Biocosmology
Multiverse, Life and Consciousness

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Abstract

The evolution of life on the planet Earth is happening primarily in the universe and secondary on the Earth. We will examine in this article evolution of life as the cosmic phenomena. In our model multidimensional time-invariant superfluid quantum space that is the fundamental arena of the universe and represents about 95% of the energy in the universe has stable entropy. The increase of entropy happens only by about 5% of the energy in the universe that is in the form of matter. The evolution of life in our model is a process of matter organization into living systems that tends to develop towards the constant entropy of the time-invariant multidimensional quantum space. This process runs in the entire universe. The development of life into intelligent organisms is the universal process running throughout the entire universe.

Keywords: cosmology, life, superfluid quantum space, consciousness.

1. Introduction

The result of several pieces of research is that the superfluid quantum vacuum also named superfluid quantum space (SQS) is the physical origin of the universal space, the fundamental arena of the universe [1,2,3,4,5]. Superfluid quantum space (SQS) has a general *n*-dimensional complex structure $\mathbb{C}^n$; every point of it has complex coordinates:

$$z_i = x_i + i\, y_i \quad (1).$$

(x_i, y_i) $(i = 1, \ldots , n)$ is an ordered n-tuple of real numbers $((x_i, y_i) \in \mathbb{R}^n)$; for the purpose of this paper, we consider its subset $\mathbb{C}^4$ where all elementary particles are different structures of $\mathbb{C}^4$SQS and have four complex dimensions z_i "[4].

Elementary particles proton, electron, and photon are 4-dimensional structures of the $\mathbb{C}^4$SQS and have according to the existing quantum theory almost infinite lifetime. Sbitnev proposal is that elementary particles are different vortex structures of superfluid quantum space [6]. As $\mathbb{C}^4$SQS has stable entropy, proton, electron and photon have stable entropy. 5% of the energy in the universe is in form of matter composed out of atoms that are 3-dimensional and 95% is in the form of the $\mathbb{C}^4$SQS that is 4-dimensional and has stable entropy.

Multiverse is in dynamic equilibrium. In AGNs matter is falling apart into elementary particles that form huge jets. These jets are the "raw material" for the formation of the new stars. This process of matter transformation in elementary particles is continued. The universe is a non-created system in a permanent dynamic equilibrium [4,5]. The evolution of life in the universe is an intrinsic tendency of 3D matter to develop into systems (living organisms) that tend to develop towards the constant entropy of $\mathbb{C}^n$SQS.
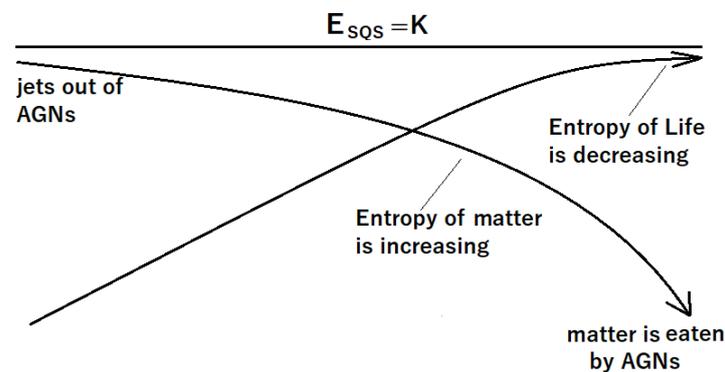
Figure 1: Life is developing towards the constant entropy of $\mathbb{C}^n$SQS.

The entropy of matter in the universe is continuously increasing. The entropy of life is continuously decreasing. The entropy of $S_{\mathbb{C}^n SQS}$ is constant:

$$S_{\mathbb{C}^n SQS} = K \qquad (2).$$

2. Quantum mechanics of life negentropy

Fritz Popp's and Cohen's research has shown that a living organism has a coherent electromagnetic field that plays an essential role in the organism's function [7].

Electromagnetic fields are carried by the complex four-dimensional superfluid quantum space $\mathbb{C}^4$SQS. A living organism has an atomic and molecular layer entropic layer and electromagnetic layer that is negentropic. The negentropic layer is the software and the entropic layer is the hardware. Our proposal in this article is that life is an "orchestra" of the higher dimensional layers of $\mathbb{C}^n$SQS. Consciousness in our model is the energy E_c of the photon of the n-dimensional layer of $\mathbb{C}^n$SQS; its frequency tends to the infinite:

$$E_c = \nu_{\to\infty} h \qquad (3),$$

where ν is photon frequency and h is a Planck constant. Consciousness is governing life via lover dimensional SQS by the pilot photons. Biophotons are studied in detail by Popp and Cohen [7]. Photons have a spin. Left spin, we can take like 1, and right spin we can take like 0. When a photon is passing the microtubule, it passes the information via its spin. $\mathbb{C}^4$SQS photons have 4 bites of the information. They are getting information from higher dimensional SQS photons and are passing it to the microtubule [8]. The equation for the information increases in higher dimensional layers of SQS is following:

$$C_k(n) = \frac{n!}{(r!(n-r)!)} \qquad (4)$$

where n is the number of SQS dimensionality, and $r = 3$ because microtubules are 3-dimensional. A four-dimensional biophoton carries 4 bits of information: $[X_1, X_2, X_3]$, $[X_2, X_3, X_4]$, $[X_1, X_2, X_4]$, $[X_1, X_3, X_4]$ and transfers it to the 3D microtubules.

Table 1. Information density in higher dimensions of $\mathbb{C}^n$SQS.

$\mathbb{C}^4$SQS	4 bit
$\mathbb{C}^5$SQS	10 bit
$\mathbb{C}^6$SQS	20 bit
$\mathbb{C}^7$SQS	35 bit
$\mathbb{C}^8$SQS	56 bit
$\mathbb{C}^9$SQS	84 bit

$\mathbb{C}^{10}$SQS	120 bit
$\mathbb{C}^{100}$SQS	161700 bit
$\mathbb{C}^n$SQS	∞ bit

In n-dimensional SQS the amount of information is infinite. Seems, life and the entire universe are functioning via binary logic and binary transfer of information. That's why we managed the immense development of computers; we discovered the mechanisms of information storage and transfer that are universal. The numbers sequence 4,10,20,35,56,84,120…….is a tetrahedral sequence of numbers, also called triangular pyramidal numbers. It is interesting that several molecules have a tetrahedral structure [9,10]. Tegmark is proposing that the entire universe is a mathematical structure [11]. Comparing Tegmark's proposal our model is moderate and proposes that the entire three-dimensional universe is built accordingly to the mathematical structures that have their information basis in the higher-dimensional layers of SQS.
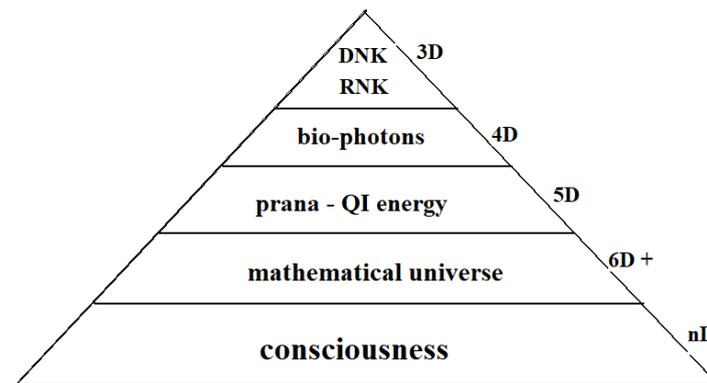
Figure 2: Life-information system that exists in the entire universe.

Biophotons in a $\mathbb{C}^5$SQS are the physical basis of prana, biphotons in higher dimensional layers are the physical origin of the mathematical universe and finally, biophotons in $\mathbb{C}^n$SQS are the origin of consciousness.

One bit of information in life-information system is a "complex bit", because biophotons are excitations of the complex $\mathbb{C}^n$ SQS. One bit of information in artificial intelligence is carried by the electrical current, because in computers one bit means that electrical current has moved in one or other direction. That's why artificial intelligence and alive intelligence will never be compatible. Computers will never have real human emotions

and will never be conscious. They will never develop higher cognitive functions that are characteristic for the higher dimensional layers of the human $\mathbb{C}^n$SQS.

3. **Materials and methods**

Research done between 1987-90 has confirmed that the presence of the higher dimensional layers of $\mathbb{C}^n$SQS in a living organism minimally increases its weight. Preliminary experiments has been carried out at the Biotechnical faculty, Ljubljana, Slovenia in June 1987. Measurements have been performed on a Mettler Zurich M5 scale. Six test-tubes were filled with three milliliters of a water solution made out of meat and sugar. Four test-tubes were used and a fungus was put into two of the test-tubes. All of test tubes were welded airtight. The weight difference between test-tubes was measured for ten days. After three days of growth, the weight of test-tubes with the fungus increased (on average) 34 micrograms and in last seven days remains unchanged. The experiment was carried out in sterile circumstances and has confirmed that when organic mass turns into an alive mass its weight increases accordingly to Eq. (5).

$$Fg_{\ living.organism} \ = \ Fg_{\ organic.matter} \ + \ Fg_{life} \qquad (5).$$

The experiment was then carried out in the opposite way. Two test-tubes were filled with 5 grams of Californian worms with distilled water. All of the test-tubes were then welded airtight. The weight difference between test-tubes was measured for 5 hours. At the end of the first hour there was no appreciable difference but at the end of the second and third hour there mass was decreased of 4.5 micrograms on average. This mass then remained stable for the next 2 hours most likely due to there no longer being any living organisms. Experiment was repeated 5 times. The weight loss can be expressed by following equation:

$$Fg_{\ dead.organism} \ = \ Fg_{\ living.organism} \ - \ Fg_{life} \qquad (6).$$
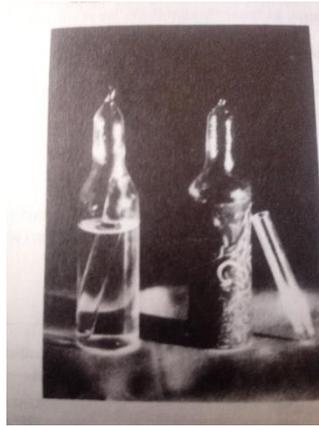
Figure 2: Experimental and control test tube back in 1988

These experiments were repeated from August to September of 1988 at the Faculty for Natural Science and Technology, Ljubljana. Two Mettler Zurich scales, type H20T were used in the measurements. A test-tube was filled with 70 grams of live Californian worms and a small testtube was filled with 0.25 ml of 36% water solution of formaldehyde. The control test tube is containing 70 ml of distilled water with a small test tube of formaldehyde inside. Both the test tubes were welded, wiped clean with 70% ethanol, and put into the weighing chamber of the balance. Approximately, one hour was allowed for acclimatization. Later both test-tubes were measured three times at intervals of five minutes. Then the test tubes were turned upside down to spill the solution of formaldehyde and again they were measured seven times at intervals of fifteen minutes. The weight of the test-tube with the worms was found to have increased in the first 3 minutes after the poisoning on average for an average weight of 60 micrograms and it then went down. Fifteen minutes after poisoning, the weight diminished on average by 93.6 micrograms.
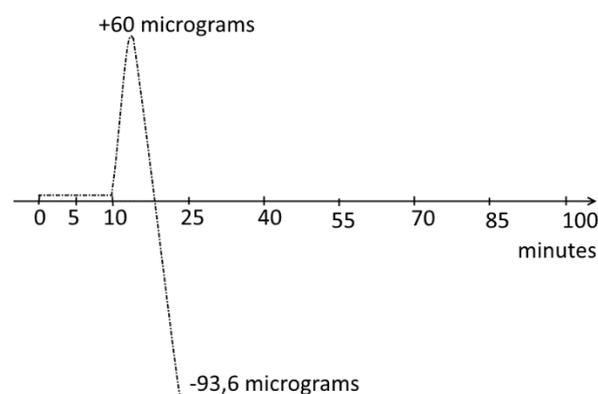
Figure 3: Weight diminishing at the time of worm's death

This last experiment was repeated twelve times. The standard deviation goes to 16 micrograms. The pressure in both test tubes was one atmosphere for the entire duration of the experiment as well as the temperature remaining unchanged. Neither the pressure nor the temperature could have been the cause for the change in the weight. Experiments are preliminary and need to be repeated at least in two different laboratories. We do not encourage researchers to use higher developed animals in this experiment.

In 1997, one of the authors (A. Sorli) published the results of the experiments in the 'Newsletter' nr. 18-19 of Monterey Institute for Study of Alternative Healing Arts, California. On March 3rd 1998, Dr. Shiuji Inomata from Japan informed the editor (S. Savva) that Dr. Kaoru Kavada got similar results using rats as the experimental organism, again in a closed system.

Back in 2019, the experiment with 5 grams of worms was repeated on the high accuracy balance Mettler-Toledo AX107H Comparator. The difference between the two test tubes with the worms and the two control test tubes with destinated water was measured simultaneously. The same results were obtained.

Figure 4: Two experimental and two control test tubes
on Mettler-Toledo AX107H Comparator

Today, the interpretation of these experiments is that the mass m of living worms and the mass m of dead worms are the same because in both masses we have the same atoms. Only their molecular composition after poisoning with formaldehyde is different. A living organism has more energy than the same dead organism. Its energy is following:

$$E_{life} = mc^2 + E_{\mathbb{C}^n SQS} \qquad (7),$$

where m is the mass of the organism and $E_{\mathbb{C}^n SQS}$ are higher-dimensional energies of $\mathbb{C}^n SQS$ that are present in the living organism. The presence of higher-dimensional energies of $\mathbb{C}^n SQS$ in living organism minimally increases its weight [12].
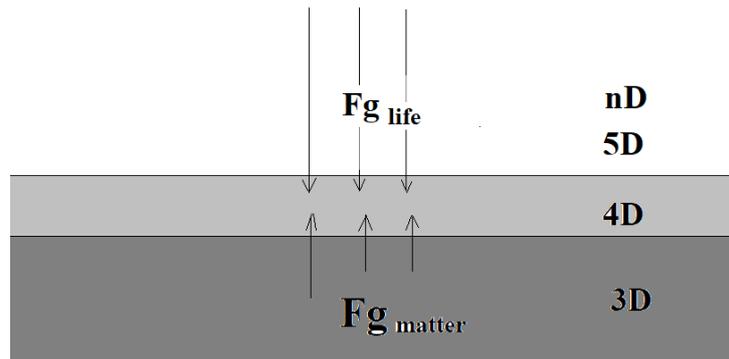
Figure 5: Gravity of matter (Fg_{matter}) and gravity of life (Fg_{life})

The weight of living organisms has two components. The weight of the atoms in the living organism (Fg_{matter}) and the weight of the higher dimensional energies of $\mathbb{C}^4 SQS$ that are present in the living organism (Fg_{life}) see figure 5.

In our cosmology model, gravity force is the result of the diminished energy density of $\mathbb{C}^4 SQS$ because of the presence of the physical object [4,5]. The presence of higher dimensional layers of $\mathbb{C}^4 SQS$ also diminishes the energy density of $\mathbb{C}^4 SQS$ and so gravity force is minimally increased. We could say that so-called "subtle energies" as "Prana" or "QI" energy and consciousness have some minimal weight [12]. Mechanistic science is strictly denying the existence of a reality that reaches beyond electromagnetism. We think this approach will not give us any progress. As Nicola Tesla said: "The day science begins to study non-physical phenomena, it will make more progress in one decade than in all the previous centuries of its existence".

Slawinski has measured bio-photon radiation at the time of death of the organism and increases from 10 to 100 times [13]. This confirms that at the time of death the four-dimensional layer of $\mathbb{C}^n SQS$ that represents the coherent electromagnetic field discover by Popp and Cohen is falling apart and this causes increased bio-photons radiation.

4. **Evolution of life**, **order, disorder and randomness**

We take a "fair coin" and we throw it. We have a 50% possibility to get the "upper side" and a 50% possibility to get a "downside" of the coin. We take a "fair dice" with six numbers. We throw it and we have a 16.66 % possibility to get number six.

We take two fair dices, we place them on the plate so that they both have number six on the upper surface and we throw them. We use the equation (4) to get the number of possibilities. Number n is 12 because we have 6+6 surfaces, and number k is 2. Throwing two dices we can get 66 different combinations. This means that the possibility that both dices will have at next throw number six on the upper surface is 1.56%. Now we take 10 dices and we place them so that all have the number six on the upper surface. Number n is 60, and number k is 10. At the next throw, we have 75394027566 different possibilities. Possibility that all dices will have at next throw number six on upper surface is $1.326 \cdot 10^{-9}$ %. At 100 dices number n is 600, and number k is 100. At the next throw, we have $1.111 \cdot 10^{116}$ different possibilities. Possibility that all dices will have at next throw number six on upper surface is $9 \cdot 10^{-115}$ %.

Random hitting of dices increases the disorder of the system. A living organism's order is extremely bigger than the order of the system of 100 dices. Life is regarding the geological environment extremely high organized system. Longo and Montévil have proposed that randomness increases order in biological evolution [14]. The calculations above confirm that the idea that randomness is the cause of biological evolution seems unacceptable.

Penrose and Hameroff have proposed consciousness as the core of life evolution. They have created orchestrated objective reduction theory (Orch OR), which sees life and consciousness as phenomena that are deeply related to the structures of the universe: "The DP (Diósi–Penrose) form of OR is related to the fundamentals of quantum mechanics and space-time geometry, so Orch OR suggests that there is a connection between the brain's biomolecular processes and the basic structure of the universe" [15]. We have replaced space-time model with the time-invariant model. Seeing consciousness as something that appears in time is outdated. Linear phycological time "past-present-future" exists only in the human brain and consciousness is far beyond the brain and phycological time [16]. The universe is time-invariant, time as duration enters existence when measured by the observer [5]. In our model evolution of life has its information basis in the higher dimensional layers of SQS. Entire universe is existing in a time-invariant SQS, everything in the universe is entangled via time-invariant SQS [4]. In $\mathbb{C}^4$SQS information transfer is of the light speed. In $\mathbb{C}^n$SQS information transfer is immediate. $\mathbb{C}^n$SQS is the medium of EPR-type entanglement. This is because the

frequency of the photon in $\mathbb{C}^n$SQS that represent consciousness tends to infinite value and its wavelength tends to zero. Its velocity tends to zero ($\nu_{\to\infty}, \lambda_{\to 0}, v = \nu\,\lambda = \to 0$). Consciousness is the carrier of the immediate information transfer. Back in 2014, Max Tegmark published an article where he discussed that consciousness could be understood as a state of mater [17]. In the $\mathbb{C}^n$SQS model, all that exists in the universe is energy. Matter, electromagnetic energy, and consciousness are different aspects of the same energy. There is no need to think that matter is primary and consciousness is a state of matter or that consciousness is primary and the matter is its manifestation. They are both coexistent forms of the same energy. In $\mathbb{C}^n$SQS model dichotomy matter/consciousness is solved. Energies of all layers of $\mathbb{C}^n$SQS are interwoven. They are one organism and seeing them separate seems wrong.

Einstein and Bohm were not in the favour of the idea that the universe is a random phenomenon with no order. Einstein has proposed "hidden variables" to explain the EPR-type experiments, Bohm has proposed "implicate order of the universe", a model that proposes the universe is an intelligent system [18]. There is a deep ontological similarity between Einstein's, Bohm's, and our view. In our model universe is governed by consciousness and we humans have to search consciousness experientially in order to be able to follow cosmic laws and build human society accordingly [19].

Self-organization is today recognized as a valid principle in developmental biology [20,21]. It is well recognized that life is organizing itself. The mistake is to believe that this principle is ruling the development of life. No principle can rule a given process. A given principle in order to be real needs discovery of its physical origin. The principle of self-organization needs experimental verification. Our experiment "life-dead weight difference" proves that some higher dimensional type of $\mathbb{C}^n$SQS energies is present in the living organism. These higher-dimensional energies of $\mathbb{C}^n$SQS are the physical origin of self-organization. It makes no sense to see living organisms as an isolated system. Life is deeply related to the $\mathbb{C}^n$SQS.

Organic molecules have been found in the interstellar medium [22]. In our model interstellar medium is the $\mathbb{C}^n$SQS. Molecules in interstellar areas have a tendency of self-organization because information of life is encoded in higher-dimensional layers of SQS. On the planets that are similar to the planet Earth, life has developed in intelligent beings. In our universe, there are many planes similar to our planet Earth where life could develop [23,24]. Biocosmology is reaching beyond anthropocentrism and geo-centrism. We are not the centre

of the universe. The evolution of life on Earth is the consistent part of a universal process that runs throughout the entire universe.

5. Conclusions

The universe is the main system in which all other systems exist. It is opportune to approach life as a universal process. Astrobiology is searching for extra-terrestrial life. Biocosmology is building a model where the development of life is an integral part of the universal dynamics. Higher-dimensional layers of $\mathbb{C}^n$ SQS are the cosmic reservoir of information for the development of life.

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