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(RESEARCH ARTICLE)

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In search of the universal code: The means of communication used by cosmic matter

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Abstract

The extraordinary immensity and complexity of the universe that surrounds us has stimulated for millennia the curiosity of men and has evoked many questions about what is the force that generated it and what mysterious mechanism shapes it and makes it evolving.

The simplest answer was to assign to a supernatural, divine entity, the God of the Christian religion or the multiple divinities produced by the mystical sentiment of the peoples, the role of creator demiurge creator of the entire universe.

While this solution was solving the question of the origin of universal matter, has not responded to the most difficult one of what is the mysterious and complex mechanism that the supreme entity has devised for the immeasurable multiplicity of its forms and its continuous transformation.

In this article we are going to try to give a rational and personal interpretation of what might be the physical force and what properties it must have to have been able to activate and maintain in continuous evolution the constitutive matter of man and the whole universe.

Evoking an imaginative "universal code", the creator of such extraordinary wonder and describing its properties, seemed to us the personal solution, but rationally more plausible.

Keywords: Universal code; Structure of matter; Wave system; Unit of measurement

1. Introduction

To introduce the theoretical framework which forms the subject of this article, we must recall the basic concepts of physics [1,2,3]

For the rational description of the matter that forms the universe, scientists have introduced the concept of an atom, as an elementary particle that represents its constituent element.

At present, about a hundred atoms are known in nature, each of which is different from all the others because of the physical properties which distinguish them, and which are encoded in the periodic system of elements [4].

Understanding the origin of the atoms that form matter is an arduous task and we must be content with the Big Bang theory as a plausible hypothesis to explain it.

Atomic theory has been modified over the centuries to adapt it to new experimental evidence.

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Today the atomic structure is represented as a composition of elementary particles, which become more and more numerous, as the investigation is pushed to infinitesimal levels, which are held together by forces of various kinds.

So that the atom as represented by modern physics has reached an increasing complexity and difficulty, so much so that a unifying conception of the properties of matter has not yet been reached [5].

In the following paragraphs we try to simplify and facilitate the understanding of matter and the morpho-energy code that governs the elementary particles from which it is formed.

The hypothesis behind this conception is to represent the elementary particles as entities endowed with a physically detectable and describable dimension (the elementary mass) that can manifest its existence.

To constitute material objects it is necessary that a substantial number of particles with elementary masses, equal or different from each other, join to form an agglomerate that can assume different states and consistencies depending on the physical properties that the manifest matter.

But how are the elemental masses held together? What properties must the uniting force possess?

The first property that characterizes the elementary particles is their microscopic but finished dimension, they are also equipped with wave movement and emit radiation that have frequency and intensity typical of each. Wave motion is present in all forms of universal matter, and is the result of natural selection, because it can modify and assume infinite space-temporal variables; Therefore, it is best suited to represent the frequencies typing the individual particles [6].

The other more difficult property to define is the nature of the forces, the glue that holds the particles together.

An essential clue to the understanding of matter, we were provided by the genius of Einstein, who expressed in the known formula : E = m C2 , the relationship between the three fundamental quantities of physics: Energy, mass, Speed (of light) and expresses the close link between them, so that the variation of each corresponds to the modification of the others.

We know that each elemental unit is equipped with a force produced by its own movement (kinetic energy), but it is not the most suitable to keep the matter formed by them cohesive, but rather serves to separate the individual constituent particles according to the dispersion of their state of aggregation which is at the origin of the physical states of matter Fig. 1.

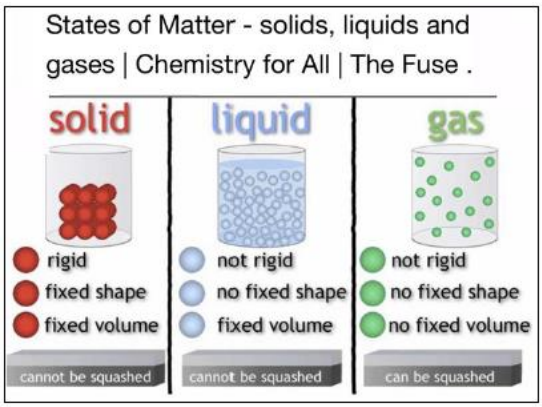

Figure 1 The states of matter

At this point to unravel the complexity of the subject we must introduce a new physical magnitude, the electromagnetic force [7].

Let's start from the definition of electric and magnetic charge.

All matter is formed by elementary particles which in the state of stationary equilibrium are free of charge or rather are neutral, since the different charges that compose them are in equal number and in equilibrium with each other but can

nevertheless acquire a positive or negative electric charge. The instability produced by the imbalance of the charges generates a field (electric field) able to attract other equally charged particles.

According to physics, moving charged particles produce a magnetic field, with the characteristics of electromagnetic waves associated with it.

Other forces have been hypothesized and described by atomic physics that can keep all the elements that make up atoms together.

But what we have known so far of atoms is their energy content in the form of forces, but not their nature and properties, and they have been defined: weak forces, strong forces, electromagnetic forces, and gravitational forces [8].

We therefore owe to these forces the state of dynamic energy equilibrium that holds matter together.

But even this new conception does not contribute to a complete understanding of how matter is constituted and how it is transformed and evolves.

2. A different interpretative approach

The elements that form the matter of the universe are carriers of characteristic and specific sensitive physical codes, which define them as unique and unmistakable entities. These codes are called physical quantities. Considered in their essence, physical quantities are in the first approximation the properties of bodies, substances, or phenomena that can be measured using fundamental units of measurement empirically chosen to express them quantitatively (with numbers) and compare them to each other.

The fundamental quantities introduced empirically are seven, their units of measurement have been defined by means of operational descriptions of comparison with physical dimensions present in nature and adopted as fundamental units, Table 1:

Table 1 International System of Quantities base quantities

International System of Quantities base quantities				
Quantity		**SI unit**		**Dimension symbol**
Name(s)	**(Common) symbol(s)**	**Name**	**Symbol**	
Length	*l, x, r*	metre	m	L
Time	*t*	second	s	T
Mass	*m*	kilogram	kg	M
Thermodynamic temperature	*T*	kelvin	K	Θ
Amount of substance	*n*	mole	mol	N
Electric current	*i, I*	ampere	A	I
Luminous intensity	I_v	candela	cd	J

If we want to express the properties of matter from the point of view of the state of aggregation, we must indicate the classic solid, liquid, gaseous and plasma states, Fig.1.

But, if we want to briefly describe the essence of matter by abstracting from its state of aggregation and from the measures that define it, we can say that this entity is defined by an energetic and conformational content, necessary and sufficient to uniquely characterize it.

According to quantum physics, each material element possesses both an electromagnetic energy of a corpuscular/wave nature defined by dimensions: amplitude, frequency, length and intensity and a steric/spatial conformation. These

characteristics unmistakably communicate the properties of the individual elements with respect to all the others, without necessarily having to measure them.

Also, because the procedure or method of measurement, as the theoretical physicists themselves recognize and admit, introduces three independent and random variables that it is impossible to control with the rigor that science requires [9-11].

Limits of the measurement method

In fact, the measurement process introduces three independent variables that affect the whole process:

2.1. The object to be measured

Any object presents in nature, in the microscopic universe and in the macroscopic universe is subject to continuous changes in position, volume, consistency, etc. So that what we see in a definite instant is different a subsequent instant;

2.2. The unit of measurement

The units of measurement are chosen and defined arbitrarily, assuming physical quantities that represent them through operating procedures, even these arbitrary Tab. 1 (e.g. Time is calibrated on the isotope 133 of the cesium atom (Cs). (this element is assumed to be eternally immutable or rather the decay time (measured as?) is considered such;

2.3. The observer

The need for an observer to measure phenomena introduces as many variables as observers. So that the observer is the one who chooses and defines the units of measure, and at the same time performs the measure according to their subjective evaluations.

2.4. Ownership of communication

The communication mechanism based on codes specific to each material element is fundamental for the following reasons:

- Serves to uniquely characterize the element and can be recognized without error.
- It is useful to report to other elements its characteristics and investigate the possibility of an interaction and possible synthesis that is sterically and energetically advantageous for both the thermodynamic;
- Acquiring by means of a reciprocal exchange of structural components (electrons, protons, or other components) an energetically more stable conformation, (for example with the formation of a covalent bond with octet formation and orbital completion).

In order to express and communicate the informational and energetic content they possess, the elementary particles must recognize each other and come into contact with each other, and eventually merge passing through a state of transition Fig. 2.

Contact can produce an effective result, in the form of a modification of the starting conditions (a modification of the energy state of one or both interacting particles, or the production of a new entity), or produce no result.

For the mutual contact between particles to take place it is necessary that they proceed to a selection among all the existing ones, to recognize and choose only those complementary to them and compatible under the energy-conformational aspect.

But how can they meet and recognize each other so that they can join in a new entity?

The recognition cannot be entrusted to chance, since in the infinite variety and variability of the existing material entities, it will be extremely unlikely that two of these are in the exact steric-energetic conformation that favors their coupling.

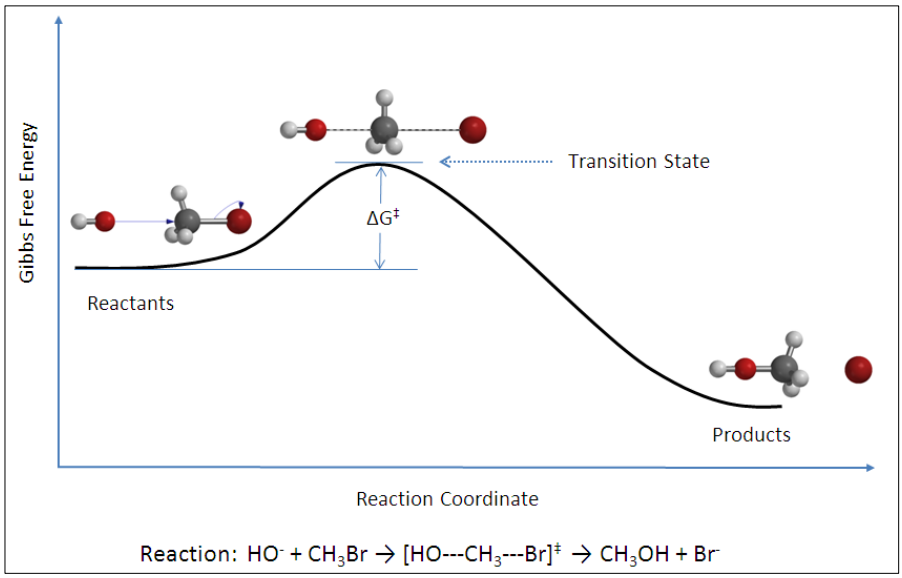

Figure 2 Chemical Reaction with formation of a transition state -From Wikipedia

One hypothesis is that they use the specific wave frequency code of each. The code we call "universal code".

When the frequencies of one encounter those of another and are mutually compatible (quantum mechanics calls the phenomenon "resonance") then an attraction occurs that leads to their fusion.

This is a universal phenomenon that occurs at the microscopic and macroscopic level.

From atoms to macromolecules, the process of communication and mutual recognition is the same.

So that each material entity is characterized by the emission of its own wave frequency with an energy content associated with it and by a specific steric conformation (molecular footprint). By these quantities the particles can be recognized and eventually join.

At the molecular level there is a sort of natural selection analogous to that which Darwin has hypothesized happens between the living species. In living organisms the ability to communicate has reached maximum efficiency and effectiveness.

In fact, all living organisms from the simplest bacteria to man are nothing more than carriers of molecular complexes capable of emitting and receiving messages to select and promote the union of specific molecules. This is the case, for example, in the endocrine system, nerve transmission, enzymatic reactions, immune processes, etc.

As we have mentioned earlier, there is also another means for transformation that comes into play when atoms or molecules transfer only parts of their structural components through mutual contact, such as the reactions of oxide-reduction, acid base, nucleophile, etc. Fig.3.

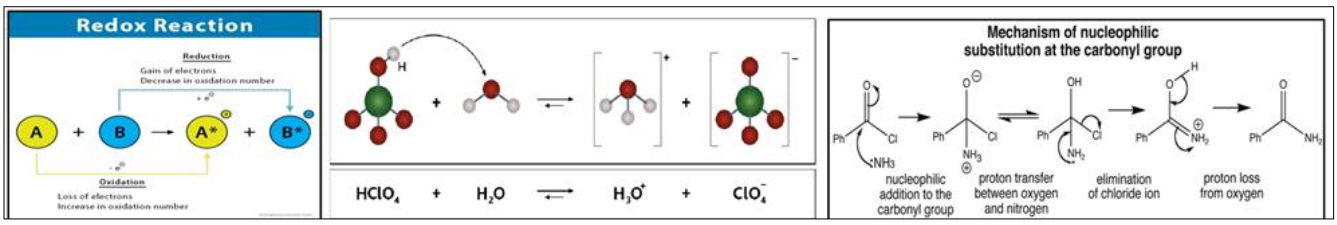

Figure 3 Examples of chemical reactions with molecular portion transfer

But also in this case the communication process takes place, by which the molecules must first recognize themselves, and then interact.

2.5. Communicate to exist

We have previously expressed the concept of universal code, by which all elementary substances, microscopic and macroscopic, communicate with each other. The ability to communicate is a property inherent in matter. And it happens through its own energy-conformational characteristics that can produce the change of the state of the space-time field that can be recognized by other entities.

It is a phenomenon that occurs on a planetary level, from the most elementary forms of the state of aggregation of matter to the most complex ones.

And it's amazing how it can work effectively and how it can evolve into increasing diversity and complexity.

If we examine the most elementary forms of organic matter, such as the Archaea, we are astounded by the simultaneous and orderly functioning of such an innumerable number of molecular processes, and how they can be coordinated to preserve their existence and reproduce their species.

And what about the most complex organisms, formed by billions of elementary cellular units that communicate and function in unison.

It is clear then the need for a system of communication and interaction between the multiple components, through which to coordinate the operation of the whole apparatus.

It is equally evident that such a communication system must be unique, based on a common code, a universal code, capable of taking on infinite variations and modes of expression to function.

In nature there are many manifestations based on a code with these characteristics, one for example is the wave type code, which manifests itself in its forms of sound waves and electromagnetic waves.

Waves are physical quantities can take on an infinite number of expressions. In a previous article I have described the main features of this [12].

The a wave code existence is an evidence from the different ways in which it is expressed, or in the form of mechanical waves (acoustic) or electromagnetic waves (from light to radio waves), as well as it is evident that only specialized biological apparatuses (sense organs) or advanced technological (all electronic devices), can transpose and decode it.

However, there remains the mystery of how this unique code, whether wave-like or otherwise, is formed, what is its essence and how does it transfer its informational content, modulating infinite variations by means of a single source?

If a partial understanding is accessible for sound waves, as they act mechanically and are produced and collected by mechanical means (musical instruments, auditory apparatus), the mystery remains of how such mechanical phenomena are transduced into recognizable signals. The transformation into nerve conduction in the auditory pathways and the recognition in the specific cerebral cortex, leave unresolved the mystery Fig.4.

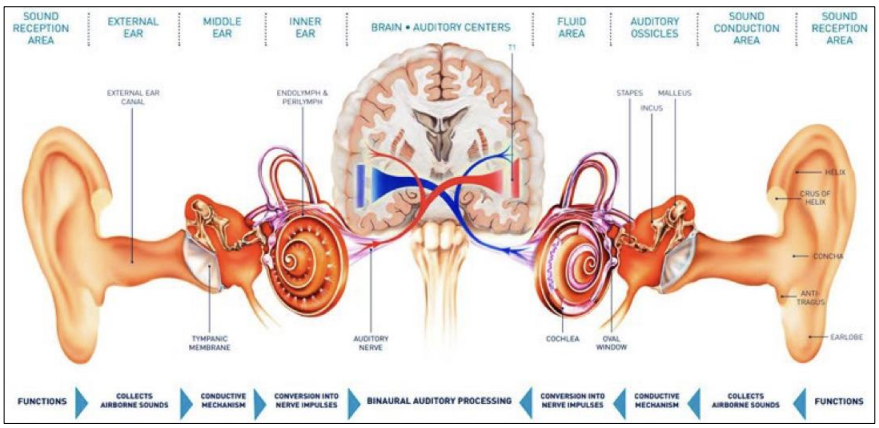

Figure 4 The Ear System, from British

To remain in the auditory area, equally mysterious is the mechanism by which the otoliths, (corpuscles formed by salts present in the semicircular channels of the inner ear) they can transfer information to the entire proprioceptive apparatus that controls the balance of our body Fig.5.

Invoking the intervention of neurotransmitters (molecular structures) as the final effectors of the information process, adds a few more openings but leaves substantially unknown the intimate mechanism that is the basis.

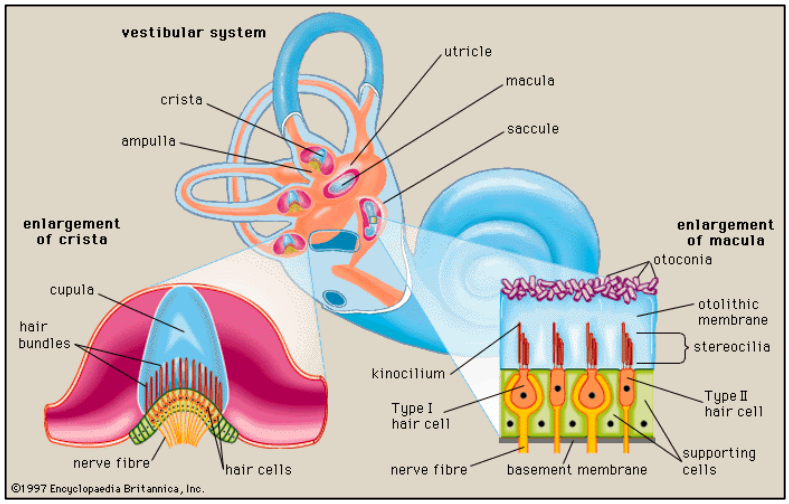

Figure 5 The vestibular system , from Britannica

In this case, the specificity of communication is ensured by the characteristics of the sound waves and the auditory apparatus and is specific for this type of transmission that transports communication along the auditory pathways, without interference with other systems.

More complex is the understanding of how electromagnetic waves act. Quantum mechanics has revealed their wave-like corpuscular nature, but the underlying mechanism of their operation remains unresolved.

While the behaviors of the wave component of electromagnetic waves is like that of other waves, the functioning of their corpuscular component remains uncertain

In this case the effect produced by this type of waves is the result of the two constituent elements, frequency, amplitude, length, and intensity of the wave associated with the corpuscular energy component, which may vary in size and energy content.

Living organisms have specialized in the reception of different modes of communication.

- If the electromagnetic waves are deprived of the corpuscular part, they transmit the information with the mechanical component only by means of oscillations to the specific receptors (mechanoreceptors of touch, of hearing);
- While electromagnetic waves transmit directly with both corpuscular-wave components the signal on specialized molecules as happens for vision (rhodopsin) and for chlorophyll synthesis (chlorophyll);
- Finally, there are communications that take place with messages transmitted by the specialized corpuscular or molecular component alone (taste and smell) [13].

The DNA code itself carries an infinite amount of information to communicate but cannot do it directly and simultaneously for all the endless molecular entities and metabolic processes that depend on it, uses other molecules, intermediate messengers, able to select, modify and transfer individual messages (contained in genes), to other target molecules with the epigenetic transduction mechanism.

Finally, the most communicative organ is the brain, organized as a complex transceiver system able to select and recognize an infinite number of signals that it receives simultaneously from the organism to which it belongs and from the surrounding environment, and to elaborate homeostatic responses aimed at conservation, reproduction, survival of the species and environmental adaptation.

And with what mysterious code the same brain manifests to us the state of ecstatic bliss, that we try to the sight of a beautiful natural landscape or, to remain in cosmic theme, the transcendent mystical sensation of "*infinite spaces where the shipwreck is sweet*" described by Giacomo Leopardi in the poem The Universe [14]?

3. Conclusion

In conclusion, the communication system that takes place through the universal code, of probable wave nature, can transfer modulating the physical parameters of which it is a carrier, and with a single language, all the information that directs the cosmic evolution and destiny of us mere mortals.

To date, despite the efforts and numerous research, we have not yet been able yet to understand the physical nature and the fundamental mechanism of the mysterious universal code.

However, there remains the meagre consolation of being able to express in the language of humans, the wonder and amazement that natural phenomena can transmit to us.

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[14] Giacomo Leopardi,1798- 1837- was an Italian poet, philosopher, writer, and philologist. He is considered among the greatest Italian poets of the nineteenth century and one of the most important figures of world literature