

New-Paradigm Definition of Consciousness

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1. The New Paradigm according to Ervin Laszlo

In one of his recent books [1], Ervin Laszlo considers the emerging new paradigm in science as follows.

"There is a major revolution under way in science today, a transformation that is both profound and fascinating. It changes our view of the world, and our concept of life and consciousness in the world. It comes at a propitious time.

We know that the world we have created is unsustainable: we need new thinking to avert a collapse and set us on course for a sustainable and thriving society. The inspiration for the new thinking can come from science but not, or not only, from science as a source of new technologies. Rather, we need to view science as a source of orientation and guidance, as a wellspring of trustworthy ideas for rediscovering our relations to each other and the universe. The revolution under way in science offers a paradigm that can fill this need.

A paradigm in science is the sometimes tacit but always effective

foundation of the way scientists conceive of the world, including the objects and processes they investigate. The new paradigm is an important innovation in science: it allows scientists to piece together the emerging elements of scientific knowledge and perceive the meaningful whole that underlies this complex mosaic of data, theory, and application."

About a decade ago, Ervin Laszlo and Jude Currivan considered the question: "What do we mean by 'mind'?" [2].

"Einstein, as have many pioneering scientists, saw the world as an integral whole and discerned the creative and all-pervasive presence of mind in the Cosmos. But what do we mean by "mind"?

Generations of neuroscientists have been consumed with finding an answer to this deepest of questions, and numerous books have been written in the attempt to define *mind*. Yet despite the multitude of definitions in use, *the* definition remains elusive and contentious.

The inability of scientists to agree on what comprises "mind" is inevitably a consequence of the intrinsic immateriality of thoughts, feelings, and ultimate perceptions of experience. However, the premise, agreed by most neuroscientists, is that somehow immaterial mind - limited, as they have generally assumed, to human and higher-order animals, at most - arises from material brains. But how this assumption could possibly happen remains wholly mysterious."

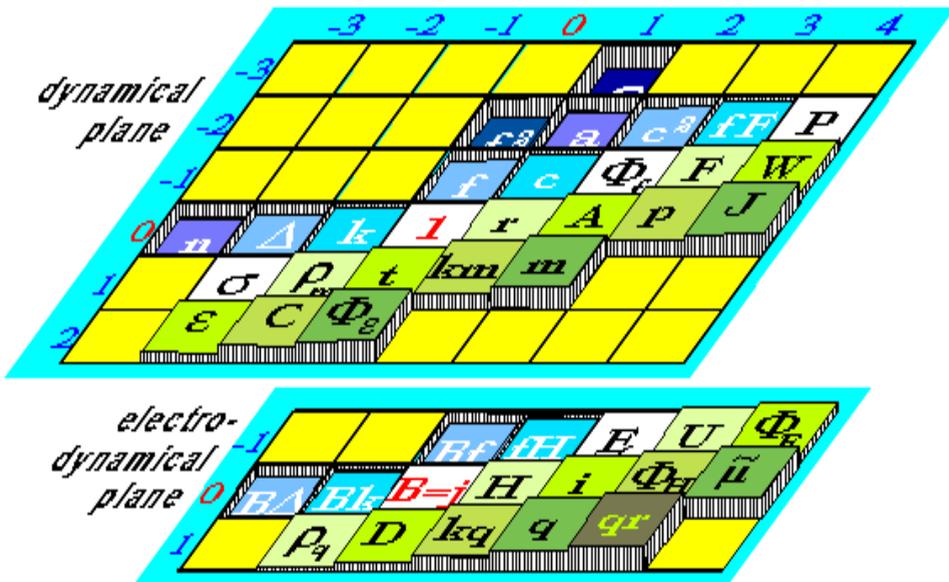
2. The basis of the New Paradigm of the Unified Physics

The Laszlo Institute of New Paradigm Research has organized its Third International Meeting ("New Paradigm in Physics") in Bagni di Lucca

(Italy) at the end of January 2016. I was invited to give a lecture during the meeting. It was titled: "The Unified Physics is the New Paradigm" [3]. I have reported about the newest development in the unification of the whole of physics, which I continue to complete during the recent three decades [4]. One of the main points was the further possibilities to simplify the Unified Family of all physical quantities, leading the New-Paradigm science to the probably first worldwide *scientifically rigorous definition of consciousness*. My goal here is to present the shortest possible way to reach this new definition.

The original Unified Family of all possible physical quantities is a self-consistent order of those quantities on two correlated planes, the dynamic and the electrodynamic. This Family defines all the quantities through just two fundamental physical quantities. One fundamental difference between the Unified Family and any traditional definition of different (always separated from each other) physical quantities has to be kept in mind all the time when considering the New-Paradigm physics. Namely, all unified physical quantities are *quantum quantities*. It means, they describe always physical quantities of individual quanta of our completely quantized Universe. Most of all quantities are material-dependent, but the dependency can be very simply expressed visually through a lifting of the individual quantity up or down in relation to a corresponding two-dimensional plane of the Family, as shown in the picture below. The quantities on the same lifting-level show the same material dependency (and thus the same color on the diagram).
(Let us name for non-physicists some of the common symbols: r - size, A - area, p - momentum, f - frequency, c - velocity, F - force, W - energy, a - acceleration, P - power, t - time (quantum period), m - mass, q - electric charge, H - magnetic field, i - electric current, E - electric field, U - electric potential.)

Material dependence of physical quantities



A further modification of the original Unified Family is an observation that all physical quantities from the electrodynamic plane can be found on the dynamic plane, though only in their squared forms, as shown in the following diagram of the united single plane. Directly located are E^2 , $B^2 = j^2$, $c = H^2$, $F = i^2$, $\rho_m = D^2$, and q^2 .

Some of those equivalences have been already expressed in physical equations used in practical applications of the traditional electrodynamics. For example, it was clear, that force F can be related only to a square of the electric current (i^2), but never to a single current alone. Similarly, only the

square of the electric field (E^2 or D^2) could be directly related to energy W .
 The same is true for the magnetic field (B^2 or H^2).

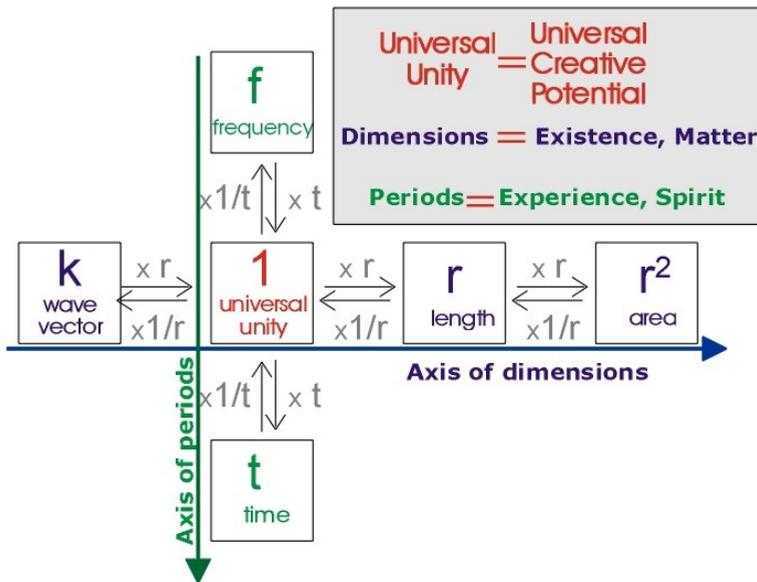
R \ S	-3	-2	-1	0	1	2	3	4
-3					G $6.6816 \cdot 10^{29}$		E^2 $1.7199 \cdot 10^{13}$	
-2				f^2 $2.5885 \cdot 10^{25}$	a $1.3133 \cdot 10^{17}$	c^2 $6.6630 \cdot 10^8$	fF $3.3805 \cdot 10^0$	P $1.7151 \cdot 10^{-8}$
-1			$B^2=j^2$ $1.0028 \cdot 10^{21}$	f $5.0877 \cdot 10^{12}$	$C=H^2$ $2.5813 \cdot 10^4$	Φ_f $1.3096 \cdot 10^{-4}$	$F=i^2$ $6.6445 \cdot 10^{-13}$	W $3.3711 \cdot 10^{-21}$
0	n $7.6570 \cdot 10^{24}$	Δ $3.8848 \cdot 10^{16}$	k $1.9710 \cdot 10^8$	1 1.000	r $5.0736 \cdot 10^{-9}$	A $2.5741 \cdot 10^{-17}$	p $1.3060 \cdot 10^{-25}$	J $6.6261 \cdot 10^{-34}$
1		σ $7.6357 \cdot 10^3$	$\rho_m=D^2$ $3.8740 \cdot 10^{-5}$	t $1.9655 \cdot 10^{13}$	km $9.9722 \cdot 10^{-22}$	m $5.0595 \cdot 10^{-30}$	q^2 $2.5670 \cdot 10^{-38}$	
2		ϵ $1.5008 \cdot 10^{-9}$	C $7.6145 \cdot 10^{-18}$	Φ_ϵ $3.8633 \cdot 10^{-26}$				

However, our united plane presents now a rule valid for all electrodynamic quantities. The individual electrodynamic quantities of the original electrodynamic plane of the Unified Family retain their theoretical meaning only when used in purely electrodynamic considerations. In all dynamical problems including energy, power, and force, the original electrodynamic quantities become superfluous. The Unified Family can be thus reduced to a

single plane. It can be easily confirmed when analyzing the universal values shown in the above diagram below the quantities names. For example, $q^2 = m \cdot r$, and indeed we have $2.5670 \times 10^{-38} = 5.0595 \times 10^{-30} \cdot 5.0736 \times 10^{-9}$. (The same rule means of course also the new, unified relation between the corresponding units: $C^2 = kg \cdot m$.)

The central part of the plane can be considered as the Unified-Physics definition of the first step toward the theoretical creation of our unified quantum Universe. This central part, shown in the diagram below, connects the definition of both axes of the plane, **the axis of dimensions** and **the axis of periods**, as resulting mathematically from the **Universal Unity**, and conceptually - from the **Universal Creative Potential**.

Our first steps to create the unified Universe



As suggested in this diagram, the axis of quantum dimensions defines all

those objects we are used to name material objects, having a non-vanishing quantum area, or size. Therefore, they are traditionally considered as physical bodies. We consider them as really existing. The axis of quantum periods defines all possible changes of the material objects defined "along" the matter axis. Quite consequently, the diagram suggests that an abstract, temporarily unchangeable piece of matter alone cannot be spiritually realized, that means, mentally perceived. Thus it cannot be considered as a part of our reality. That means further that matter not experiencing any change in time cannot be a part of our reality. Similarly, an abstract "flow" of time or a periodic circulation not combined with a non-zero area, or size, of a quantum, cannot be considered as a part of our reality, too. **Quantum area (spatial size) and quantum time (temporal circulation) are two inseparable aspects of our quantum reality.** It is the reason why this natural and universal duality will be further on interpreted in the New Paradigm of the Unified Physics as the **Existence (Matter) - Experience (Spirit) duality.**

The next step of simplification of the Unified Family of all physical quantities is to abandon its remaining superfluous elements. Let us consider the complete definition of our single plane on the diagram below. The left upper corner-frame contains the general definition of all physical quantities. Each single of them can be defined as a multiplication of the material parameter μ with the universal length r_u , and the universal period t_u , all in powers depending on the position of the defined quantity in column C and row R of the unified plane. As can be seen, all electrodynamic (squared) quantities are located in the odd columns of this plane, the columns containing exclusively vector quantities. Here we reach one of the fundamental practical questions concerning our New-Paradigm point of view. Do we really need any vector quantities in our Unified-Physics description of Nature? No, we don't need them.

R\C	-3	-2	-1	0	1	2	3	4
-3	$\mathbf{x} = \mu^n \mathbf{x}_u$ $n = C + 2R$ $\mathbf{x}_u = r_u^C t_u^R$				-5 \vec{G} gravity factor		-3 \vec{E}^2 el. field sq.	
-2				-4 $\overset{\circ}{f}^2$ frequency square	-3 \vec{a} acceleration	-2 \vec{c}^2 light-speed square	-1 $\vec{f} \vec{F}$ temporal force change	0 $\overset{\circ}{P}$ power
-1			-3 \vec{B}^2 mag. ind. sq.	-2 \vec{f} frequency	-1 $\vec{c} = \vec{H}^2$ light speed	0 $\overset{\circ}{\Phi}_f$ flux of frequency	1 $\vec{F} = i^2$ force	2 \vec{W} energy
0	-3 \vec{n} spatial density	-2 $\vec{\Delta}$ Laplace operator	-1 \vec{k} wave vector	0 $\overset{\circ}{1}$ universal unity	1 \vec{r} length	2 \vec{A} area	3 \vec{p} momentum	4 $\overset{\circ}{J}$ action
1		0 $\overset{\circ}{\sigma}$ electric conductivity	1 $\vec{\rho} = \vec{D}^2$ mass dens.	2 \vec{t} time	3 $\vec{k} \vec{m}$ linear mass distribution	4 $\overset{\circ}{m}$ mass	5 \vec{q}^2 el. charge sq.	
2		2 $\vec{\epsilon}$ dielectric factor	3 \vec{C} electric capacity	4 $\overset{\circ}{\Phi}_\epsilon$ optical area	$r_u = 5.074 \text{ nm}$ $t_u = 0.197 \text{ ps}$			

In order to explain this statement, let us note the drastic difference of some of our definitions of the main physical quantities in comparison with the traditional physics. Time, frequency, and energy are all two-dimensional quantities (mathematically called bivectors; marked in the above diagram with $\vec{=}$). The traditional Einsteinian (3+1)-dimensional **space-time** has to be replaced in our quantum description with (2+2)-dimensional quantum **area-period** construction. The third, traditionally used "spatial" dimension of a quantum is always determined through its area (planar size); it cannot be varied independently. Larger quanta (imaginable in a form of donuts) are "thicker". An independent definition of a quantum volume is superfluous. The same is true for any quantity equivalent to volume, like momentum p ,

and its temporal relatives, like force $F (= dp/dt)$.

After we have realized this fundamental overestimation of the Old-Paradigm physics (of the traditional point of view), we can simply abandon all vector quantities from the fundament of the Unified Physics. This possibility is very advantageous when we are going to formulate a new definition of consciousness, the probably most fundamental concept of our knowledge. After we have "purified" our above diagram from all vectors, the Unified Family simplifies to its compact form presented in the diagram below.

$R \setminus S$	-2	0	2	4
-2		$-4 \overset{\circ}{f}^2$ frequency square	$-2 \overset{=}{S}$ radiation intensity	$0 \overset{\circ}{P}$ power
-1		$-2 \overset{=}{f}$ frequency	$0 \overset{\circ}{\Phi}_f$ flux of frequency	$2 \overset{=}{W}$ energy
0	$-2 \overset{=}{\Delta}$ Laplace operator	$0 \overset{\circ}{1}$ universal unity	$2 \overset{=}{A}$ area	$4 \overset{\circ}{J}$ action
1	$0 \overset{\circ}{\sigma}$ electric conductivity	$2 \overset{=}{t}$ time	$4 \overset{\circ}{m}$ mass	
2	$2 \overset{=}{\epsilon}$ dielectric factor	$4 \overset{\circ}{\Phi}_\epsilon$ optical area		

We note immediately that all physical quantities traditionally considered as

important, used in the definitions of different forces (interactions) are no longer present in our "pure" Unified Family. Gravity, electromagnetic force, nuclear weak and strong forces, are all just an illusion produced through our superfluous traditional definitions. All traditional concepts based on electric charges are an illusion too. They should have no influence on our scientific definitions of such fundamental concepts like matter, spirit, body, mind, soul, consciousness, and life itself. The single physically usable idea of an interaction in our Universe is that one based on the energy transfer, which can be expressed with the simple equation resulting directly from the last diagram above:

$$\Delta W = \Phi_f. \text{ (This is the Quantization Rule of the Universe)}$$

The white color of the field on which the quantum flux of frequency Φ_f (or simpler, quantum of circulation) has been located in the Unified Family, means its independence of material state. The above rule means thus that an arbitrary distribution Δ of energy W equals always the universal quantum of circulation, whether it is an atom, a neuron, or a galaxy. This universal process of energy transfer tends always to compensate all inequalities in energy distribution in the Universe. We can stay alive, for example, only as long as we are able to accumulate energy in our body.

Another new, universal relation read out from the above diagram is the ultimate definition of the quantized energy transfer. In this definition we use the radiation intensity S , being a spatial distribution of the quantum power P (from the above diagram we read out that $S = \Delta P$). Let us note that power P is also a material-independent physical quantity; being located on a white field of the Unified Family. Because of $f^2 = df/dt$, we read in the diagram:

$$\Delta S = df/dt.$$

This most fundamental rule of Nature (and its single rule at all) reads:

Radiation becomes active when its frequency changes.

In a more extended version we read this rule as follows. **The single mutual interaction in Nature, the energy transfer (or radiation), is only possible (becomes energetically active), when the medium (the environment through which the energy quanta propagate) causes (forces) the radiation to change its frequency. Otherwise, the energy will propagate without any loss (nothing else will change).**

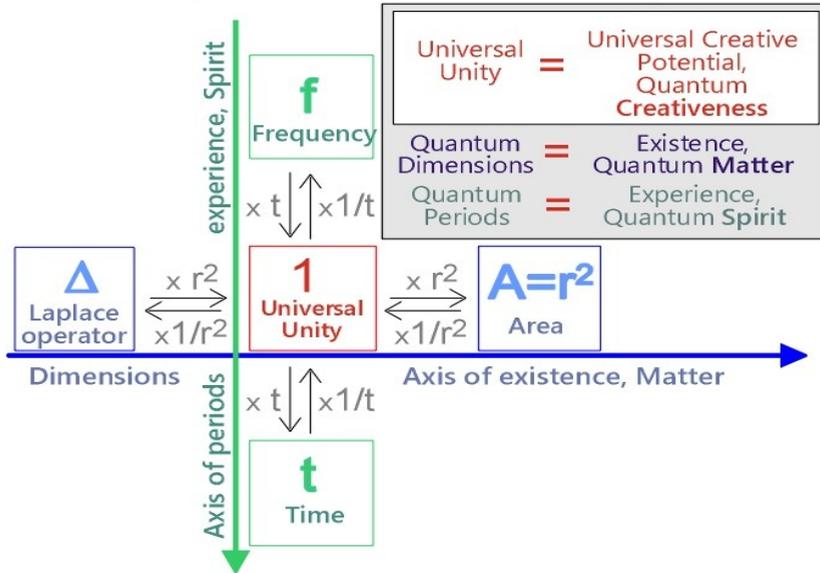
This simple rule describes all activities in our Universe, including also all processes of conscious life, like thinking, feeling, or dreaming.

3. Global and Individual Consciousness in the New Paradigm of the Unified Physics

In the previous section we have shown that the single starting point, we have to assume as really existing before we begin to create our Universe, is our Universal Unity of the Unified Family. It can be endowed with a universal creativeness, the Universal Creative Potential to create everything else in our (2+2)-dimensions of the Universal Quantum Field, a physical realization of such ancient fields as the Akasha. It should be underlined here that the Universal Quantum Field (or Akasha, as Ervin Laszlo names it) is not assumed in the Unified-Physics New Paradigm to exist from the very beginning. It becomes reality only through the two axes created directly from the Universal Creative Potential. As explained above, the axis of quantum dimensions (area) defines the universal quanta of all material objects, whereas the axis of periods (time) defines all possible changes of those material objects.

In order to complete our quantum concepts for our new definition of consciousness, let us add the quantum creativeness to the previously used diagram.

Quantum **Creativeness**
and its fundamental quantum creations:
quantum **Matter** and quantum **Spirit**



We resume the above diagram with the extension of our previous statement.

Two-dimensional quantum space (Area) and two-dimensional quantum time (Period) are two inseparable aspects of our creation of the Universe on the basis of the Quantum Creativeness.

Now we are ready to define in the following table the global consciousness of the humanity and the individual consciousness of every one of us as two triplets of commonly used concepts ordered in a new way, allowing to differentiate between them precisely, and use them in a scientifically verifiable context.

The Unified-Physics definition of Consciousness

Global Consciousness	Individual Consciousness	Meaning of the considered entity (object / subject)*
Creativeness	Soul	M: the Universal Unity; UP: the Universal Creative Potential; QE; the potential extension (creation) of a quantum in our Universe; Pl; the expression of Oneness (Creator, God);
Matter	Body	M: the spatial creation of the Universal Creative Potential; UP: the necessary condition for a physical existence; QE; the spatial extension (size) of a quantum in our Universe; Pl; the expression of material (body);
Spirit	Mind	M.: the temporal creation of the Universal Creative Potential; UP.: the necessary condition for a physical experience; QE; the temporal extension (duration) of a quantum in our Universe; Pl; the expression of spirituality (mind).

* M - mathematical meaning; UP - Unified-Physics meaning; QE - quantum expression; Pl - philosophical meaning.

4. Global Consciousness as a product of all superbrains

In the proposed terminology, soul, body, and mind should be understood as the individual expressions of the global concepts of the creativeness, matter and spirit, respectively. However, in order to understand those relations more precisely, we have to consider also the second main discovery of the Unified Physics, the Quantum Spectrum of Matter-Spirit [5]. The table below presents the typical values of all classes of quanta of matter-spirit possible in our Universe.

Typical values for all possible classes
of quanta of matter-spirit

Class	Quantum	Size	Frequency	Temperature	Velocity	Voltage
4	<i>superbrain cells</i>	0.5 m	~2/hour	2.4 μ K	0.26 mm/s	1 MV
3	brain cells	5 mm	5 Hz	240 μ K	2.6 cm/s	10 kV
2	nerve cells	50 μ m	50 kHz	24 mK	2.6 m/s	100 V
1	tissue cells	0.5 μ m	500 MHz	2.4 K	260 m/s	1 V
0	membranes	5 nm	5 THz	240 K	26 km/s	10 mV
-1	molecules	50 pm	50 PHz	24 kK	2.6 Mm/s	100 μ V
-2	atoms	0.5 pm	500 EHz	2.4 MK	260 Mm/s	1 μ V
-3	atomic nuclei	5 fm	5×10^{24} Hz	240 MK	26 Gm/s	10 nV
-4	<i>quarks</i>	50 am	5×10^{28} Hz	24 GK	2.6 Tm/s	100 pV

We meet in this table the traditionally accepted classes of the smaller quanta of matter: molecules, atoms, atomic nuclei, and quarks. Nevertheless, we have to remember that the traditional definitions of those "quanta" exclude their spiritual properties at all. Also a precise scaling of all physical parameters of those quanta was impossible in the Old Paradigm of the traditional physics. However, what is of an immense importance for our present purpose, are the classes of matter-spirit quanta above the class of membranes. They are classes of the living quanta of tissue cells, nerve cells, brain cells and superbrain cells. Surprisingly enough, only the lower two has been identified till now in living organisms. The brain quanta are completely misunderstood in neuroscience and in brain research based on the Old Paradigm. As we see in the table, brain level quanta are completely new structures in brain, with their (macroscopic!) size between 0.05-5.0 cm. Only such large structures activated in our living brain as a conglomeration of neurons and all other cells in a brain can be made responsible for all brain activities with frequencies between 500 Hz and 0,05 Hz. This range of frequencies includes all "brain waves" observed in the traditional neuroscience and brain science. However, as far as I know, those large brain quanta, responsible for the observed frequencies, have never been defined (and investigated) in the traditional brain science.

Still worse is the unawareness of the traditional brain science of the obvious existence of the superbrain class in the natural spectrum of the matter-spirit quanta. Those extraordinarily large quanta have sizes between 5 cm and 5m; much too large for the brains of all living today organisms. The activities of those quanta happen with extremely low frequencies, ranging between 3 per minute to 3 per week, having an average value of 2 per hour (as shown in first row of the above table). Let us note as curiosity that at least one group of researchers has already measured the brain activities with such average "super-frequency" of 2 waves per hour, unfortunately not being able to explain their origin. The group directed by Günter Haffelder of a private Communication and Brain Research Institute in Stuttgart, Germany [6], has done very interesting studies of how specific frequencies (mainly expressed as music) can help our brain to learn and to repair itself.

The measurement done by Günter Haffelder became possible because we have an organ in our body allowing us to build a superbrain structures of neurons and other biological cells. It is our gut. The "gut-brain" cells are able to form such large structures with a size of average 50 cm, necessary to undertake the functions of a superbrain. We cannot "think" with our gut-brain, but we can feel with it. Physically seen, we are able to concentrate much more energy with our gut-brain than with our "normal" brain, because one superbrain quantum has its quantum energy ten thousand times higher than a usual brain quantum, collecting energy of hundred millions of neurons. It is the reason, why we experience love (and other feelings) so powerful. And, according to the New-Paradigm point of view, unifying all physical properties of every quantum to each other, we have to conclude that our consciousness is a physical process (or phenomenon) like all other known processes. By the way, the new definition explains also why we cannot find any thoughts or feelings in a "dead" brain (as well as meridians in a "dead" body), when the corresponding quanta had already lost their energetic "identity".

Our first conclusion from what has been said above is very important: **Neither our individual nor global consciousness can be immaterial.** Both are physically describable products of our superbrain (gut-brain) influencing our individual brain. Our brain is not yet developed highly enough (not large enough) to be able to develop a regular superbrain in our head. But our brain can be already modified with our superbrain (gut brain) as discovered by the Haffelder's group. Our individual soul, body, and mind are fundamental elements of our **individual consciousness**. They describe our individual Unity, and its Existence, and Experience, respectively, as shown in the table in section 3 .

Our new scientific definition of consciousness directly correlates our individual consciousness with a global consciousness of humanity. With our present biophysical configuration of our average body size of about 180 cm and our brain diameter below 25 cm, we can only use our gut brain (or "belly-brain") to "feel" the global consciousness activities. It is the reason,

why we are traditionally calling the records made in our "belly-brain" as sub-conscious. Merely a mirroring of those records through our (still too small) brain has been recognized as conscious activities or decisions. Now we see that the name sub-consciousness for our gut-brain activities is not correct. It should be called our super consciousness, corresponding to the highest evolutionary level of the matter-spirit quanta in our Universe.

Second important conclusion from our new definition is the realization that the superbrain activities, reaching physically the space outside of our body, is those long looked for possibility to communicate between individuals. Research of such "transpersonal" communication can be now transferred from "para-sciences" to the rigorous science based on the New Paradigm. The global communication joins us together with all other brains being used by all living organisms, human beings and higher developed animals. The collective consciousness of all users of brains and superbrains forms what we called in the defining table as the **global consciousness**. Its primary component is the Quantum Creativeness (or Universal Creative Potential), expressed in its material Existence and spiritual Experience.

The global communication joins us together not only with the other "brain users" but also with the surrounding cosmic environment. That is one of the sensational discoveries of the modern astrophysics, though first the New-Paradigm Unified Physics delivers a reasonable explanation of this observation. The details of this explanation has been recently published on the Open Science Academy website [7]. Thus, the global consciousness cannot be thought of as a primary "immaterial medium" of our reality, or as a building element of our observed Universe. But the local part of it surrounding our Solar System, being influenced by our global consciousness, is growing constantly (with the speed of light), since our first superbrain has been formed, and with the intensity growing with the growing number of the conscious inhabitants of the Earth.

References

1. E. Laszlo, "*The Self-Actualizing Cosmos ; The Akasha Revolution in Science and Human Consciousness*" (Inner Traditions , Canada, 2014).
2. E. Laszlo and J. Currivan, "*CosMos; A Co-creator's Guide to the Whole-World*" (Hay House, Inc., 2008).
3. P. Jakubowski, "The Unified Physics (of Naturics) is the New Paradigm": http://www.naturics.eu/wp-content/uploads/2016/05/L_INPR_Presentation_310116_final_version_official.pdf.
4. A series of articles presenting the Unified Physics has been published by the author in *Physics Essays; an international journal dedicated to fundamental questions in physics*, between December 2015 and December 2016; two last articles of this series are expected to be published in March and June 2017. (For online links and more information visit the page: <http://www.naturics.eu/?p=4334>).
5. P. Jakubowski, "The Quantum Spectrum of Matter": <http://www.naturics.eu/?p=134>.
6. G. Haffelder, Institut für Kommunikation und Gehirnforschung, Stuttgart; <http://www.gehirnforschung.com/englisch/index.html>.
7. P. Jakubowski, "Anthropogenic modulation of our cosmic environment", <http://www.naturics.eu/wp-content/uploads/2016/11/Anthropogenic-modulation-of-our-cosmic-environment.pdf>.