ISSN: 3144-1890

Wissen PUBLICATION GROUP

Journal of
Advanced Physics and Interdisciplinary Science

Review Article

Volume: 1 | Issue: 1 | November 2026 | Pages 01–12

The Truly Innovative Ideas in Physics and Philosophy

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Submitted: 14 November 2026 **Accepted:** 23 November 2026 **Published:** 30 November 2026

Citation: Jakubowski, P. (2026). The Truly Innovative Ideas in Physics and Philosophy. Journal of Advanced Physics and Interdisciplinary Science, 1(1), 01-12. DOI: doi.org/10.67927/jadvphysintersci/2026(1)112.

Abstract

The unification of the whole of physics achieved over the last fifty years enables us to create an entirely new scientific description of our Universe. According to the New Philosophy of Life: life is a process of accumulating energy within a closed system, separated from the inanimate world by membranes. This article summarises all the new concepts necessary to understand this new perspective.

Keywords: Unified Physics, Cosmic Hierarchy, Unified Science, Universal Philosophy of Life.

Introduction

The only absolute truth in science is the statement that there are no absolute truths. All theories in the natural sciences are always merely more or less subjective models of the reality in which we live. The better these descriptions of reality are, the fewer preliminary assumptions are required to formulate them, on the one hand, and the more precise experiments (comparisons with reality) they are able to explain, on the other. These are also the criteria that compel us, from time to time, to abandon older theories and replace them with new ones. This article proposes precisely such a change in the most advanced theory of the natural sciences of the present century, the culmination of which is the New Philosophy of Life. The cover of the latest book on this subject presents the main idea of the New Philosophy of Life as follows: Until now, the common origin of life has generally been understood as the emergence of the first organism or the first cell [1]. However, all observations to date can be interpreted differently. It can be assumed that the true source of life does not lie in a specific object, but in a particular state of Nature. In that case, the uniformity of life is not the result of a one-off historical coincidence, but a consequence of the general laws of Nature. What is of decisive importance, then, is not the first cell, but the conditions under which the same energetic organisational principles inevitably take shape everywhere. According to this philosophy: *Life is a process of accumulating energy within a closed system, which remains separated from the inanimate world by membranes*. Reaching this seemingly simple definition of life, however, required colossal changes to our physical framework for describing the entire Universe in which we live. In the next paragraph, we shall discuss the most important of these changes. In the final paragraph, we shall present several practical examples of how this new philosophy can also be applied to related fields.

Chronology of The Discoveries

Non-Orthogonal Atomic Orbitals (1973-1981)

The theory of traditional quantum chemistry required the mathematical normalisation (orthogonalisation) of all orbitals in order to describe the motion of electrons in atomic orbitals. However, this purely mathematical requirement led to the loss of important information regarding the mutual energy relationships between the various electrons in the system under description [2]. On the other hand, taking this information into account enabled a new approach to a more natural energetic ordering of individual quanta in all quantum systems [3].

An Alternative Solution to Maxwell's Equations (1982-1990)

The traditional solution to Maxwell's equations adds the Maxwell 'displacement current' to the current term in Ampère's equation. This results in D'Alembert's equation for electromagnetic waves in a vacuum. The alternative solution to Maxwell's equations, however, subtracts the Maxwellian 'displacement current' from the current term in Ampère's equation. The rationale for this change is the adoption of the actual direction of electric current flow, carried by negative electrons, which were unknown in Maxwell's time. The result of this change is the demonstration that electromagnetic waves do not exist in the absence of electric charges, and therefore also in a vacuum. A far more significant change, however, was the demonstration that, given this starting point, electrodynamics is entirely equivalent to dynamics [4]. This means that all electrodynamic processes and interactions are merely an equivalent description of the reality of Nature, alternative to the dynamic description. This discovery paved the way for the practical unification of the whole of physics.

The Unification of all Physics (1991-2000)

The main premise of Unified Physics is the acceptance of quantisation not only of the energy of atoms and molecules, but of all properties of the entire Universe, right down to its furthest reaches. Therefore: *The Universe in which we live is quantum*. An alternative solution to Maxwell's equations made it possible to construct a Unified Family of all physical quantities (together with their units and constants) [5]. It turned out that such unification requires a transition from Einsteinian space-time (3+1-dimensional) to a 2+2-dimensional quantum space, in which both time and energy are two-dimensional quantities. The quantisation of the Universe therefore follows naturally from a fundamental property of the Unified Family of all physical quantities: *for the quantisation of energy also implies the quantisation of all other physical quantities.* Figure 1 below depicts the complete plane of the Unified Family of all physical quantities . The universal value x_u of any quantum of any physical quantity x can (in accordance with the rules given in the top left-hand corner of the figure) be calculated on the basis of the universal length r_u and the universal period t_u of that quantum. Moving one square to the right on this plane means multiplying by the length r, whilst moving to the left means multiplying by the wave vector k (the reciprocal of r). In turn, moving one square downwards means multiplying by the period t, whilst moving upwards means multiplying by the frequency f (the reciprocal of t). In this way, Planck's constant, the universal value of action (J), turns out to be the fourth power of the universal value of length, r_u. By inferring from the experimentally well-known value of Planck's constant, we learn, amongst other things, that the universal quantum size in our Universe is 5.07 nanometres (nm). The corresponding universal quantum frequency is 5.08 terahertz (THz), whilst the universal quantum temperature (as a measure of the quantum's energy density) is 244.4 Kelvin (K), or, in other words, approximately -30°C.

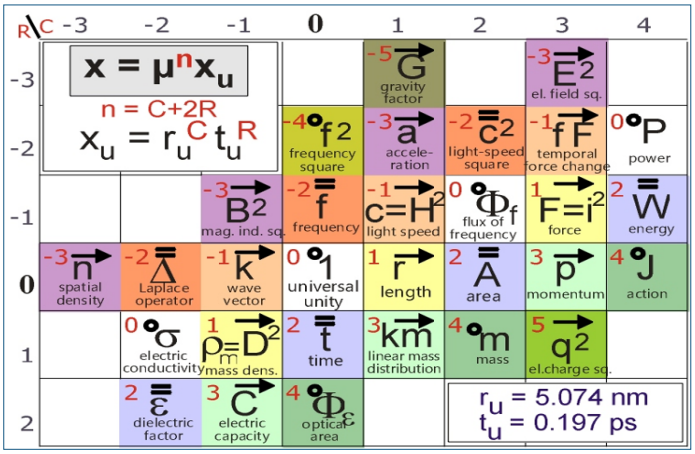


Figure 1: The Unified Family of all Physical Quantities.

To calculate the values of the remaining quanta of a physical quantity x, one simply needs to multiply its universal value x_u by the appropriate material coefficient μ^n. As can be seen in the following Figure 2 of the Relative Quantum Spectrum, the material coefficient μ takes the value 1 for universal membrane quanta, a value in the range from 1 to 0 for quanta of inanimate matter, and a value greater than 1 for quanta of living organisms. The required exponent n of this material coefficient is calculated on the basis of the position (in column C and row R) of the desired physical quantity x on our complete plane of the Unified Family. The first practical result of the unification of physics was the proof that all physical quantities, introduced into physics over the centuries, are space-time derivatives of the Universal Unity [5]. The next practical result was a simple computer programme which, on the basis of the Unified Family, derives all possible (known and hitherto unknown) physical equations. One of the most surprising unknown equations turned out to be a new definition of quantum mass, namely that the mass of any quantum is equal to the product of its period and its area [6].

The Full Spectrum of Matter-Spirit Quanta (1990-2000)

The Unified Family of all physical quantities demonstrates unequivocally that the Universal Unity, interpreted as the Universal Creative Potential, creates the material (spatial) properties of every quantum in our Universe, and at the same time, through its interactive (temporal) relationships, it also creates all the properties of these quanta which, at the highest stage of development of living organisms, become responsible for our spiritual activities. Therefore, right from the very beginning of our new description, we refer to all the quanta of our Universe as material-spiritual quanta, or matter-spirit quanta [7].

[1]Note that Unified Science must use the equivalent symbol W for energy (derived from its equivalent quantity – work, W), because the electric field E has no equivalent symbol.

Material class	Const. Φ_f, P B, E	~μ¹ r, c^{-1} U, H	~μ² t, W i, D	~μ³ p, a^{-1} Φ_H,C	~μ⁴ m, J q, $\tilde{\mu}$	Electro-magnetic radiation in vacuum
	1	10^{8}	10^{16}	10^{24}	10^{32}	
Superbrain quanta	1	10^{7}	10^{14}	10^{21}	10^{28}	Extra-long waves
	1	10^{6}	10^{12}	10^{18}	10^{24}	
Brain quanta	1	10^{5}	10^{10}	10^{15}	10^{20}	Radio waves
	1	10^{4}	10^{8}	10^{12}	10^{16}	
Nerve cells	1	10^{3}	10^{6}	10^{9}	10^{12}	Micro-waves
	1	10^{2}	10^{4}	10^{6}	10^{8}	
Tissue cells	1	10^{1}	10^{2}	10^{3}	10^{4}	Far-Infrared
Membranes	**1**	**1**	**1**	**1**	**1**	**Infrared**
Molecules	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	Visible
	1	10^{-2}	10^{-4}	10^{-6}	10^{-8}	Ultraviolet
Atoms	1	10^{-3}	10^{-6}	10^{-9}	10^{-12}	X-rays
	1	10^{-4}	10^{-8}	10^{-12}	10^{-16}	
Atomic nuclei	1	10^{-5}	10^{-10}	10^{-15}	10^{-20}	γ-rays
	1	10^{-6}	10^{-12}	10^{-18}	10^{-24}	
Quarks	1	10^{-7}	10^{-14}	10^{-21}	10^{-28}	Cosmic rays
	1	10^{-8}	10^{-16}	10^{-24}	10^{-32}	

Figure 2: Relative Spectrum of Matter-Spirit Quanta.

Figure 2 shows the complete spectrum of all possible matter-spirit quanta. The membrane level separates the four possible classes of matter-spirit quanta in living organisms (tissue, nerve, brain and superbrain quanta) from the four classes of inanimate objects (molecular, atomic, atomic-nuclear and quark quanta). The five classes of relationships between physical quantities and material are ordered according to the power of the material parameter μ (in accordance with the definition of the Unified Family of all possible physical quantities in the previous figure) (from n=0 to n=4). The Relative Quantum Spectrum presents all values of various physical quantities in relation to their universal values at the membrane level (that is, when $x = x_u$). Table 1 below provides an insight into the extent to which the values of various matter-spirit quanta, for different physical quantities, differ from their universal values.

Table 1: Typical Values of all Possible Classes of Matter-Spirit Quanta.

Class	Quant	Size			Frequency	Temperature	Speed	Voltage
		Minimal	Average	Maximal				
4	Superbrain	50 mm	0.5 m	5 m	~2/hour	2.4 μK	0.26 mm/s	2 MV
3	Brain	0.5 mm	5 mm	50 mm	5 Hz	240 μK	2.6 cm/s	20 kV
2	Nerve cells	5 μm	50 μm	0.5 mm	50 kHz	24 mK	2.6 m/s	200 V
1	Tissue cells	50 nm	0.5μm	5 μm	500 MHz	2.4 K	260 m/s	2 V
0	**Membranes**	**0.5 nm**	**5 nm**	**50 nm**	**5 THz**	**240 K**	**26 km/s**	**20 mV**
-1	Molecules	5 pm	50 pm	0.5 nm	50 PHz	24 kK	2.6 Mm/s	200μV
-2	Atoms	50 fm	0.5 pm	5 pm	500 EHz	2.4 MK	260 Mm/s	2 μV
-3	Atomic nuclei	0.5 fm	5 fm	50 fm	$5x10^{24}$Hz	240 MK	26 Gm/s	20 nV
-4	Quarks	5 am	50 am	0.5 fm	$5x10^{28}$Hz	24 GK	2.6 Tm/s	200pV

We can see here, for example, that average nerve quanta are around ten thousand times larger than the universal value r_u = 5 nm, whilst brain quanta may be a further hundred or even a thousand times larger. We also see that the characteristic frequency f (as the reciprocal of the period t) of average atoms may be around one hundred million times higher than the universal frequency f_u of 5 THz at the membrane level.

Venus-Centered Solar System (1995)

Traditional cosmology assumes that our Sun formed as a solitary star. Given this starting point, however, explaining the origin of the planets orbiting our Sun requires an assumption—which contradicts Newton's theory of gravity—that the angular momentum of a rotating accretion disc acts as an additional force drawing the planetary masses together. Unified Physics emphatically demonstrates the incorrectness of such an assumption – angular momentum does not create any new force. A solitary star cannot have planets. Therefore, the Sun must have formed simultaneously with a second (smaller) star in a binary system, the standard configuration of the observable Universe. At the centre of mass of this system, one of the four primordial planets of this primordial Sun was formed. Today we know it as Venus (see Figure 3). The Sun's original stellar companion (which we call the Andrea star) was shattered in a cosmic catastrophe 3.5 billion years ago.

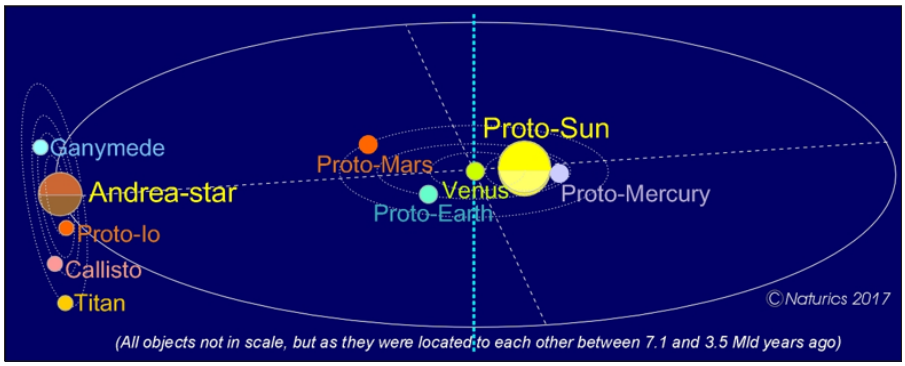


Figure 3: Proto-Solar System.

The result of this catastrophe was the emergence, within the primordial Solar System, of four gas giants and all the moons of today's Solar System [8]. However, the bulk of Andrea's mass remains to this day in its original orbit, which we now call the Kuiper Belt. The centre of this mass lies approximately 10 Astronomical Units beyond Pluto's current position (see Figure 4).

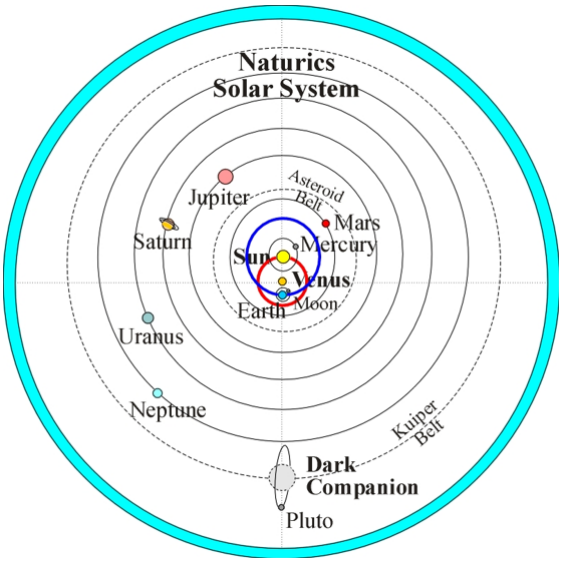


Figure 4: Our Venus-Centered Solar System.

The Cosmic Hierarchy of the Solar System (1994-2013)

The extension of the Proto-Sun–Andrea-Star binary system (based on a uniform scale of sizes and periods) led to the discovery of the Cosmic Hierarchy of the Solar System (in its original version) [9]. An updated version is presented in Table 2. The most important point to note regarding this table is that all its numerical values have been calculated theoretically. These calculations were based on the known orbital period of the Proto-Sun around Venus, which remains unchanged to this day and is equal to the (traditionally assumed) orbital period of Venus around the Sun. The scaling factor for the rest of Table 2 (cosmic quantum number, cqn) was calculated on the basis of the assumed relationship between the primordial, universal energy density (equivalent, according to Figure 1, to the quantum speed of energy transfer, or in other words, the primordial speed of light) and the present-day speed of light in our Solar System.

Table 2: The Cosmic Hierarchy of the Solar System.

L	Object	Radius [AU]	Cycle [yr] = Radius [ULy]	Relative velocity [km/s]	Mass [MProto-Solar-System]
10	Still unknown	2.369×10^{11}	4.353×10^{10}	3795.4	4.35×10^{14}
9	Sloan Great Attractor	1.951×10^{10}	3.585×10^{9}	2033.2	1.03×10^{13}
8	Great Attractor	1.607×10^{9}	295.2×10^{6}	1089.2	2.43×10^{11}
7	Virgo Cluster of Galaxies	1.323×10^{8}	24.311×10^{6}	583.48	5.74×10^{9}
6	Andromeda Group of Galaxies	1.090×10^{7}	2.0021×10^{6}	312.57	1.36×10^{8}

5	Large Magellan Cloud	8.974×10^5	164878	167.44	3.21×10^6
4	Omega Centauri Cluster	7.390×10^4	13578.3	89.698	7.58×10^4
3	Orion Complex	6085.97	1118.22	48.051	1790.42
2	Ursa Major Moving Group	501.201	92.0896	25.741	42.31
1	Solar System	41.2757	7.58390	13.76	1
0	Proto-Sun	3.39920	0.62456	–	0.0236
Sc	–	cqn^8	cqn^8	cqn^2	cqn^{12}

Colour Code:	Exact as observed	Close to the observation	Discovered using Unified Physics

The colour-coded legend below Table 2 shows exactly how our calculated values for the individual levels of the Solar System's Cosmic Hierarchy correspond to astrophysical observations from recent decades. The discovery of this hierarchy radically changes our view of our cosmic surroundings. One of the first radically new conclusions is the realisation that there is no such thing as the Milky Way Galaxy (compare the photograph in Figure 5).



Figure 5: What We See Here is not a Milky Way.

The bright band in the sky, which ancient observers already called the 'Milky Way', is not our home galaxy. It is a collection of galaxies and galaxy clusters forming the two largest energy bridges of levels 8 and 9 of the Cosmic Hierarchy of the Solar System, spanning approximately 295 and 3500 million light-years respectively.

The Cosmic Origin of Physical Constants (2000)

The only physical quantity defining this entire vast hierarchy turned out to be the mass of the primordial accretion cloud from which the primordial binary system of the Proto-Sun and the Andrea- Star was formed. To understand how this mass defined all of our terrestrial physics, let us look at Figure 6 below. We see here that the universal mass $m_u = 10^{-60} M_{proto\text{-}Solar_System}$, the universal length $r_u = 10^{-20} R_{proto\text{-}Solar_System}$, and the universal gravity factor $G_u = 10^{40} G_N$ (where G_N means the Newtonian gravity factor). The conclusion to be drawn from this observation is clear. It was the mass of the primordial accretion cloud from which the early Solar System formed that determined all the universal constants of the Unified Family, and thus the whole of traditional physics.

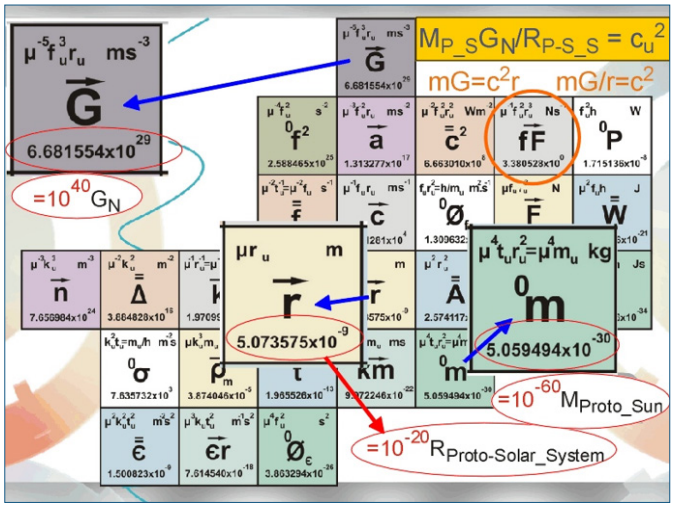


Figure 6: Relations Between the Universal Values and the Cosmic Values of the Proto-Solar System.

The Cosmic Time Scale – a Precise Chronology of the Earth's Geological Periods (1996)

An integral part of the Solar System's Cosmic Hierarchy is the scale of the periods corresponding to the successive levels of this hierarchy (compare the values in the fourth column of Table 2). All time intervals of the Cosmic Hierarchy of the Solar System can be lined up one after the other. This defines a precise theoretical time scale for the boundaries of the geological periods of the Earth's history and for the palaeontological events during this time, especially for the often repeated mass extinctions of the Species of living organisms [10]. Of course, we are not able to list here all the smallest steps of the Cosmic Hierarchy of the Sun since the formation of the Moon about 3.5 billion years ago. Those detailed early periods would not really help any geologist anyway. And certainly not a palaeontologist, because life has only really flourished on Earth in the last 700 million years. Scientists only have enough fossils for their research from the more recent periods of the Earth's history. It is therefore only in this relative late period of the Earth's history that the great practical advantages of our theoretical time scale become apparent. From the earliest history of the Earth, we list here only the points of time on the scale that mark the quantum jumps of level 8, with the interval of 295.2 million years. This is the first time in science that we have established the actual boundaries of the individual geological periods. Only in the most recent two periods of this scale, which traditional geology has named the Palaeozoic and Mesozoic, do we refine our list by level 7 (with a shorter period of 24.3109 My[2]). In doing so, we also establish for the first time in science the actual boundaries of these most widely known geological periods, from the Cambrian to the Tertiary, with a previously unattainable accuracy of single years[3].

The beginning of the current period of cycle 9, 3506.673 My ago, was followed by the successive events of level 8 with its interval of 295.201 My. The individual periods of level 8 thus led to the following theoretical steps in Earth's history . They appeared, in order, at:
3506.673 My; Archaean Eon; Phylum Vertebrata appeared (potentially!);
3211.472 My;
2916.271 My;
2621.070 My; Proterozoic Eon;
2325.869 My;
2030.668 My;
1735.467 My;
1440.266 My;
1145.065 My;
849.864 My;
554.663 My; Palaeozoic;
259.462 My; Mesozoic.

The traditionally defined end of the Mesozoic was 64.975 My ago and was caused by the cosmic event of level 7, which in simplified terms is associated with the final extinction of the dinosaurs. However, the current Cenozoic belongs to the same, still ongoing period of level 8 of the Cosmic Hierarchy. This will only end in 35.739 My (= 295.201-259.462 My)[5]. The entire current period of level 9 will end in 77.897 My (= 3584.559-3506.673 My)[6].

As said, now we look one step deeper into the two most recent periods of level 8. All periods of level 7 (with its duration of 24.3109 My) of the Palaeozoic began at:
554.663 My; Cambrian;
530.352 My;
506.041 My; Ordovician;
481.731 My;
457.420 My;
433.109 My; Silurian;
408.798 My; Devonian;
384.487 My;
360.176 My; Carboniferous;
335.865 My;
311.554 My;
287.241 My; Permian;
262.932 My.

[2]We abbreviate the description of the unit of millions of years to My.
[3]It is possible, because in our Unified Physics the accuracy of all calculations is the same as our experimental accuracy for the Planck Constant.
[4]Note that although we adopt the traditional geological terms for the different periods of Earth's history, we calculate their purely theoretical "corner points". The visible proximity of all theoretical points to the observational data confirms the universal applicability of our Time Scale; see also Table 3 below.
[5]And probably together with it, also the existence of life on Earth.
[6]And surely together with it, also the existence of our Solar System at all.

The subsequent periods of level 7 of the Mesozoic and Cenozoic began at:
259.462 My; Triassic; Class Mammals appeared (among others);
235.151 My;
210.840 My; Jurassic;
186.530 My;
162.219 My;
137.908 My; Cretaceous;
113.597 My;
89.286 My;
64.975 My; Cenozoic; Tertiary-Paleogene;
40.664 My;
16.353 My; Tertiary-Neogene; Order Primates appeared (among others).

Let us note that the upper „steps of life“ always begin and end with an extreme warm period (due to the many cosmic impacts on the Earth's surface and the subsequent volcanism). The calming and cooling of the Earth's surface always followed towards the middle of each step. This is the main reason for the subtle differences between our above (theoretical) boundaries of geological periods and the traditionally used boundaries, which were mainly defined from one cold period to another (compare Table 3).

Table 3: Our Theoretical Limits of the Geological Periods

Cycle	UTS (My)	Paturi (My) [11]	Shear (My) [12]
Moon's formation	3506,673	4600-4000	
Archaean	3506,673	4000	
Proterozoic	2621,070	2500	
Palaeozoic	554,663	590	
Cambrian	554,663	590	
Ordovician	506,041	500	505
Silurian	433,109	440	438
Devonian	408,798	410	408
Carboniferous	360,176	360	360
Permian	287,243	290	286
Mesozoic	259,462	250	258*
Triassic	259,462	250	
Jurassic	210,840	210	
Cretaceous	137,908	140	
Cenozoic	64,975	66	

* - According to Shear's time scale, there is a clear boundary between Late Permian and Early Permian right around this time. Our Cosmic Time Scale distinguishes levels 7 and 8 in their impact and duration so strongly that the transition between Palaeozoic and Mesozoic appears much more natural in our unified description than in the traditional picture of Earth history.

The Universal Time Scale for living and non-living matter (1998)
One of the most important discoveries based on Unified Physics was the observation that our Cosmic Time Scale in non-living matter is also preserved in the characteristic biofrequencies of living organisms [10]. In the course of evolution, the cycles of biological processes have energetically aligned with the cycles of cosmic processes, which form the material basis for the evolution of life. The result of this alignment is a tangible influence of the cycles of cosmic processes on life cycles.

We see now (in Figure 7 below) that the same scaling factor of 12.1428 (as previously seen in 4th column of Table 2) applies to the entire range of 20 orders of magnitude of the real cosmic and biological frequencies. It extends from the billion-year period of formation of planetary systems, over the several-month period of reproduction of individual living organisms, to the millisecond periods of nerve activity of such organisms. Note that the absolute duration of the period lengths on this figure is given in seconds along the scale. This figure thus shows a complete spectrum of frequencies that connects the standard rhythms of living organisms with the hierarchical rhythms of their cosmic environment. This is why we call this hierarchy the Spectrum of Biofrequencies (or sometimes bioresonances). Therefore, in this general sense, the Universal Time Scale is a numerical basis for our unified physical description of all of Nature, applicable in astrophysics, geophysics, bio-physics and the life sciences [13]. It is deeply satisfying to know that all these cycles are actually observed, both in our cosmic environment and in our own bodies, along the twenty orders of magnitude of period length. This Spectrum of Biofrequencies is one of the most exciting practical discoveries of Unified Science. Our previous definition of the Cosmic Hierarchy is also the reason why we have set the middle (zeroth) period of the Scale

of Biofrequencies to the value of 0.62456 years (228.12 days or about 7.5 months), a value that separates the periods of global processes from those occurring within an individual organism.

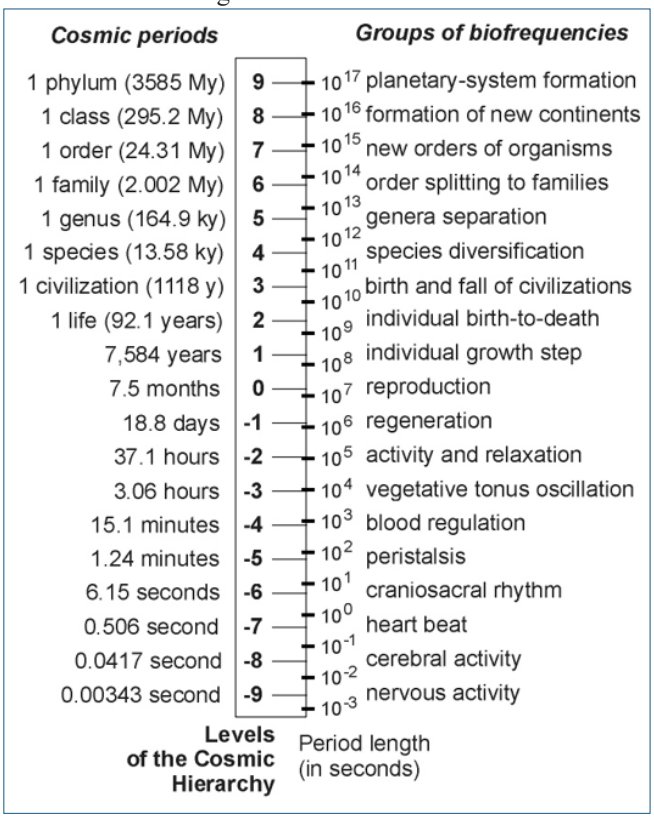


Figure 7: The Universal (Cosmic and Biological) Time Scale.

It should be noted that the proposed classification concerns the universal steps of the time scale. For example, period 2 in this diagram, the individual period from birth to death, has been labelled „individual birth-to-death". Of course, this does not mean that every living organism would remain alive for the period of 92.1 years. However, it would be interesting to investigate how far the observed lifespan for different Species and different living conditions (including for us humans) deviates from this „cosmic standard value". Even the heartbeat rate of approximately 118 per minute (i.e. with a duration of 0.506 seconds) can only be understood as a comparative standard for all living beings, regardless of their actual physical state (whether they are resting, running, jumping, swimming or flying).

The Formula of the Universe (2024)

The most important information concerning the discovery of the Formula of the Universe is compiled in a special book [14]. Its subtitle explains the purpose of this publication: 'How the physical formula of the Universe can change our material and spiritual lives.' In its descriptive form, the Formula of the Universe states that the surface distribution of energy of every quantum in our Universe is always the same, equal to the circulation quantum (or frequency flux). This value remains constant, whether in a proton, a molecule, the brain, a star or a galaxy. It is precisely this constancy that is the secret behind the universality of all natural processes in the Universe. Energy can flow freely between all quanta of the Universe, however large they may be. Studying how our well-being is influenced by the weather or the moods of others has the same physical foundations as studying energy relationships within atoms or molecules. The study of individual and global consciousness will most likely be the most fascinating subject of research within Unified Science.

The New Philosophy of Life (2001-2026)

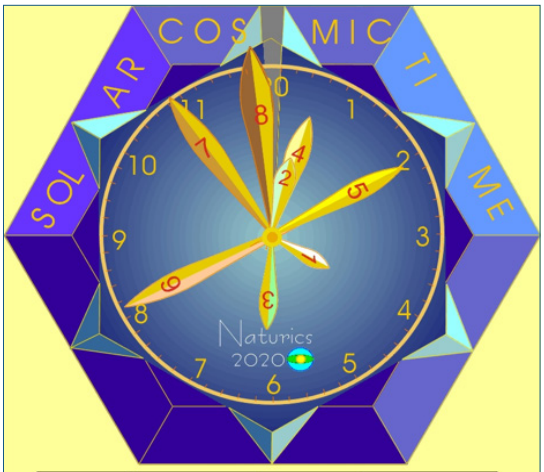
The most ambitious scientific questions have always concerned, and continue to concern today, life itself; including the origin of life, the origin of life on Earth, and the meaning of our lives. Traditional physics long ago abandoned attempts to answer such questions (confining itself to describing the 'world' of inanimate matter). Unified Science, based on our Unified Physics, now has the opportunity to provide new answers to these age-old questions. Unified Physics forms the basis for all the natural sciences [13,15]. Today, Unified Science is no longer merely a physical description of the world in which we live, but a holistic, physical-philosophical description. It seems best to summarise the scope of this description under the name 'New Philosophy of Life'. As a new field of knowledge, it is still undergoing further development, with the concepts used being refined and clarified. The latest book, mentioned previously [1], deals with this subject in greater detail. It answers a number of important questions posed by the New Philosophy of Life:

1. What is life?
2. What does a living organism need in order to stay alive for as long as possible?

3. What exactly is energy, and how might one conceive of quanta of energy?
4. Can primitive life arise anywhere in the Universe? Under what conditions?
5. If we do indeed represent a remarkable exception amongst billions of planetary star systems, how did this come about?
6. Must the evolution of life, moving towards ever-higher levels of energy accumulation, overcome some natural threshold in order to really gain momentum?
7. Did any truly exceptional events force us to evolve? Is this pressure still at work?
8. So far, apart from Earth, we have found no traces of more highly developed life. Why?

Examples of the Practical Application of the New Knowledge
Quantum Definitions of the Taxonomy of Living Organisms
We shall quote here an excerpt („The human being in this new view“) from the summary of a recent book on this subject [16].

The Cosmic Clock
The Cosmic Time Scale of our Cosmic Hierarchy can be visualised with the help of a multicyclic clock, as shown in Figure 8 below. Note the grey inclusion of the clock face between the hours 12 and 0, which provides the necessary extension of each period of this clock from 12 to 12.1428 hours, which is required by the theoretical scaling of the Cosmic Time Scale.



Level of hours	*Group of organisms*	*separates itself from*	*every (years)*
8	Class	Phylum	295.201 M
7	Order	Class	24.3109 M
6	Family	Order	2.00209 M
5	Genus	Family	164878
4	Species	Genus	13578.3
3	Civilization	Species	1118.22

Figure 8: The Quantum Taxonomy of Living Organisms.

Below the clock we see a table that reminds us of the steps evolution had to take from the most primitive creatures to us humans.

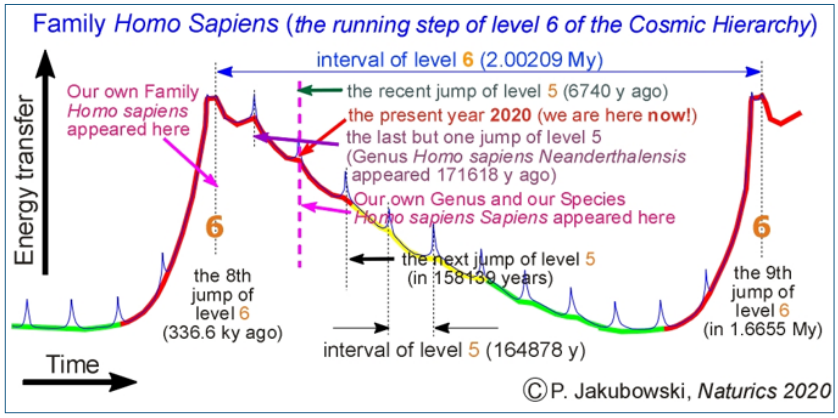


Figure 9: The Cosmic Energy Transfer to the Earth During the Full (Past and Future) Lifetime of Our Family Homo Sapiens.

Figure 9 demonstrates the evidence that the Neanderthals brought us, the Genus Homo sapiens Sapiens, „into being“, but no earlier than 6744 years ago[7]. This is one of the most surprising discoveries of Universal Philosophy. More precisely, however, we should now ask ourselves what cosmic circumstances, and the resulting environmental upheavals, have led to a statistically very small group of Primates having „jumped off the brink of extinction“ three times and remaining alive today as the only Species of our Family.

The Origin of the Genus *Homo Sapiens Neanderthalensis*

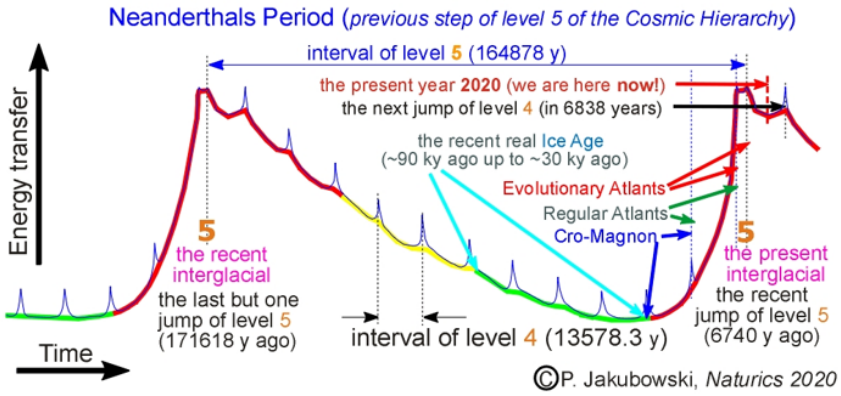


Figure 10: The Full Lifetime of the Genus of the Neanderthals.

It took over a hundred years for people to realise that the Neanderthals were much more than just a side branch in the history of human evolution. However, our arrogance, which is strongly rooted in Western science in particular, still does not allow us to take a proper look at our relatively recent past. We cling to the completely insane idea that we must belong to some kind of „modern humans“ because we are so unique. It's a misunderstanding. If we actually have evidence that Neanderthals lived on Earth for around 165 thousand years, then we have to think and speak of an entire Genus of Neanderthals. And then it is also quite natural that this Genus should include at least 13 successively living Species of this Genus (compare Figure10). We see, for example, that Cro-Magnon-People were just the eleventh Species of the Genus *Homo sapiens Neanderthalensis*. Any other assignment of this „group of people“ is incompatible with our quantized point of view.

Earth’s glaciations and the shortening of the tropical year

This time we shall quote an excerpt from Chapter 7 of the most recent book on this subject [1]. Further evidence of the strength of our Cosmic Time Scale concept concerns the last 3.5 billion years of the Earth’s global climate history. According to our scenario for the formation of today’s Solar System, as outlined in the previous chapters, approximately 3507 million years ago a catastrophic 9th-degree cosmic quantum leap occurred, as a result of which the precursor to this system was violently restructured. And it was precisely then that the current 9th-degree period began.

In accordance with this scenario, we have also posited that the current 9th-degree period is the principal period in the evolution of life on Earth, including human life. The fact that the Earth’s global climate has a very strong influence on the evolution and sustenance of life on Earth has become particularly evident in recent decades, as we are experiencing the effects of current global warming very clearly. However, it is only through a more detailed analysis of our Cosmic Time Scale that we can prove this has always been the case. For it is only now that we are able to understand and organise the past phases of Earth’s history, including the numerous periods of global glaciation.

These phases, however, are also linked to the continuous rise in the Earth’s global surface temperature and the continuous shortening of the year, which can be clearly seen in the graph in Figure 11 below.

The individual ‘hours’ of level 8 of the ending period of level 9 in our Cosmic Hierarchy are shown along the X-axis, changes in the length of the year along the left Y-axis, and changes in the average surface temperature of the Earth since the beginning of this period—that is, 3506.7 million years (My) ago— are shown along the right-hand Y-axis. This graph presents, on a timeline, all the major ice ages on the Earth’s surface that have so far been confirmed by geologists. As a result of the collision between the Primordial Earth and the largest fragment of Primordial Mars (at the beginning of the current period), the Earth-Moon binary system was pushed towards the centre of the Solar System. The collision took place in a region approximately 50 million km further from the Sun than the Earth’s current position. For this reason, the Earth’s surface cooled shortly after the collision to the ambient temperature prevailing there, which was just -32 °C.

[7]Note that today we are six years later than the quoted text and figures.

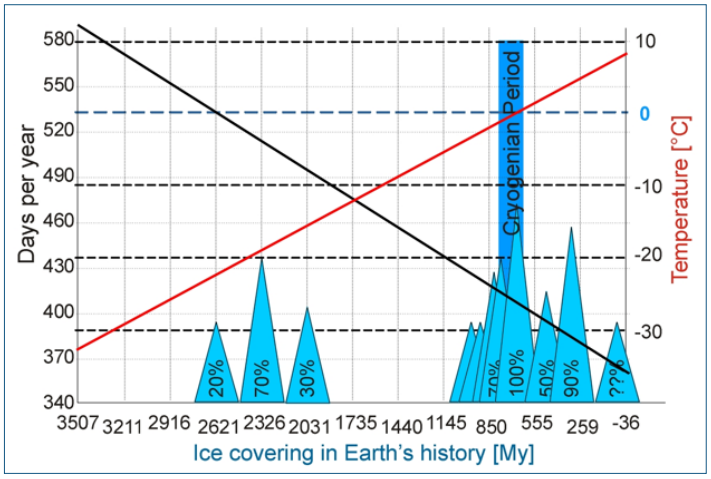


Figure 11: The History of the Earth Over the Last 3.5 Billion Years.

The Earth was therefore deeply frozen shortly after the catastrophe. There were no oceans on the Earth at that time, nor did it rain or snow. However, the distance between the Earth and the Sun was constantly decreasing, which caused both the Earth's orbital period around the centre of the Solar System (Venus) and around the Sun itself to shorten. The so-called tropical year was becoming progressively shorter. Since the Earth's rotation on its axis (the length of the day) did not slow down as a result, it must be assumed that the number of days in a tropical year was constantly decreasing; as the graph above shows, from 584 days at that time to 365 days today. In my opinion, this fact alone unequivocally confirms our model of the structure of the Solar System, including the formation of the Moon and the presence of the Andrea-Star.

Additional Note:
I first came across the concept of longer years in the Earth's past in Tjeerd H. Van Andel's 1989 book „New View of an Old Planet" (German edition). The first illustration in this fantastic book shows the number of days in a year reaching 600 million years ago, when that figure stood at around 430. To prove this, the daily deposits of calcium carbonate layers in the shells of numerous corals and molluscs were counted. Many years later, when I drew up the above graph, I was delighted by the consistency of my calculations with this discovery by a brilliant geologist. And so it remains to this day.

However, the second assertion presented in the chart above—concerning the steadily rising temperature of the Earth's surface as a result of events associated with the formation of the Moon—has also been impressively confirmed by our concept for reconstructing the Earth's ancient climate. After three 'hours' of stage 8 of the current stage 9 period, the Earth had cooled sufficiently that it was only during the 'hot' phase of the next quantum leap of stage 8 did a sufficient amount of energy reach the Earth for the Earth's atmosphere to temporarily trigger intense snowfall, which, over millions of years centred on the peak year of this leap 2621 million years ago, led to the first 20 per cent glaciation of the Earth's surface. In the subsequent hour 4 of this series (2326 My ago), this effect intensified even further, leading to a 70 per cent glaciation of the Earth's surface. The next such event, in hour 5, was, however, weaker once again, and no further glaciations occurred at all. This is understandable, as the Earth's average surface temperature had by then already risen to -11°C and above. By that point, smaller-scale impacts at level 7 were sufficient to prevent global glaciation of the Earth's surface through the heat they generated. However, a billion years later, it was precisely these smaller-calibre quantum jumps at level 7 that were sufficient to thaw the previously frozen Earth and cause smaller and shorter periods of glaciation. And around 800 million years ago, when the Earth's temperature rose to just below 0°C, snow fell so heavily across the entire Earth for millions of years that the Earth travelled through space like a snowball. The two polar ice caps met at the equator. This period in Earth's history is now known as the Cryogenic Period. Once it had ended, the Earth slowly but completely thawed. Water filled all the depressions on the Earth's surface, and the first oceans formed. Subsequently, life 'exploded' within them, and shortly afterwards on the ice-free landmasses as well.

During this 'explosion of life'—a period traditionally considered to be relatively well-studied—, some 550 million years ago, over a geologically relatively short period, almost all modern animal groups seemingly emerged suddenly in the oceans of that time, and complex body plans appeared. It was only during this period that many animals developed hard shells and armour, thanks to which they became clearly visible in the rocks as fossils. The causes of this 'explosion' specifically during this period, however, remain to date more of a mystery than a certainty. Our diagram, on the other hand, can serve as reliable evidence of the course of life's history on Earth during the past periods of levels 8 and 7 of the Cosmic Time Scale. At that time, the effects of the last two quantum leaps of level 8 in supplying an enormous amount of cosmic energy to Earth also become evident. The corresponding phases of mass extinction, which took place around 555 and 259 million years ago, are undoubtedly the most pronounced in the entire history of life to date.

Global Climate Reconstruction and Forecast
Unified Science enables us, for the first time in the history of science, to reconstruct past phases of the Earth's global climate with a precision down to individual years that was previously unattainable. Furthermore, thanks to our Universal Time Scale, we now

also have the ability to accurately predict natural changes in the Earth's global climate, both in the near and distant future [17, 18] .

Figure 12 shows an example of our reconstruction and predictions of energy-related changes in the Earth's global climate between 1805 and 2085.

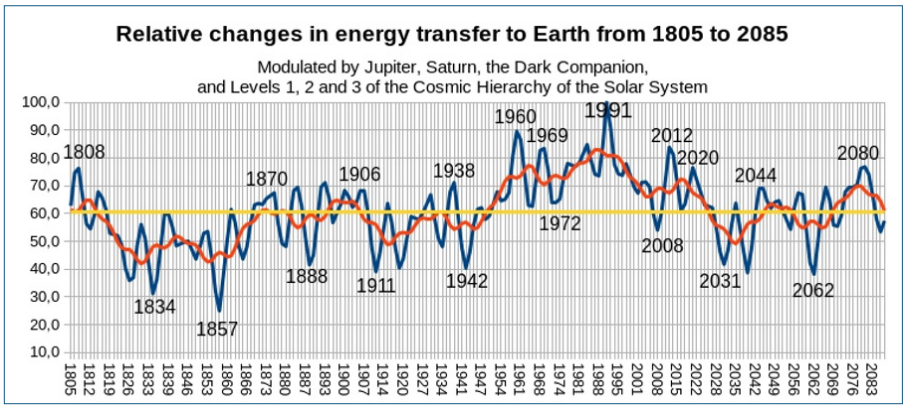


Figure 12: The Reconstruction and Prognosis of the Energetic Changes of the Earth's Global Climate in Years 1805 – 2085.

The red line represents the average of the calculated (blue) values over an entire solar cycle (of approximately 11 years). The yellow line represents the average of all calculated values between the year 347 and the year 2510.

The findings of this analysis of natural changes in the global climate are unequivocal. Firstly, the majority of the climate changes observed since 1805 – including the local minimum in their global intensity in 1857 and the global maximum in 1991 – are due to natural causes. The impact of human activity on these changes is secondary. Secondly, having passed the global maximum for the entire millennium, we have now entered a period of long-term cooling, for which we must prepare humanity and its economy.

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