate change and the wide-spread

addiction to power and money. In addition, a purely materialistic/technological human projection may not give a clue as to the involvement of an eternal observer, by many considered as crucial in initiating a quantum mechanical transition in the creation of our universe.

17.2. *The universe seen as a neural network*

We suggested earlier that the fractal human brain resembles a personal universe (Meijer, 2015) and that consciousness in the universe may be scale-invariant (Meijer & Geesink, 2017). The latter does not imply a distinct *material* fractality in the cosmos but rather self-similarity in the flux of information.

The observable universe contains 100 billion galaxies, while the human brain contains about the same number of neurons and non-neuronal cells.

Visually, a computer simulation of the cosmic web and a cross-section of brain tissue has a similar structure of filaments (neuro-filaments or condensed ordinary and dark matter) embedded with bodies (cells or galaxies). The cosmic web consists of all the stars, gas and dark matter in the universe.

Both networks have similar power spectrum analyses: this measures the fluctuations of a structure, or as the researchers describe: “*it tells us how many high-frequency and low-frequency notes make the peculiar spatial melody of each image.*”

The cosmic web and the human brain have a similar complexity (see Fig. 18). This is estimated by measuring the size of the smallest computer program that could predict the behavior of a network. In other words, “the entire life experience of a person can also be encoded into the distribution of galaxies in our universe,” write the researchers.

Yet, a striking resemblance of neuronal networks and the cosmic web structures was suggested (Fig. 18) by (Vazza & Feletti, 2020). This idea also seems to align with the possibility of conceiving the universe as a neural network (Vanchurin, 2020). Our brain may, therefore, be a mirror image of the universe.

17.3. *Scale-invariant geometry*

As explained in the foregoing, there is an important “take home message” for the readers of the present paper. In the process of composing this article, we discovered that the primordial acoustic quantum code with its coherence equation (Geesink & Meijer, 2019), numerically connects various current concepts for consciousness: the Orch-OR theory of Hameroff and Penrose, the microtubular vibration concept of Bandyopadhyai, The Life Creation model of Wong et al. (2019), the

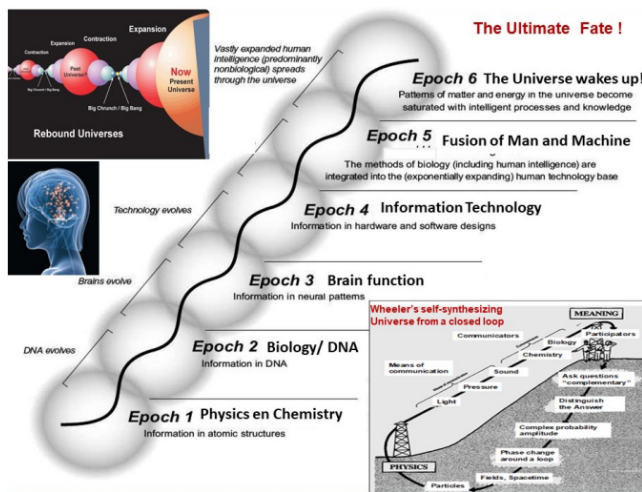


Figure 17 The sequential epochs in the evolution of our universe, also depicting the very far future of a “living” Universe (see text right in the middle), in a repetitive cyclic rebound universe model (top left), in which the universe takes care of its reproduction (after (Kurzeil, 2005)). The participatory role of humans in the fate of the cosmos was earlier proposed by John Wheeler (inset right below).

Event Horizon Brain concept of Meijer and Geesink, as well as that of ZPE-mediated consciousness of Kepler.

This became clear since we recently revealed the correspondence of our frequencies with the micro-tubular frequencies in brain from the Japan group (as performed recently by Geesink) and also found a very good fit with, all of the recently published, frequency values of Gravitational waves. This code of a discrete EMF frequency pattern brings it all together through an acoustic and musical algorithm that was earlier revealed by us in life systems, clay materials, water, Boson energies/BSE condensates, Superconductive energy gaps, and in EMF-promoting entanglement studies, as well as in reported ZPE field oscillations and can now be conceived as integrating the quantum wave aspects related to life, consciousness and cosmological information processing, as registered here for the first time. Our concept also touches upon the cosmic toroidal model of (Hamein et al., 2016) and (Lefferts, 2019)

In this sense, the conception of a living system extends beyond the normal consideration of only the biological organism (e.g. evolution and synergism are not merely products of the biosphere, but are present in the interactivity of systems in general leading to the emergence of the biosphere) and properties of sentience and awareness are involved in the directed (non-random) generic evolution of matter and the universe”.

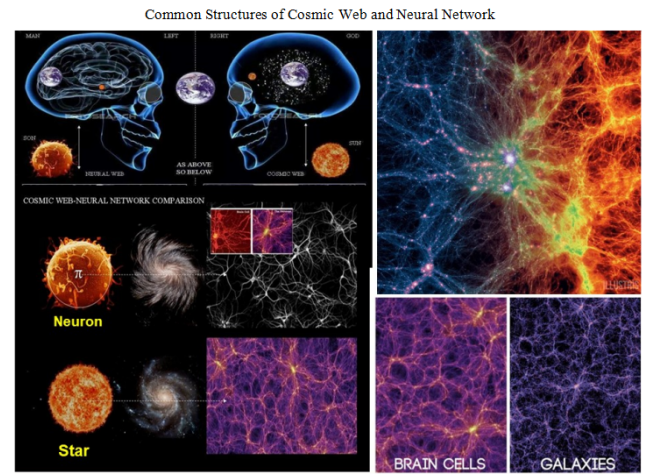


Figure 18 Common Structures of the Cosmic Web and Neuronal Networks (modified from (Vanchurin, 2020, Vazza & Feletti, 2020))

18. The general character of the GM-scale EMF-frequency pattern, revealing the coherent acoustic quantum code

Coherent quantum energies were consistently found in a spectrum of animate and non-animate systems for:

- (i) *Life conditions affected by EMF exposure:* A meta-analysis of over 800 biomedical publications, from 1970 till 2021, showing beneficial or detrimental biological effects as caused by external non-thermal EMF frequencies from Hz till THz. (410 data, (Geesink & Meijer, 2018), as reviewed in (Geesink & Meijer, 2024, Meijer, 2023).
- (ii) *EMF frequencies that promote Entanglement in Einstein Podolsky Rosen experiments:* Meta-analyses of the EPR-experiments learned that entanglement, achieved in such studies is real, and the applied EMF frequencies are located at discrete frequencies revealing a coherent distribution pattern, (84 data in 50 publications, (Geesink & Meijer, 2018).
- (iii) *Superconductor energy gaps:* Meta-analysis of related literature showed that the particular wave frequency patterns in superconducting materials have discrete coherent frequency bands and can be described by the proposed quantum equation of coherence (160 data, 76 publications, (Geesink & Meijer, 2019)
- (iv) *EMF frequencies of Phyllo-silicates:* Meta-analysis of radiated EMF frequencies after energizing various clay materials, showed a distinct

frequency pattern fitting the proposed coherent quantum code (45 data, (Geesink & Meijer, 2024).

- (v) *EMF frequencies that either inhibit or promote cancer:* Meta-analysis of shows a distinct EMF frequency pattern, fully compatible with the proposed acoustic quantum code (100 data from 123 studies, (in a study of Kf & Hans (2019)).
- (vi) *EMF-frequencies of water:* Meta-analysis of semi-harmonic frequency patterns found in purified water are very similar to those found in intact biological systems, (see **Table 1**): frequencies of pure water shows that 192 subsequent first and second derivatives of spectral frequency curves of water –molecules and can be precisely positioned at the pattern of coherent Eigen-frequencies of the quantum code with an error of 0.45% (700 data, (Geesink et al., 2020).
- (vii) *Frequencies of Bose Einstein condensates:* Many independent experiments related to energy distributions of Bose Einstein Condensates show a distinct semi-harmonic distribution of energies (78 data in 26 publications, in: (Geesink et al., 2020).
- (viii) *Frequencies for Quantum Hall effects:* A meta-analysis of experimentally found fractional quantum Hall effects learns that the different energy Landau levels are ordered according but to a semi-harmonic function as proposed by a wave-function of coherence (57 data in 21 publications, in: (Geesink, 2021).
- (ix) *Frequencies for mass/energies of Bosonic elementary particles:* A support for an ontological basis of the Standard Model was found and indicates a coherent quantum wave equation for subatomic particles (40 data in 21 publications, in: (Meijer et al., 2022).
- (x) *Frequencies of zero-point energy oscillations:* Zero-point measurements and calculations related to Rabi frequencies, Lamb shifts, vibrational energies of molecules, including hydrogen and water, substantiated the discrete quantum distribution states of the zero-point energy field as calculated by the quantum equation of coherence. (49 data (Meijer, 2023, Meijer et al., 2021).
- (xi) *Frequency values for gravity waves:* Meta-analysis of as recently reported Gravitational waves revealed a clear frequency distribution pattern, confirming the proposed Acoustic Quantum Code (140 data from 12 studies, in: (Geesink & Schmieke, 2022).

Table 1 The Various Biophysical phenomena in which the Acoustic Quantum Code was revealed by Meta-analysis of Research Publications (Meijer, 2013, 2023)

The Acoustic Quantum Code of Resnant Coherence	
Life Conditions at Exposure to Various EMF-frequencies	Frequencies of Bose Einstein condensates
Band-like Distribution of EMF-frequencies of Life	Frequencies for Mass/Energies of Boson Elementary Particles
EMF-frequencies that eith inhibit or promote cancer	Frequencies of, solar cells, semiconductors and photosynthesis
Frequencies of Spatio-temporal EEG-peaks in Brains of Helathy Individuals and Mental Disorder Pateints	Frequencies of Energy Fluctuations at the Planck Scale
Infrared Sginal Techn. improves healthy conditions in brain	Frequencies of Quantum Hall effects
Frquency values for oscillations in Brain Neuronal Microtubules	Frequencies of Zero-point Energy Oscillations
EMF-frequencies of Phyllosilicates, (Clay-materials)	Frequency values for Gravity waves
EMF-frequencies that promote entanglement	Chern-invariant metrics derived from patterns of Phonon tepology
Superconductor Energy-gap frequencies	Quantum energy states of monopoles described by generalized music wave function
	Solar optical spectrum irradiance

- (xii) *Frequency values for oscillations in microtubules in vitro:* Meta-analysis of the recently published frequency values for microtubule of brain tissue studies , as performed in various groups, shows a striking congruence with the frequencies of the Acoustic Quantum Code (Geesink & Schmieke, 2022).

The Universal mind operates in holographic mode, so each part contains the information of its whole-ness: The Universe system is in "geometric-harmonic-resonant" equilibrium with itself. It is of great interest that the Acoustic Quantum Code was consistently detected in the EMF values gravitational waves, waves that promote entanglement and superconductivity, as well as on ZPE energy wave frequencies (see **Fig. 20**), indicating that this gauge code may reflect fundamental properties of space-time. This idea is supported by the concept that gravity is closely connected to the phenomenon of entanglement (Krisnanda et al., 2020, Swingle & Van Raamsdonk, 2016) and that entanglement may be a requisite for the formation of the space-time perse (Van Raamsdonk, 2015), the latter in the framework of AdS/CFT correspondence.

Using the phenomenon of resonance, it will be possible to design various technological applications in har-

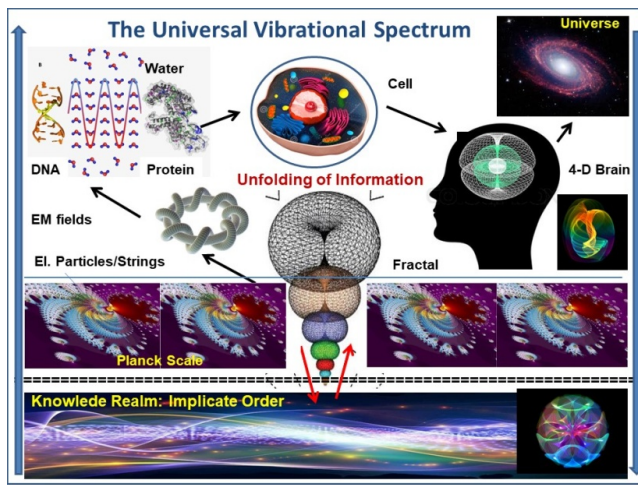


Figure 19 The flow of information in the whole universe from micro- to macro-levels (bottom to top) conceived as a nested toroidal operation that is fractal and scale-invariant and is initiated in a knowledge realm underlying the known wormhole matrix (quantum foam) at the Planck scale. Supposed quantized string activities produce elementary particles, atoms, molecules and life systems. The latter contain dedicated holographic memory spaces at the cellular and organ level. The human brain integrates, internally and externally, guided conscious states. Further fractal and self-similar properties in a quantum fluid universe provide the architecture of cosmic macro-structures.(from (Meijer, 2021, Wong & Chow, 2021))

mony with nature, including the abovementioned anti-gravity effects. This area of research may have enormous implications for our life on this Earth and our future. Everything is born from the One and returns to, enriched by the experiences gained in the passage in the 5 operational dimensions. The latter represent "our word", that in order to The Space with neural superfluid properties, is conceived as a great container of the so-called "Akashi memory", where data with meaning as a collective memory exist, needs the existence of the "speaker", that is, the eternal One residing in a supposed sixth dimension. Some see this as a cosmic mind as Eddington who said: Physics is the study of Consciousness!

The crucial force that moves everything is what we call "Love", which is not only a philosophical term, but also implies an eternal spark inside it, which represents the intrinsic need to "share" one's essence of life with the evolutionary one, to satisfy the needs inherent in the "evolutionary arrow". As John Wheeler stated, humans are active participants in the process (Wheeler, 1983, 1990). Thus, not everything is written in stone: we represent one species in the cosmos that writes on the wall of the event horizon of our universe.

Yet, in this Universe, where humans are embedded in the splendid nature around them, we are only guests,

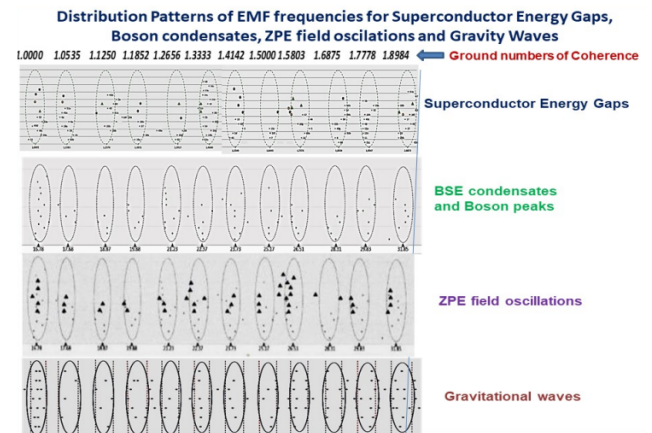


Figure 20 Selected, earlier reported, distribution patterns of EMF frequencies as revealed by meta-analysis of very different, yet related, physical phenomena (Geesink & Meijer, 2024) that all can be accommodated by a series of the ground-numbers of the equation of coherence (in red), indicating that a universal acoustic quantum code is guiding the cosmos on a very small (Planck) scale), intermediate scale (superconductor materials), to very large (cosmological oscillations such as Gravity waves). It is inferred that this semi-harmonic frequency pattern is also crucial for life processes, brain function and consciousness through an all pervading information domain that is seen as primordial, preceding the Big Bang in a cyclic modality of the universe. This assumed information domain stems from a musical/acoustic quantum code that steers condensed Bosons in a 5-Dimensional manifold (see theory of (Wong et al., 2019), and by symmetry breaking to the 4-D world. expressing themselves in Higgs bosons (magnetic monopoles) that steer life conditions in proteins and DNA and create superconductive properties in cells. Similar frequency bands are found in human brain (neuronal microtubule, see (Bandyopadhyay et al., 2023)) that may communicate with gravitational energies at the Planck scale (Orch-OR theory) and similar oscillations are also present in the ZPE field that may be instrumental in generation of scale invariant consciousness (Meijer/Keppeler).The 4 different EMF- sets in the figure above, each have different EMF ranges (from Hz to GHz) but, according to fractal harmonics, can simply be related to each other and finally to the lowest octave range of 12, from 1 to 1.9 Hz, here depicted as a series of ground-numbers (red numbers above), by dividing through 2^n , (n is an integer). From (Meijer, 2023).

and to prevent that we become unwanted for the habitat, we must respect the order of things established by the master of the house, the "speaker". Unfortunately, many humans are using nature as their personal property. Climate change may represent one of the defense mechanisms of our living planet, and should be interpreted as a serious warning for our disharmony with nature.

At the basis of all this, we experience signs of serious inflation in the scientific process, while we are exposed

to the dark side of our evolutionary brain system, being the “reward system”, implying the current addiction modes such as overeating, overdosing of drugs, sex, gaming and full day phone use, in addition to severe addiction to power and, money (Meijer, 2021). Humans are too often blinded by our big “I” and selfishness, which takes us on wrong paths. Instead, we need to exercise humility in knowing how to recognize our historical and current failures. A deeper knowledge of this will certainly help us understand the foundation of evolution and mankind's role in the ongoing fabric of reality.

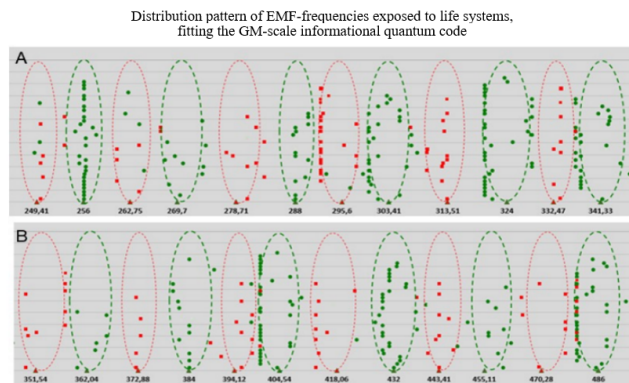


Figure 21 Measured frequency data of living cells systems that are life-sustaining (green points) and detrimental for life (in red squares) versus calculated normalized frequencies. Biological effects measured following exposures or representing endogenous effects of living cells in vitro and in vivo at frequencies in the bands of Hz, kHz, MHz, GHz, THz, PHz. Green triangles plotted on a logarithmic x-axis represent calculated life-sustaining frequencies; red triangles represent life-destabilizing frequencies. Each individual point in the graph is taken from published biological data and represents a typical frequency employed in one of the reported biological studies. For clarity, points are randomly distributed along the Y-axis. (from (Meijer, 2023)).

(Meijer & Geesink, 2017) modeled by toroidal geometry, also referring to the presently known physics of black holes, that has often been described using such a torus concept. Black holes attract and internalize material objects, including their intrinsic information content. Although this happens in a potentially destructive setting due to their extreme matter density and related gravitational forces, current cosmologists debate the inherent loss of information in this violent process: Will all the internalized information become definitely lost, or are specialized mechanisms instrumental in preserving this information by back-projection onto an event horizon surrounding these giant structures? Some cosmologists see the latter process as essential for cosmic redistribution of basic information in the fabric of reality and even as a prerequisite for the ultimate reproduction of our universe (Meijer, 2012, 2021).

Returning to the black hole metaphor in relation to current scientific endeavors, it seems that the present academic world is ripped apart by opposing forces of gravity and dark energy yet largely maintains its dynamic versatility, as always based on human curiosity and the intrinsic formulation of the right questions on the fabric of reality. In this process, the information of scientific research and technology will indeed be projected onto an adequate holographic “event horizon” (Meijer, 2017, Meijer & Geesink, 2017), (Fig. 22). This register of human knowledge may finally provide the very fundamentals for recovery of academic truth and the rebirth of a non-corrupted scientific endeavor. In this essay, the current problems and present dangers in science, as extensively reported by leading scientists worldwide, are critically considered. At the same time, a set of potential solutions will be tentatively offered.

19. Conclusions and perspectives

The universal mind operates in holographic mode (Fig. 19 and Fig. 22), so each part contains information about its wholeness: The universe system is in “geometric- harmonic-resonant” equilibrium with itself. Using the “speaker”, that is, the eternal One residing in a supposed sixth dimension. Some see this as a cosmic mind, as Eddington said: “*Physics is the study of Consciousness*”

The crucial force that moves everything is what we call “Love”, which is not only a philosophical term but also implies an eternal spark inside it, which represents the intrinsic need to “share” one's essence of life with the evolutionary one, to satisfy the needs inherent in the “evolutionary arrow”. As John Wheeler stated, humans are active participants in the process. Thus, not everything is written in stone: we represent one species in the cosmos that writes on the wall of the event horizon of our universe.

Yet, in this universe, where humans are embedded in the splendid nature around them, we are only guests, and to prevent that we become unwanted for the habitat, we must respect the order of things established by the master of the house, the “speaker”. Unfortunately, many humans are using nature as their personal property. Climate change represents one of the defense mechanisms of our living planet and should be interpreted as a serious warning of our disharmony with nature. At the basis of all this, we experience signs of serious inflation in the scientific process, while we are exposed to the dark side of our evolutionary brain system, being the “reward system”, implying the current addiction modes such as overeating, overdosing of drugs, sex, gaming and full day phone use, in ad-

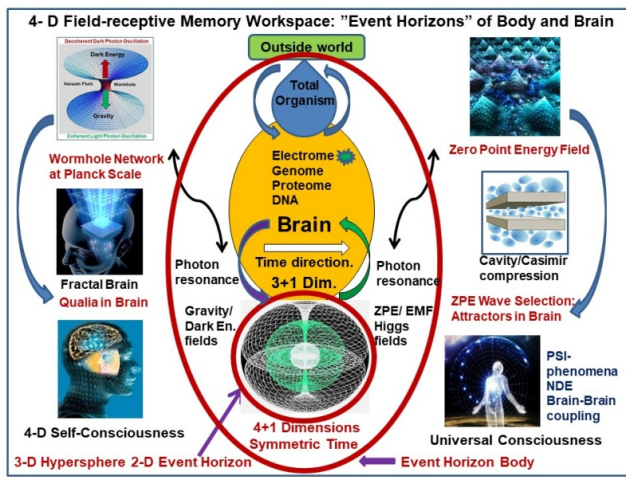


Figure 22 The “Event Horizon Workspace model of brain and body relations in a 4+1-dimensional space-time framework (4+1 implies 4 spatial dimensions and one single dimension of time) based on energy trajectories in a nested toroidal geometry. The opposing forces of dark energy (diverging force) and gravity, (converging force) as well as discrete wave frequencies of electromagnetic fields, are instrumental in the generation and compression of individual life information. The human brain may receive quantum wave information directly derived from the Planck space-time level (upper left) through quantum gravity mediated wave reduction and through resonance with the ZPF (upper right). Our brain can perceive only 3+1 dimensions, the latter being a time dimension with a one-directional arrow of time. The material brain and its 4+1-D supervening field-receptive mental workspace should be seen as an integral whole until the bodily death of the organism. The 4th spatial dimension allows individual self-consciousness since an extra degree of freedom is required for self-observation and reflection, while in the mental context the time dimension is symmetrical, allowing the integration of past and future-anticipating events. The 4th spatial dimension is also assumed to accommodate the bidirectional flow of information between the domains of self-consciousness and universal consciousness. Bottom-up information flow from the Planck scale, combined with top-down information conjugation from the ZPF, constitutes the event horizon of the brain, integrates gravitational and dark energy force fields, and supervises the physical brain. Event horizons of the brain and whole body are depicted in the red ellipse and the circle, respectively (From (Meijer & Geesink, 2017)).

dition to severe addiction to power and, money (Meijer, 2021, 2024a, Meijer & Bermanseder, 2024a). We humans are too often blinded by our big "I" and selfishness that takes us on wrong paths. Instead, we need to exercise humility in knowing how to recognize our historical and current failures. A deeper knowledge of this will certainly help us understand the foundation of evolution and mankind's role in the ongoing fabric of reality.

With a better understanding of the resonance phe-

nomenon, designing various technological applications that are in harmony with nature, including the above-mentioned anti-gravity effects, will be possible. This area of research may have enormous implications both for our life on this Earth as well as for our future exploration of the space in which we are immersed and of which we are part. In this vision of the intelligent Universe, the Space with neural superfluid properties, is the great container of the so-called “Akashi memory”, where everything is born from the One, and everything returns to, enriched by the experiences gained in the passage in the 5 operational dimensions.

Our “acoustic quantum code” concept was recently supported by (Hameroff, 2023, Miller, 2024, Oyewole, 2024, Sha & Xiu, 2024) and (Scala, 2022). Miller’s paper on a scale-free information matrix is in harmony with the TBP concept in its support of Bohmian cosmology and holomovement, as well as in the universal information/consciousness cosmology of (Wheeler, 1983, 1990). The Holographic model for the consciousness of (Sha & Xiu, 2024), likewise emphasizes a duality in distinguishing a spacetime metric from some invariant scale. The Psi-field study of (Oyewole, 2024), focuses on the similarities between the mainstream accepted Higgs field and the Psi-field as the medium for consciousness. The author also addresses a distinction between organic and inorganic matter associations thereby also opening the door to the quantum biology of (Funk, 2022) and (Chow et al., 2021), (see Fig. 10). Parts of the abovementioned models on cosmic consciousness operate in a 5D universe, by assuming one extra spatial dimension as earlier proposed and being in accordance with the work of (Dietrich, 2003).

Our work so explores a unique cosmological and quantum framework, integrating universal consciousness as both a source and processor of information within the universe’s structural design (Meijer, 2012, 2013). Universal consciousness is regarded as collector and processor of information that forms a potential energy plenum, subject to mathematical definition and creation. The totality or omni state of universal consciousness is then simulated as physicalized consciousness in individuated data occupying the emergent space-time and mirroring this information processing back into the abstraction of pre-spacetime (Hawking's imaginary time, Fig. 4, Fig. 7, and Fig. 19).

We incorporate existing theories, like Dirac's string theory and Penrose’s cyclic cosmology, to describe a universe as both cyclic and holographic. A "Twin Bipolaron" (TBP) model for gravity is proposed, positioning universal consciousness as an entity, functioning through quantum and relativistic principles. Central to

this idea is the existence of a "Twin Bipolaron Gravitational Center" (TBPGC), a structure that bridges physical reality (Minkowski-Einstein spacetime) and ab

The TBP model posits a connection between micro- and macro-phenomena through quantum gravity, characterized by a stract or "imaginary" spacetime, associated with Hawking's concept of imaginary time (**Fig. 13**). duality of black hole (inflow) and white hole (outflow) dynamics (**Fig.12**). This configuration is mathematically tied to the holographic principle, where information in the universe is encoded in a two-dimensional surface area, particularly around black hole event horizons, (**Fig. 12**, and **Fig. 22**).

In this model, dark matter and dark energy are two manifestations of a universal consciousness, described in terms of gauge interactions within a unified field theory, which integrates fundamental forces through both bosonic and fermionic particles (**Fig. 6**). We conceive all of spacetime as a discretization of pixelated holofractals (**Fig. 19**), always repeating the inflow-outflow vorticity as a Black Hole/White Hole energy duality. This then can very well be coupled as phonon/EMF electron/proton pair creation, in the mirror universe connected to annihilation quantum dynamics (**Fig. 13**).

The TBP Gravitation Center (TBPGC) itself so becomes the minimum spacetime configuration for any cosmology, magnified from the Planck scale. The TBPGC thus can be identified as the HE(8x8) fifth superstring class of the TBPGC, then becomes the Weylian wormhole of creation, connecting the 'inflow' from the pre-spacetime (time-space) to the 'outflow' of the creation event.

In living systems, fractals must satisfy the state of quantum coherence which maximizes global cohesion and local autonomy (see **Fig. 4**, **Fig. 5** and **Fig. 20**), and enables energy from any local level to spread to the global and, conversely, concentrate energy to any domain from the entire system. It is of great interest that brain function was recently described by ([Bandyopadhyay et al., 2023](#)) and ([Singh et al., 2020](#)) on the basis of a self-operating time crystal model of the human brain. The striking structural similarity of neuronal networks and the cosmic web of filament-connected galactic networks were earlier treated by vazza and van-curin The treatment of music theory by ([Ho, 2015](#)), and ([Hempel, 2024](#)) provides excellent introductions and makes clear that Fibonacci type of wave termination is essential for tone separation and the acoustic guiding of the fabric of reality ([Meijer, 2023](#), [Meijer et al., 2021](#)), see also **Fig. 4**, **Fig. 5** and **Fig. 19**)

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Supplementary Material

S1. The threats of addictive technology and AI

Indeed, even finding out something new can often be a thrilling experience, urging you on to build upon this thrilling piece of new information, or seeking another hit of information to reward you with the same feeling as before (see **Fig. S1**, **Fig. S2** and **Fig. S3**). If humans can rapidly learn cues and contexts, that asks for the availability of addictive drugs, they will use the same cognitive machinery to learn where to obtain another hit of information. Finding a source of knowledge is, in fact, rewarding in itself and will quickly become highly valued and used for future acts of knowledge acquisition.

There is, perhaps, also a difference in the quality of this gratification. Information obtained by the need of a quick fix does not require much thought, whereas those who seek to satisfy their intellects engage in long bouts of sustained sensory stimulation, in this manner build up their cognitive machinery to better understand the world. The satisfaction gained from this is arguably a greater reward, such as an emotional "Eureka!" moment of discovery.

[Large Language Models \(LLMs\)](#) models develop a statistical understanding of language: how words and phrases are usually combined, what topics are typically discussed together, and what tone or style is appropriate in different contexts. That allows it to generate human-like text and perform a wide range of tasks, such as writing articles, answering questions, or analyzing unstructured data. LLMs include OpenAI's GPT-4, Google's PaLM, and Meta's LLaMA. These LLMs serve as "foundations" for further AI applications. Despite their prodigious capabilities, these systems are not without flaws. At times, they churn out information that might sound convincing but is irrelevant, illogical, or entirely false—an anomaly known as "hallucination." In May 2023, the U.S. Department of Education released a report titled "Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations". This report warns that AI not only increases known, existing risks, but also introduces new risks. Known risks include data privacy

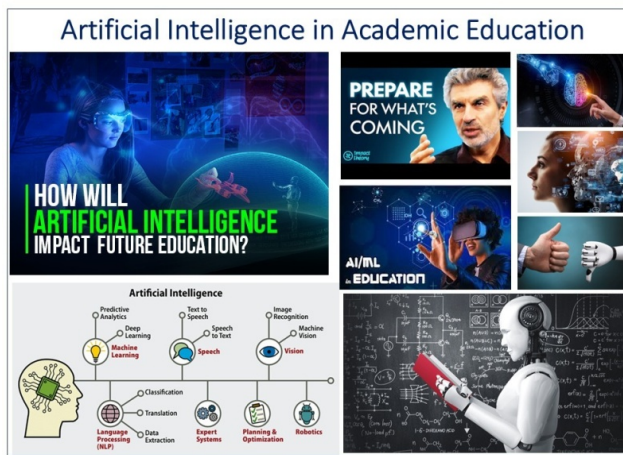


Figure S1 AI in Academic Education: Overwhelming Sea of Information without Clear Horizons (modified from Meijer (2024a)).

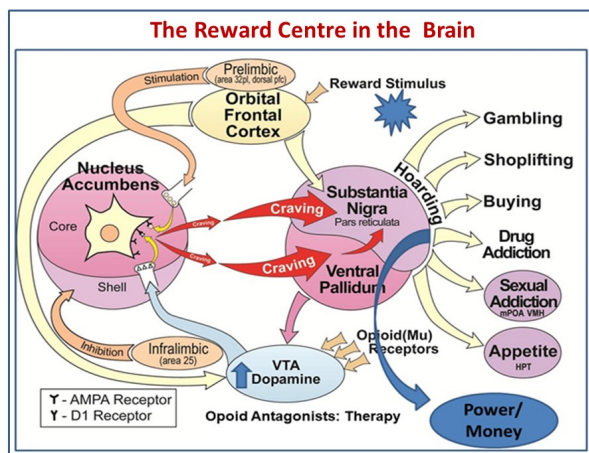


Figure S2 The Reward Centre in the Brain Showing the Network of Various Brain Centres and Neurotransmitters Involved (left) and the Spectrum of Addictions that Are Currently Reported (right), (modified from (Kim et al., 2013))

and security, algorithmic discrimination, inappropriate outputs, inaccurate depictions of history, unwanted surveillance and compromised trust. (Fig. S1).

The main risk of LLMs, is to the “level of independence” at which students are expected to work. With LLMs, students can “seemingly complete an assignment with very little effort.” This in turn “leaves no room for the student to interpret and understand,” endangering a student’s ability to develop crucial critical thinking skills. The risks and benefits of generative AI in education are still emerging. However, other technological tools have already proven to be beneficial for students. When installed on school computers, screen monitoring software, like LearnSafe, may protect students from intrinsic harms. This includes the risk of inappropriate responses from generative AI, (Fig. S2). As technology becomes ubiquitous in our work and pri-

vate lives, understanding how we interact with it is increasingly important. The average millennial picks up their smartphone more than 100 times a day. About 90 % of university students use social network sites such as Facebook on a regular basis. Smartphone users have doubled in five years to 3.5 billion in 2020. By 2025, mobile internet traffic will be five times what it was in 2020, and half the world's population will have access to the 5G network. In relation to the latter, by 2030, there will be ten times as many (20,000) satellites in orbit around the Earth (part of current plans to launch 82,000 satellites). It is alarming that we have very little scientific data on potential long-term health effects of such permanent high densities of EMF radiation.. Exposure to harmful EMF will certainly affect the essential communication function of the “electrome” of cells in the organism, and can, in principle, cause genetic damages, dysfunctional reproductive systems, increased cancer risk, learning and memory deficits, and many other harmful effects including poor mental health , such as severe addiction, as supported by our evolutionary Reward system in the brain, (Fig. S2).

S1.1. Smartphone use by school children and students

An alarming situation has arisen worldwide by the excessive use of smart phones, especially by children (some even start to do so at the age of 5 !), realizing that, up to 18 years of age, the brain is still in a developing stage, (Fig. S3). At least 25 % of children, in some European countries, cannot properly read their lessons or newspapers and rather obtain their knowledge from media such as “TikTok, Make your Day”. Comorbidity with depression, anxiety, OCD, ADHD and alcohol use disorder was firmly established. Excessive smart phone use is also associated with difficulties in cognitive-emotion regulation, impulsivity, impaired cognitive function, addiction to social networking, shyness and low self-esteem Medical problems include sleep problems, reduced physical fitness, unhealthy eating habits, pain and migraines, reduced cognitive control and even changes in the brain’s gray matter volume, (Fig. S1 and Fig. S3).

In conclusion, excessive smart phone use is associated with a spectrum of psychiatric, cognitive, emotional, medical and brain changes, that should be urgently considered by health and education professionals. In the Netherlands, from January, 2024, phone use in the classroom is forbidden, except for special educational purposes and at some schools, parents and school management even agreed to also stop phone use outside school and at home. (Meijer, 2021).

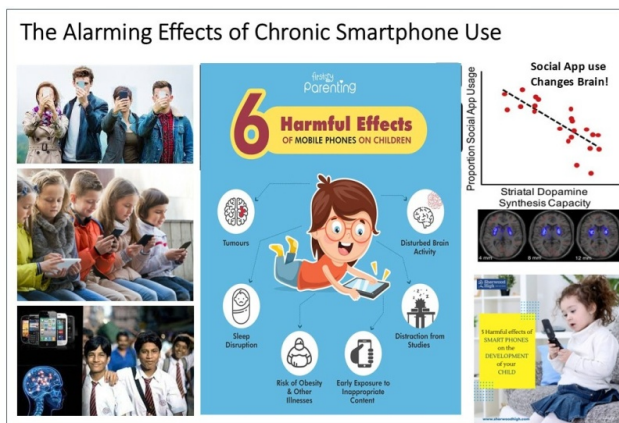


Figure S3 The Dangers of Smartphone Use in Children and Young Adults (modified from (Meijer, 2024c))

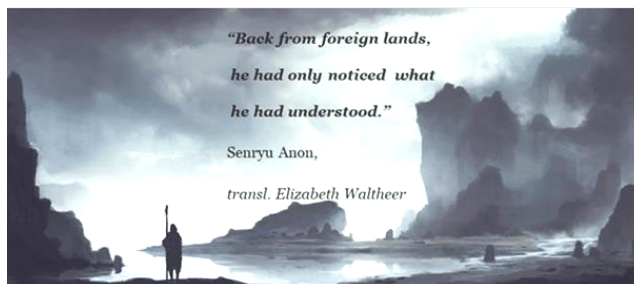


Figure S4 Lack of Real-life Learning: The Space-fright for Intuitive Thinking and Out of the Box Reasoning (from (Meijer, 2024c))

S2. The necessity of training in scientific thinking and philosophy of science

Another crucial factor in the induction of science inflation is the deficient science-philosophical education of our students in the current curricula and the related loss of the academic worldviews and scientific fundamentals in university education, in which time is often short and necessary moments of reflection scarce. We all hope that we will stick to our most important task in academic teaching: to stimulate our students to formulate pertinent and critical questions, also with regard to analyzing the processes of which they are part themselves, leading up to a better future for open science and responsible technological innovation.

Real-life learning must incorporate all four human functions (Thinking, Feeling, Perceiving, and Intuiting), including “interactivity” within an integrated process of self-realization, while the first step in problem-solving requires a comprehensive re-evaluation of the present media-sphere and its psychological agency as a primary educational edifice. Immunizing the global population from the current entropic diseases can be accomplished by impregnating the unified field of the

media-sphere with alternative quantum signatures that are based on the source code embedded in the context of a universal/cosmic consciousness (Meijer, 2021, 2023, Meijer et al., 2021). No matter how ingenious the mind may be, it is ultimately helpless without moral instruction.

Clearly, we should be aware of how we think rather than what we think, (Fig. S4). This requires a mind set in which we allow a drastic individual transition that integrates the all-pervading state of cosmic connection. This was earlier treated (Meijer, 2017) as the replacement of the act of explanation by the meaning of in-planation. The inherent problem of scientific deliberation is that it takes the form of lengthy “explanations” at a time when there may be “recognition” of the need for “in-planation”. So called “explanations” in science often have the flavor of a satisfying reductionism and presuppose a certain consensus, thereby seemingly obtaining a rather definite character. In other words, they tend to escape the individual plane and, through this adverse effect, may not leave much space for future creativity. They seem to be resistant to the requirement of “future proof”. Explanations, therefore, can effectively take people out of the plane of the reality in which they live, without ensuring that they are nourished by the deeper (potential holistic) perspectives offered. In contrast, “in-planation” could be understood as a necessary complementary process, enabling people to internalize and integrate knowledge (a sort of enfolding) in a more holistic way, information that can be later unfolded spontaneously and then centered in the here and now.

One major revolution in science and science education is near: the major impact of AI and Large Language models, as treated above, in relation to their impressive potentiality, but also encompassing the severe risk of replacing the central academic capabilities of selective data searching, condensing and proper integration of those data in a meaningful message by science professionals and students. Artificial intelligence (AI) now manages the properties of electromagnetism to process texts with extraordinary success and often with outcomes that are indistinguishable from those that human beings could produce, as said by (Floridi, 2022). AI can easily produce a unique, single novel on-demand, for a single reader, including the concept of interpretability, the value of the process, as well as the context of the production of meaning.

This technology, so challenges our uniqueness and originality as producers of meaning and sense, as well as of new contents, in addition to our ability to interact with systems that are increasingly indiscernible

from other human beings in their products. It shows our replace ability as readers, interpreters, translators, synthesizers and evaluators of content and thereby the power in the control of questions. This, because, to paraphrase 1984, whoever controls the questions controls the answers and whoever controls the answers controls reality.

Here we can be confronted with subtle manipulation of news and personal profiles based on AI-augmented intelligence analysis that produces infectious information for our brain, stored at hidden unconscious domains, somehow influencing our worldview and mindset, and potentially undermining our scientific independence. It is the prominent task of the worldwide Academia to act as critical observers and as advanced innovators to generate versatile programs to control and, if necessary, to counteract such toxic intrusions of our life and take these ethical challenges very seriously. May AI provide the rebirth of the meme concept, representing the virus as bio-archetype of infectious information, that can be effectively counteracted by a versatile digital immune system (Meijer, 2024b).

In this framework we should thus take an active position in counteracting the dark energy elements that drive scientists apart and tend to corrupt their integrity, thereby rendering science endeavor increasingly ineffective. We are facing an information tsunami of such magnitude that, in order to survive, we need to learn to ride it in a proper way by realizing our bio-cosmological connections and interconnectedness (Meijer, 2012, 2021, Meijer & Geesink, 2017, Meijer et al., 2021).

In this way, hopefully, we will persist to travel an endless landscape of astounding beauty, perhaps even transcending our physical existence, since even personal information is inevitably preserved (Meijer, 2021, 2024a). Gefter (2014) was probably right: Reality is fully observer-dependent and all our natural laws arose from human thinking. Yet, the major revolution in current science lies in the creative revelations of our fictional mindscape with a reflexive anti-traditional logic, encompassing thought spaces of paradox and transcendence with cosmic solutions, (Kuroda, 2024). Here elementary and artificial intelligence should be seen as superposing manifestations of human participation, that hopefully may reconcile all present and future discords.

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