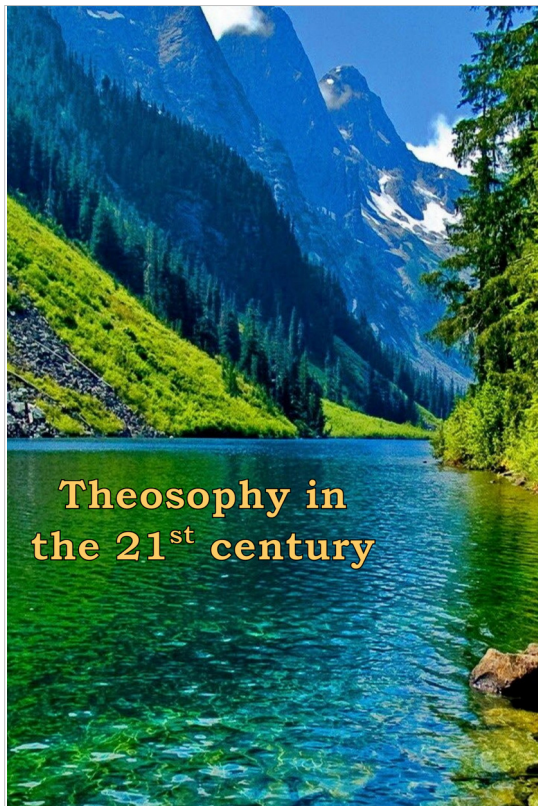


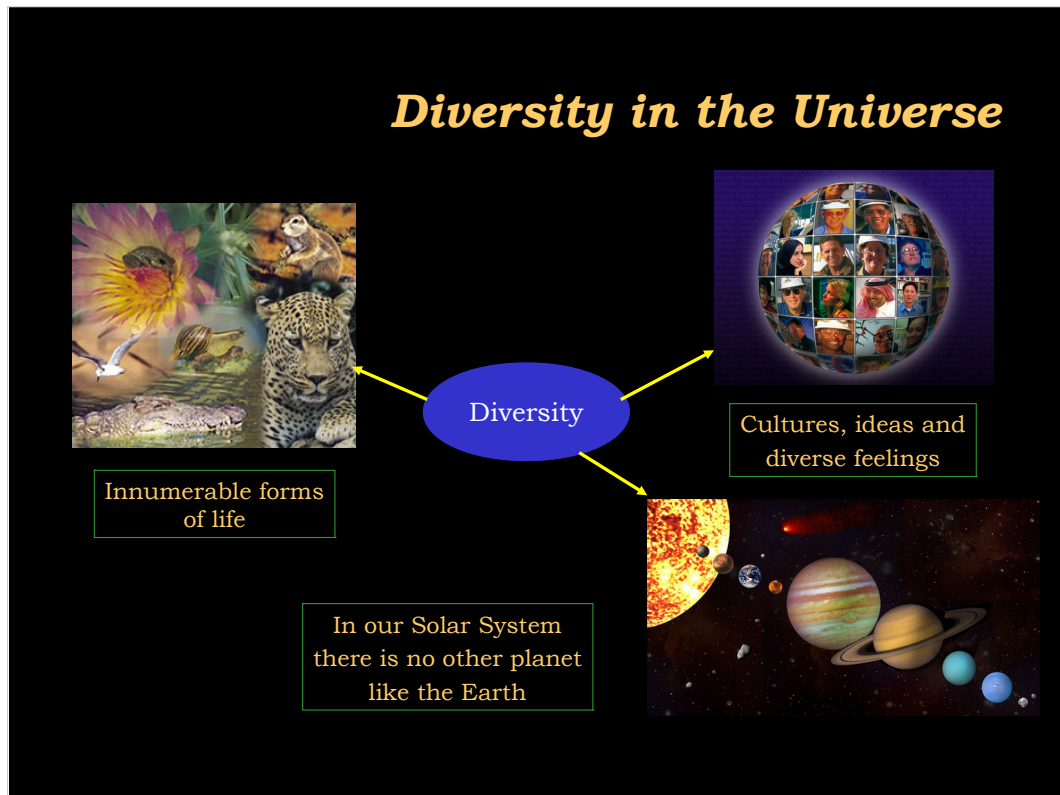


**Theosophy in  
the 21<sup>st</sup> century**

## ***3 The Unity of Life***

Course created by  
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SOCIEDAD TEOSÓFICA ESPAÑOLA

*2018*



It is clear that the Universe presents a great diversity.

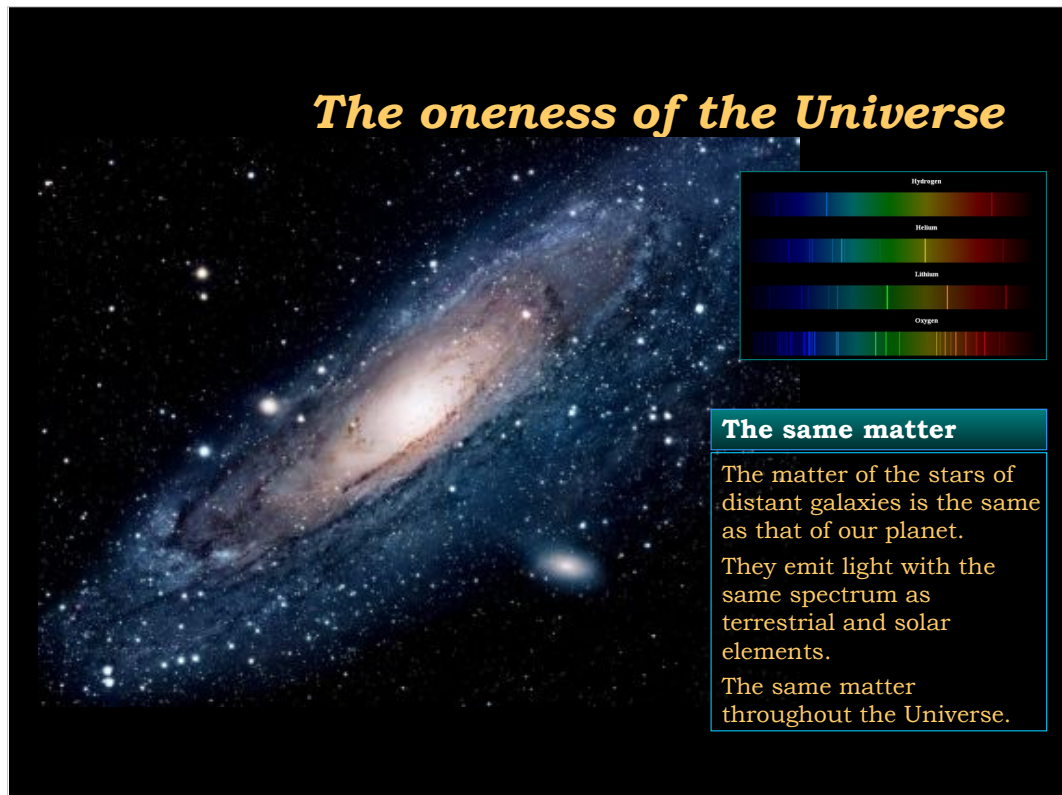
From the material point of view, we can observe a large number of galaxies with their stars and these with their planets. However, we have not yet discovered any planet equal to our Earth. In the Solar System itself we have no other planet whose conditions approximate those of the Earth to hold Life as we know it on Earth. In addition we know in Nature a great quantity of substances with very different characteristics in terms of color, hardness, elasticity, etc.

In living beings we also observe a great diversity with innumerable species and varieties, where each one has developed a different survival strategy and has adapted to different environments.

In the human kingdom we also observe a great variety of cultures, people, traditions, customs and ideas. We know that there are no two human beings alike, both in appearance and in the biological, and what to say of their ways of thinking, feeling and acting.

But what is behind this great diversity on the Universe? Is there anything in common? Is there any reality that escapes us at first sight?

We will carefully investigate what we can know about it.



When we contemplate the Universe with the help of the means offered by astronomy, we are astonished by its immensity and its mysteries. The Universe reveals to us inhabited by a huge number of galaxies and stars.

In spite of the extension and variety of the celestial bodies, there is a oneness in the **components** of the Universe that we know. The matter of the stars of other galaxies is the same matter that we find in our Solar System. Distance or age does not matter. How do we know?

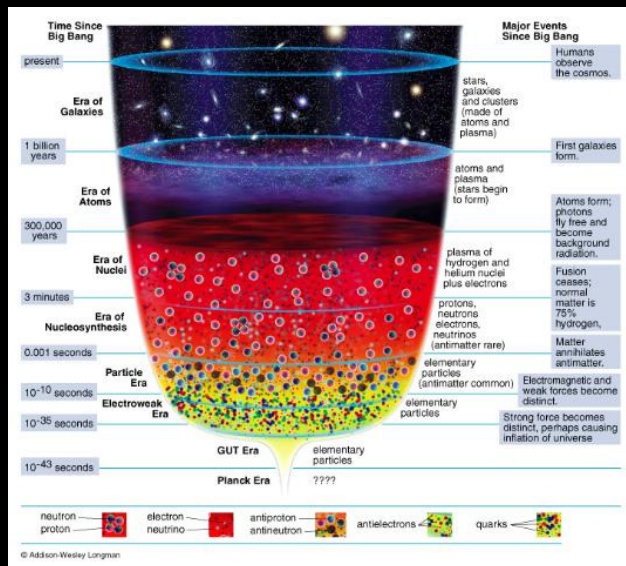
Each substance emits under certain circumstances a characteristic light that does not have all the possible frequencies of the light but only some, according to the structure of the electrons in its molecules. When the light emitted by a substance is analyzed with a spectrometer, a pattern of lines appears, each one corresponding to a frequency of light. This pattern is like a *signature* of that substance, it is the characteristic **spectrum** of it. Hydrogen, helium, carbon, oxygen, all substances have their characteristic spectrum. The spectrum is usually used in the laboratory to identify substances, such as when determining the components of a mixture.

The spectrum of light emitted by the stars reveals that they all have the same elements that we find in our Solar System: Hydrogen, Helium, Carbon, etc.

We have not found in the space indications of matter different from the one that exists in our Solar System. The so-called "dark matter" is a hypothetical matter, not visible because it does not emit light, with which astronomers try to explain certain observed phenomena, but it seems to exist throughout all the Universe.

Therefore although the Universe is very large, it is composed of the **same matter** that we know here in this region.

# The origin of the Universe according to Astronomy



## The big-bang theory

- The Universe was formed from a singularity about 13.7 billion years ago.
- It is still expanding
- We do not know why it happened.
- The Universe has a common origin.



Astronomy has always been interested in the origin of the Universe. Different theories have been elaborated to explain this.

The theory about the origin of the Universe widely accepted today and with more evidence is the **big-bang**. It argues that the Universe was originated from a singular point, a great "explosion", which occurred about 13.7 billion years ago. According to this theory, matter and energy were condensed into an extremely hot and dense point, which some call the cosmic egg, where the laws of physics were totally different from the present ones.

After the explosion the Universe expanded and transformed through stages in which matter did not exist as we know it now. It is estimated that the hydrogen and helium atoms appeared only about 300,000 years after the big-bang.

There are several big-bang evidences, such as the observation that distant galaxies are moving away and the measurement of residual radiation from the earliest Universe times in the microwave zone that has been mapped by the WMAP space probe and then by the Planck probe.

Physicists try to study how the conditions of the material world would have been only a few millionths of a second after the big bang. The formidable concentration of energy would have made the laws of physics as we know them have no validity.

The big bang, its causes and circumstances still remain a great enigma and is the cause of many speculations and theories. The future evolution of the Universe is also a subject of discussion and there are several theories not yet tested, ranging from extreme cooling to summary and collapse in a process inverse to big.bang, the big-crunch. There are also those postulating a rebound after this collapse producing a new big-bang.

But one thing is certain: the Universe has a common origin, which explains the **oneness** of matter as we have observed before.

## The variety in matter

### The elements

The immense variety of matter is due to just over 100 elements.  
From the H to the heavy elements.

### The substances

Combinations of the elements originate all substances.

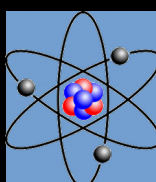
### The atoms

The atoms of the elements are composed of a few elementary particles.  
- Protons  
- Neutrons  
- Electrons

| Grupo   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  |
|---------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Periodo | 1  | 2  |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     | 2   |
| 1       | H  |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     | He  |
| 2       | Li | Be |    |    |    |    |    |    |    |     |     |     | B   | C   | N   | O   | F   | Ne  |
| 3       | Na | Mg |    |    |    |    |    |    |    |     |     |     | Al  | Si  | P   | S   | Cl  | Ar  |
| 4       | K  | Ca | Sc | Ti | V  | Cr | Mn | Fe | Co | Ni  | Cu  | Zn  | Ga  | Ge  | As  | Se  | Br  | Kr  |
| 5       | Rb | Sr | Y  | Zr | Nb | Mo | Tc | Ru | Rh | Pd  | Ag  | Cd  | In  | Sn  | Sb  | Te  | I   | Xe  |
| 6       | Cs | Ba | La | Hf | Ta | W  | Re | Os | Ir | Pt  | Au  | Hg  | Tl  | Pb  | Bi  | Po  | At  | Rn  |
| 7       | Fr | Ra | Lr | Rf | Db | Sa | Bh | Hs | Mt | Uun | Uuu | Uub | Uut | Uuq | Uup | Uuh | Uus | Uuo |

Periodic table of the elements

The elements differ only in the number of particles, not in their nature



The structure of electrons in a substance determines most of its properties

It is remarkable that the immense variety of substances found in the world is due to a few chemical elements, only about 92 natural elements from hydrogen (H) to uranium (U). The human being has created other elements beyond uranium, which practically do not exist in the natural state, such as plutonium (Pu), which is used in nuclear reactors.

Chemistry has ordered the elements according to certain characteristics that group them, as their chemical valence determines their ability to combine with other elements, resulting in the *Periodic Table of the Elements*.

It has also been found that matter is composed of **atoms**. The atom is the smallest unit of a given element. In turn the atom is composed of particles. Put simply only 3 kinds of particles are found in an atom: protons and neutrons in the nucleus and electrons forming a cloud around them.

Physical properties such as hardness, plasticity, density and others are determined by the crystalline structure adopted by the atoms of the substance. The soft graphite and the hard diamond are formed by the same carbon atoms, but organized in very different crystalline nets. Other properties such as color and the ability to conduct electricity depend on the distribution of the peripheral electrons in the atoms of the substance.

It is very interesting to note that all the immense variety of substances that we find in the Universe, from the rough beauty of a rock to the delicacy of the petals of a flower is built only with these almost 100 elements suitably combined.

The difference between the elements lies only in the **quantity** of the three kinds of atomic particles that each possesses. For example, the normal hydrogen atom (H) has only one proton and one electron, the most common carbon atom (C) has 6 protons, 6 neutrons and 6 electrons, while iron (Fe) has 26 protons, 30 neutrons and 26 electrons.

In this way, only *three kinds of particles* form the immense variety of substances that we know in the material world. Of course, physics does not stop here and it seeks to understand a model of elementary particles, and some pose unified theories like String Theory that tells us that matter and energy are essentially vibration.

This shows us the **oneness** of the matter, since the atoms of all the elements are constructed with the same 3 particles and only differ in their quantities.

# The oneness in biology: The DNA

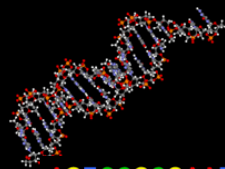
DNA is the macromolecule that contains the information necessary to build a living being.

## Bases of DNA

DNA is composed of only **4 bases** or nucleotides:

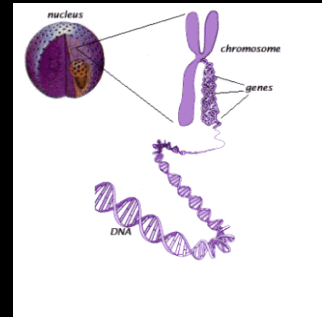
- **A** Adenine - **T** Thymine
- **C** Cytosine - **G** Guanine

They form facing pairs in the helix: A-T, C-G



AGTCCGCGAATACAGGCTCGGT  
DNA sequence

Only 0.5% of human DNA is different from one person to another



- Cells → Chromosomes → DNA → Genes
- Human DNA:
  - stretched: 1.8 m long
  - 3.200 M of bases
  - grouped in 23 pairs of chromosomes

In the world of so-called living things, Biology allows us to observe something also exciting. All living organisms are composed of one or more cells. Cells are complex functional units constructed with **proteins** that are large molecules and of very complex structure.

The key to the organization of living organisms is in a wonderful macro-molecule called **DNA** that has the information necessary to build a particular organism and acts as a memory from where the cell reads instructions to make proteins.

The DNA molecule is very long. It has the structure of twisted strands in the form of double helix as James Watson and Francis Crick discovered in 1953 and is composed of many pairs of **bases** that are simpler molecular units. These chemical bases are *only of 4 types: Adenine, Thymine, Cytosine and Guanine*, abbreviated by their initials A, T, C and G.

The 4 bases are complementary, so that if in a strand there is a base A, opposite, in the other strand of the double helix, there is a base T because they complement each other chemically. And where there is a base C, opposite there is a base G. Hence the bases in the DNA are organized into complementary pairs.

A DNA molecule in humans has about 3.2 billion base pairs and stretched it would measure approximately 1.8 m.

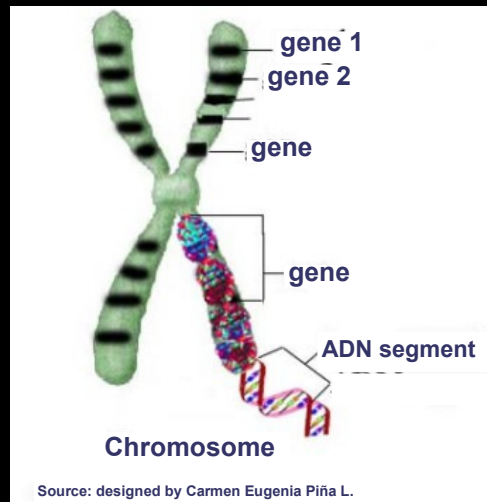
One important property of the DNA molecule is that it can replicate and every new cell in the organism inherits it. In organisms with sexual reproduction the DNA of the parents is combined to generate the DNA of the child that will be different from that of the parents and that will grant very similar but somewhat differentiated qualities. However, at most only 0.5% of one person's DNA is different from any other.

DNA can also *mutate* in the course of the life of the organism as a result of various factors and the adaptation to the environment may also cause heritable changes in the associated chemistry, leading to small alterations in the organism.

Although the functioning of DNA is not yet fully known, it is known that there are portions thereof which are called **genes** that serve to specify proteins, which are the substances from which the cells are made and which fulfill all the necessary material functions of the organism .

## In the DNA are the genes

- **Genes** are parts of the DNA sequence that specify proteins
- A gene is defined on average by 25,000 base pairs
- It is estimated that humans have about 20,000 genes
- Only 2% of our DNA contains genes
- DNA parts that are not genes also play an important role in causing genes to express themselves or not (**epigenetics**)



The DNA system is very complex and is still being investigated

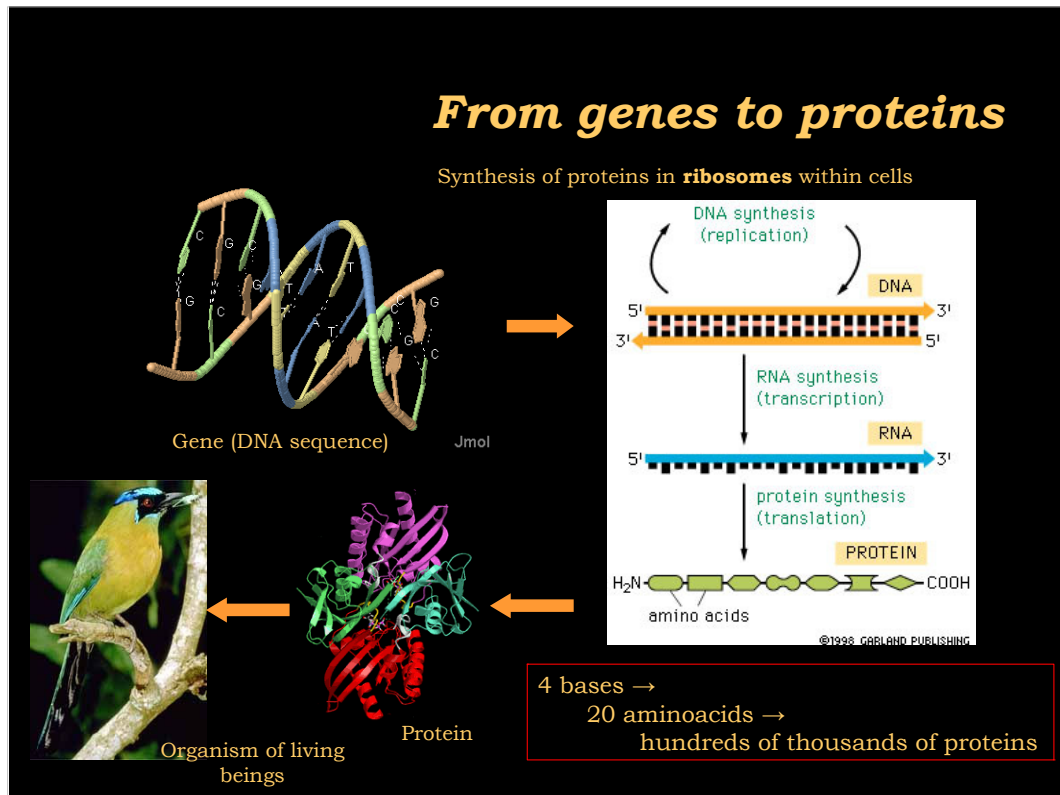
DNA is not free in cells but is compacted and divided into parts called **chromosomes**. Bacteria have a single chromosome, usually circular because they have a much simpler DNA. In more complex organisms that have cells with nuclei the chromosomes are presented in pairs. The human being has 23 chromosomes pairs. Each chromosome contains a segment of DNA.

Although the functioning of DNA is not yet fully known, it is known that there are portions thereof which are referred to as **genes** that fulfill the function of specifying amino acid sequences. These amino acids combined together form the **proteins** that are the substances from which the cells are made and which fulfill all the material functions that the organism needs. The defective manufacture of a protein or the absence of it gives rise to diseases of genetic origin.

A gene is composed on average by 20,000 to 30,000 base pairs of DNA and has a complex structure. It is estimated that human DNA has about 20,000 genes. It has been possible to identify the function of many of them. However only 2% of our DNA contains genes encoding proteins.

Other parts of the DNA that are outside the genes serve as keys allowing a gene to be expressed or inhibited causing the cell to produce or not the corresponding proteins. Chemistry related to these keys may mutate as a result of adaptation to the environment or other factors by modifying the behavior of genes. These changes are also hereditary. The study of genes and their influence is the object of *genetics* while the study of these functional parts of DNA that are outside the genes is the object of *epigenetics*.

We see how DNA is really a memory in which is the information necessary to make the proteins that constitute a biological being. But how does this wonder of nature happen?



In the cells there are wonderful special corpuscles called **ribosomes**, which are responsible for making proteins from the information contained in DNA genes

Ribosomes do not read DNA directly but do so through a complex process of *transcription* through intermediate molecules called messenger RNA (mRNA).

Ribosomes *read* the information encoded in the mRNA as a computer would. Taking base pairs in groups of three, called *codons*, produce amino acids by chemical affinity. Although the possible combinations of groups of 3 bases that may have 4 possible values each is  $4^3 = 64$ , only 20 classes of amino acids are produced in all living beings because there are certain mechanisms to compensate for possible transcription errors. These 20 amino acids linked together form the hundreds of thousands of proteins that make up the organisms of all living things.

Therefore Molecular Biology shows us that Life has developed much earlier than humanity the computer science. DNA is a complex information system based on carbon chemistry rather than silicon physics as the memories of our current computers.

Biology then teaches us a wonderful oneness in the organisms of living beings, since only **4 bases** serve to produce **20 amino acids**, which produce **hundreds of thousands of proteins** that make up organisms of all species.

## Summarizing

- Less than 100 chemical elements determine the variety of matter throughout the Universe.
- Only 3 classes of elementary particles determine all the elements
- A sequence of 4 classes of nucleotides determines the whole variety of living beings.



Behind the diversity of forms there is a unique architecture, common laws ...

But ... is there anything else?

Summarizing what we have seen, we have all known substances on Earth and in the Universe are composed of only 92 natural chemical elements. Their diversity lies in the different combinations between them and how they are structured.

In turn the chemical elements are composed of atoms. Each chemical element consists of a class of atoms. But only 3 kinds of elementary particles determine the entire range of atoms. Their differences lie only in the number of these sub-atomic particles, not in a different nature.

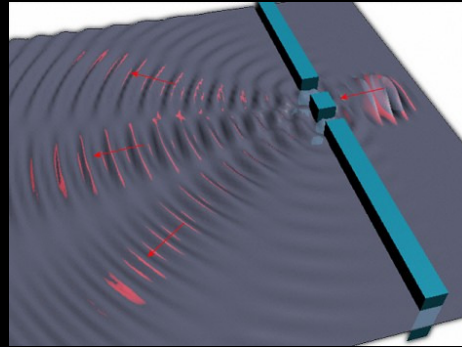
And Biology shows us that in living organisms all the variety of forms we see is determined by a sequence of the same 4 bases or nucleotides in the DNA of each organism.

For all the above we see that Science reveals to us that behind the immense diversity of forms that we find in the Universe there is a unique architecture, common laws, a uniqueness and ingenuity that surprises us.

But we intend to find out if there is anything more known about the unity of the whole Universe behind the innumerable changing forms.

## *The wave-particle duality*

- Quantum mechanics shows us that the "particles" of matter are particle and wave at the same time
- This implies that **each particle is distributed throughout the space**
- This is **non-locality** and has great philosophical implications
- It match with descriptions made on the Vedas and other ancient writings about the nature of the Universe



Double slit experiment



Symbol of Yin and Yang, duality in nature

As demonstrated by John Bell, nonlocality is a necessity in quantum mechanics

Quantum Physics shows us that the material world is not as we imagine it in our perceptions from the senses. When we enter the scale of the atomic we see that the behavior of matter and energy is different from perceived. Energy is exchanged in packets or **quantums** of energy and the particles have quantum states that correspond to their properties at a given moment.

The equations of quantum mechanics describe very well what happens and are able to predict very complex situations. The behavior of the particles according to the circumstances seems to be sometimes that of a particle of concentrated matter and sometimes of a wave. Mathematically, everything is fine, but what does all this mean? There are many interpretations of quantum mechanics, some very exotic proposing multiple possible universes and the like. The physicist Louis de Broglie proposed that waves always form part of the particle's reality and act as guides. David Bohm continued with this concept that had initially been abandoned, extended and formalized.

The interpretation of quantum mechanics by De Broglie and Bohm is of extraordinary value because it says that the particle is not something material circumscribed to a point in space but its material reality is a duality, a singularity located at a point, and its associated wave that is distributed in the space. This means that the particles influence each other due to the distributed nature of their associated waves and the famous double-slit experiment can be explained because the wave associated with a single particle passes through the two slits and generates interference patterns. This is known as **nonlocality**, the property that the particles are correlated with each other, which was denied by Einstein and many other physicists as a "*spooky action at a distance*." But modern physicist John Bell has shown that nonlocality is a necessity in quantum mechanics for it to offer a complete description of physical reality.

Then the material world is very different from what we usually know it. The wave-particle duality and nonlocality coincide with the descriptions given in the Vedas, in the ancient scriptures of India, and in the great philosophical systems of the ancient world. In Taoism there is the concept of the duality of things like Yin and Yan.

# Quantum entanglement

- Two particles can have their quantum states linked in such a way that they form a unique system even if they are in physically on **distant positions**

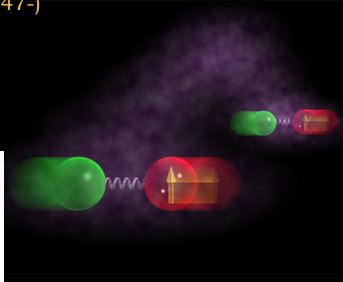
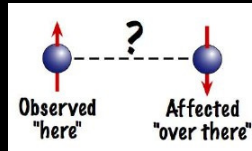
- If we affect one, we also affect the other. They are part of the same reality

- Confirms the concept of non-locality of physical phenomena

- Experimentally proved in 1982 by Alain Aspect



Alan Aspect  
(1947-)



There is nothing else supreme beyond Me, O Dhananjaya. On Me, all that is here is strung like pearls upon a thread.

[Bhagavad Gita, 7]

One of the most spectacular experimental evidence of non-locality is the quantum entanglement. The equations of quantum mechanics predict that two particles may have their quantum states bound together forming a unique system such that the change of one of them in one particle is immediately reflected in the other particle.

The physicist Alan Aspect demonstrated in the laboratory in 1982 this spectacular property producing particles, initially photons, in a special way so that they are interlaced. Subsequent experiments confirmed and extended the study of this phenomenon. The particles can be separated physically by several meters, which is a huge distance in the ground of the atomic, but still what is done to one affects the other. It is necessary to emphasize that it is not that when modifying the state of a particle certain information or perturbation travel at the speed of light towards the other particle replicating the change. On the contrary, the change is instantaneous.

This means that interlaced particles are one reality even though they look like two separate particles in space. The philosophical implication of this fact is enormous because it shows us through physics that the separateness and isolation we perceive in the world is not real and that it is only a construction of our mind, it is the way we imagine the world, and it is just an illusion.

More recent studies have found the quantum entanglement present in complex systems of many particles. See the article:

Experimentally testing nonlocality in many-body systems:

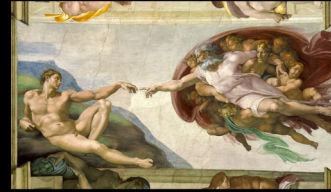
<https://www.sciencedaily.com/releases/2014/06/140620120444.htm>

Quantum entanglement is a powerful demonstration of the illusion of separateness.

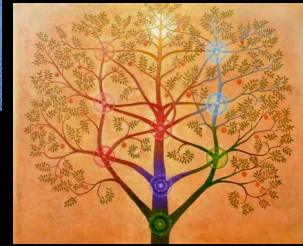
## The Unity

- The Universe is One, Life is One.
- There are 3 different models of what the Universe is:
- **Theism, Creationism.** The Universe was created by a supernatural God.
- **Pantheism.** The Universe is the sum of all its parts.
- **Emanations.** The Universe is a unit, forms and beings *emanate* from it although they remain united.

Creation



Pantheism



Emanations

There are three general ideas about the Universe: Theism or Creationism, Pantheism and the philosophy of Emanations.

**Theism** holds that the universe has been created by a supernatural entity that is above him, a God. This God acts on the Universe, which is his creation as a painting is the creation of a painter. The Universe is not God but the work of God.

**Pantheism**, or more properly Panentheism, holds that the Universe is an entity whose life is distributed in all its parts, in all its beings. For pantheism, "God is everything," meaning that God is immanent in all of Nature.

Theosophy holds the third idea, the philosophy of **Emanations**. Briefly stated, it is that the Universe is a *transcendent* reality, which manifests periodically as an *immanent* reality from which emanate all beings and forms of the Universe. This idea differs from the theistic concept of a God, more generally accepted, as Blavatsky puts it:

**ENQUIRER.** Do you believe in God?

**THEOSOPHIST.** That depends what you mean by the term.

**ENQUIRER.** I mean the God of the Christians, the Father of Jesus, and the Creator: the Biblical God of Moses, in short.

**THEOSOPHIST.** In such a God we do not believe. We reject the idea of a personal, or an extra-cosmic and anthropomorphic God, who is but the gigantic shadow of man, and not of man at his best, either. The God of theology, we say -and prove it- is a bundle of contradictions and a logical impossibility. Therefore, we will have nothing to do with him.

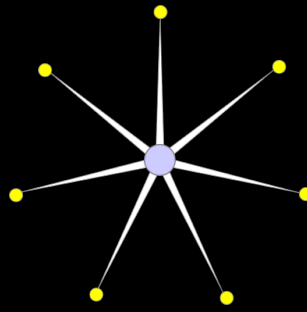
Helena P. Blavatsky, *The Key to Theosophy*

## Emanations

▪ Fundamental idea of the ageless wisdom, which is the basis of certain philosophies:

- Egypt, Osiris myth
- India: The Vedas
- Plato, Orpheus
- Neoplatonics

▪ It maintains that the matter and beings of the manifested Universe are **emanations**, not creations, of the unmanifest Principle One.



The idea of Emanations is not new, but is the basis of many ancient philosophies and religions. It is the fundamental basis of esoteric philosophy.

Plotinus, the great philosopher of the Theosophical Eclectic School at Alexandria, put it this way:

1. All things that exist do so by virtue of "unity" -- in so far as they exist in any ultimate sense and in so far as they may be said to be real. For what would anything be if it were not "one"? Without the unity of which we speak things do not exist. There can be no army which is not a unit, nor a chorus, nor herd, unless each is "one." Neither is there a household or ship without unity; for the house is a unit and the ship is a unit, and if one took away the unity the household would no longer be a household nor the ship a ship.

.....

2. Is it not true that in each particular being its essence and its unity are one and the same, as regards the whole of being and essence, the essence of the whole and the unity of the whole are also identical? Thus, it is enough to discover the being to discover its unity. Let us see: if, for example, the essence is the Intelligence, the One will also be the Intelligence, as the first being and the first unit that is, by which all other things participate in the being and, according to this, in the unit. What could be said of the One but that it is the Being itself? Because it is really identical to being.

Plotinus, *The One, Enneads*

## The sparks of fire

- The beings *emanate* of the One Life but *without leaving it*.
- The “fragments”, the **Monads** or *sparks* of the flame are *connected* together.
- Each fragment is unique but is a reflection of the nature of the Whole.
- Hermetic axiom: “**As above is below**”
- How is it possible?

Fire --> One Life  
Sparks --> Monads



It is a paradox for reasoning

In the philosophy of the Emanations it is very important to understand that beings and matter do not stop being in the Unity despite being emanated. They do not cease to belong to the nature of Principle One. This contradicts the common idea that something that emanates from something else comes out of it.

For this reason it has been used the simile of the sparks that come out of the flame to describe the fragments of life, the Monads emanated from the One, but clarifying that they are *undetached* sparks that never leave the Unit, **only differ** and continue being part of Life One. In other words, the Oneness does not fragment with the emanation of the Universe, it only produces a new state.

... the Master is made to ask the pupil:

“Lift thy head, oh Lanoo; dost thou see one, or countless lights above thee, burning in the dark midnight sky?”

“I sense one Flame, oh Gurudeva, I see countless undetached sparks shining in it.”

“Thou sayest well. And now look around and into thyself. That light which burns inside thee, dost thou feel it different in anywise from the light that shines in thy Brother-men?”

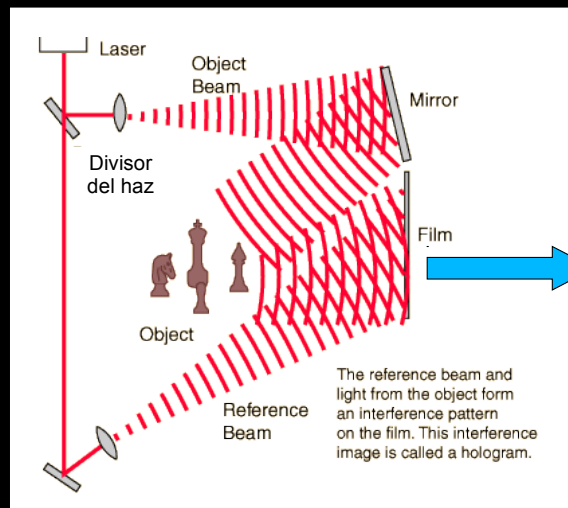
“It is in no way different, though the prisoner is held in bondage by Karma, and though its outer garments delude the ignorant into saying, ‘Thy Soul and My Soul.’”

H.P. Blavatsky, *The Secret Doctrine*, vol. 1

Every spark is a reflection of the whole. Not only does it share its nature but it is identical in essence since the whole is latent in it. The well-known axiom "As above is below" expresses this identity between the part and the whole.

Let us seek in the field of science and technology something that will help us to understand this paradox.

## What is a hologram?



Transmission hologram (Georgia State University)

- Non-lenses and coherent (laser) photography of an object that captures both the intensity and phase of reflected waves
- It records 3D information
- Transmission hologram



In the film the image of the object is not seen with the naked eye but interference patterns

A **hologram** is a photograph of an object taken without a lens with a special technique.

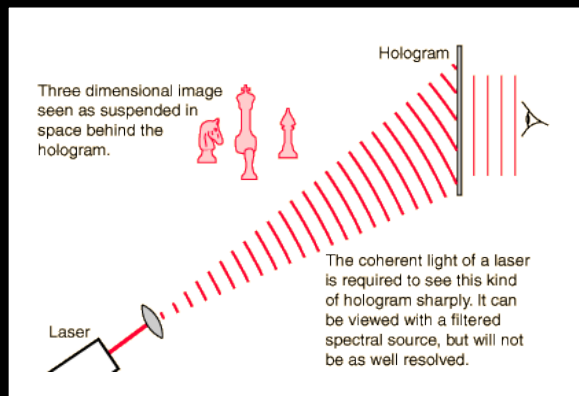
We all know the *reflection holograms* like the bird that we find in some credit cards, that produce an image that seems to be of 3 dimensions since it changes as we move our point of view.

But there are other types of holograms that have a property that interests us. The first holograms that were made were the *transmission holograms*. To obtain them, the light of a laser is divided into two beams that follow two different paths. In one of them, the light falls on the photographic film after being reflected in a mirror. In the other way, the light of the laser is made to affect the object to be photographed and its reflections are those that hit upon the film. But this light reflected by the object meets the reference beam coming directly from the laser and then interferences occur. What the film records are interference patterns. Looking at the film obtained with the naked eye one does not see the object photographed. Only rings and interference bands are seen, a set of spots.

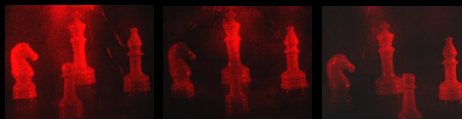
What has happened is that thanks to the interference between the beam that hits the object and the reference beam, three-dimensional information about the object is printed on the film. Not only does the intensity of light affect the film at each point of the object as in a conventional photograph, but the interference patterns also contain information on the phase of the reflected wave and therefore of the distance from the point from which it proceeds until the film.

So what do we do with this film? How do we get an image of the object photographed by this means?

## Playing the hologram



Playing the hologram (Georgia State University)



The observed image depends on the position of the observer



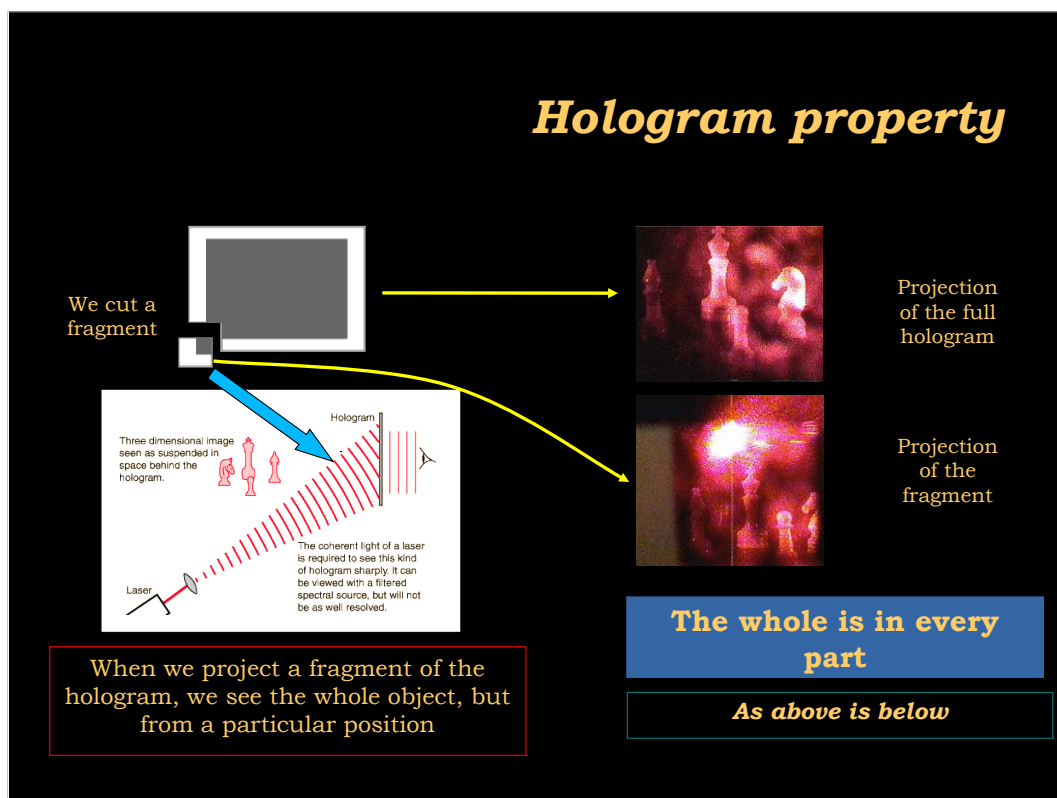
- A 3D image of the photographed object is projected through the laser light.
- If we move we see the image from another angle....

To reproduce the image contained in a transmission hologram, it is necessary to have a laser similar to the one with which the hologram was obtained, and to pass the light of it through the film. A conveniently located observer will see the image of the object that seems to be floating in space in front of him, in 3 dimensions.

As the viewer moves he will see the image slightly different, as if he were observing the solid object from different angles. This fact gives the observer the impression that he is seeing an object in 3D, and because the binocular vision one has the impression that the object is actually in front of the observer.

For a more detailed description of the holography you can see:  
Wikipedia: <http://en.wikipedia.org/wiki/Hologram>

There is a very good explanation on the Georgia State University website:  
<http://hyperphysics.phy-astr.gsu.edu/hbase/optmod/holog.html#c4>



The reason why we turn to holograms here is not the beauty of their 3D images but a very interesting property that transmission holograms have.

If we cut a fragment of the film of a transmission hologram and project it, we have the surprising fact that we do not see a fragment of the original object, as we would have if it were a conventional slide instead of a hologram, but we see the full object. Does not matter what fragment we take to project or the size of it, we always see *the whole object*, although from a particular position depending on the fragment chosen.

Therefore, this property of the hologram tells us that the image of the object is in each fragment, which is an analogy of the Principle of Unity that we are trying to explain since "**the whole is in each part**", or as it has been expressed In the hermetic philosophy with the aphorism: "**as above is below**". In this case *above* is a metaphor representing the Macrocosm, the Universe, and *below* represents the Microcosm, the domain of the individual and subjective. There is no spatial separation since the universal is in each fragment, in each part and of course in ourselves.

## Holographic model of the Universe

- Model of the Universe created by some scientists, using the hologram metaphor to describe the oneness of the Universe

- Created by David Bohm and Karl Pribram in the 50's

- The *explicate order* is an expression of the *implicate order*, as one of the possible projections of the hologram

- Controversial to most scientists but used and supported by a growing number of thinkers

Implicate Order



Explicate Order



David Bohm  
(1917-1992)



Karl Pribram  
(1919-2015)

Fragmentarity is an illusion of the mind: the true state of things is an indivisible whole.

*David Bohm*

We are part of Nature as a whole, whose order we follow. [Spinoza, *Ethics*, 1673]

Reality can only be found in the Source One, because of the interconnection of all things with others. [Leibniz, 1670]

The feature of the holograms where the whole is in each part made think to scientists and thinkers in general who saw with this model a clearer glimpse of the Reality in which the Everything is in each part. Several well-known figures, mainly the physicist *David Bohm* and the neurologist *Karl Pribram* created the name of "**the holographic paradigm**" to talk about to this holistic model of the Universe.

The notion that all these fragments is separately existent is evidently an illusion, and this illusion cannot do other than lead to endless conflict and confusion. Indeed, the attempt to live according to the notion that the fragments are really separate is, in essence, what has led to the growing series of extremely urgent crises that is confronting us today. Thus, as is now well known, this way of life has brought about pollution, destruction of the balance of nature, over-population, world-wide economic and political disorder and the creation of an overall environment that is neither physically nor mentally healthy for most of the people who live in it. Individually there has developed a widespread feeling of helplessness and despair, in the face of what seems to be an overwhelming mass of disparate social forces, going beyond the control and even the comprehension of the human beings who are caught up in it.

David Bohm, *Wholeness and the Implicate Order*, 1980

To investigate more about the holographic universe:

- The Holographic Paradigm [Wilber, Bohm, Pribram, Keen, Ferguson, Capra et all]

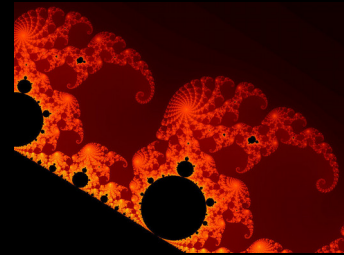
- The Holographic Universe [Michael Talbot]

<http://www.spaceandmotion.com/Physics-David-Bohm-Holographic-Universe.htm>

<http://www.slideshare.net/curentur/naturaleza-holografica-presentacion/>

## Fractals: the whole is in everything

- Figures with multiple or infinite similarity (self-similar forms)
- Each part is similar to the whole on different scales
- Fractals describe very well the forms of nature



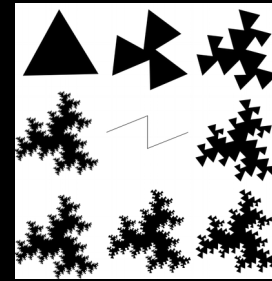
Mandelbrot sets



Fern



Romanesco broccoli



Koch triangles

The idea that the all is in everything also appears in other fields of thought.

In Mathematics, **fractals** are very well-known, which are geometric figures that have the property of having infinite or at least multiple self-similarity, that is to say that their structure is repeated in different scales and therefore each part is similar to the whole.

The discovery of the fractals is mainly due to the mathematician *Benoît Mandelbrot* (1925-2010). Fractals have several fields of application, but perhaps the most interesting and suggestive is that they are widely found in nature. A fern, or romanesco broccoli are clear examples of fractals. By varying very few parameters in equations, we get very different forms.

A tree is a fractal in itself, as mathematical works on botany have shown [1]. The shape of the branches reflects that of the tree as a whole. But what is more remarkable is that in a forest that grows naturally the distribution of trees also reflects the tree's own architecture and follows a fractal model [2].

Other interesting fields to explore in this sense are the *golden ratio* and the *Fibonacci series*, in which properties of self-similarity are also observed as expressed by the aforementioned hermetic aphorism: "As above, it is below."

Therefore, the idea that the whole is in each part arises forcefully the more we look at the world with attention and with the open mind.

The underlying Unity of Life, as a whole which is expressed in its manifold manifestations, is precisely the fundamental principle of Theosophy.

[1] Space occupation by tree crowns obeys fractals laws: evidence from 3D digitized plants,

C. Godin, O. Puech, F. Boudon, H. Sinoquet

[http://amap.cirad.fr/workshop/FSPM04/proceedings/4thFSPM04\\_S2Godin.pdf](http://amap.cirad.fr/workshop/FSPM04/proceedings/4thFSPM04_S2Godin.pdf)

[2] The fractal forest: fractal geometry and applications in forest science

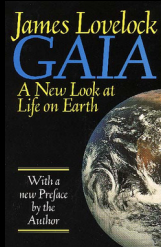
Lorimer, Nancy D.; Haight, Robert G.; Leary, Rolfe A.

<http://www.ncrs.fs.fed.us/pubs/viewpub.asp?key=234>

## Gaia theory

- All living beings and the inorganic environment of the Earth form a self-regulating and self-evolving organism called **Gaia**
- It was formulated as hypothesis by the chemist-biologist James Lovelock in 1974
- Is Gaia a *living being*?
- Gaia maintains the conditions of life on the planet.







What is a living being?

Another clue that Life is One is found in the interesting **Gaia** theory developed by environmental chemist *James Lovelock* (1919-), first published in his book "*Gaia: A New Vision of Life on Earth*." Others have also contributed to the theory, notably *Dr. Lynn Margulis*.

According to Gaia's theory the Earth behaves like a superorganism formed by all living beings and environmental matter such as rocks, atmosphere, water, salt, etc. In a homeostatic balance. When Lovelock first outlined his brilliant theory of Gaia in the 1970s, he received much criticism from the scientific community, but many people caught the idea and later Gaia, which was initially a hypothesis, moved to the level of a theory about which is actively investigated.

Lovelock claims that Gaia self-regulates to try to maintain life on the planet. Many essential elements for organic life such as the composition of the atmosphere or the salinity of the seas are maintained in dynamic equilibrium, making the planet behave as a unit.

Self-regulation of chemical composition and climate is a process that arises from the intimate evolutionary relationship of rocks, air and sea (and living things). This intertwined self-regulation, though seldom optimal (thinking of the cold, warm, moist, and dry areas of the planet) nevertheless maintains the Earth as a place fit for life.

James Lovelock

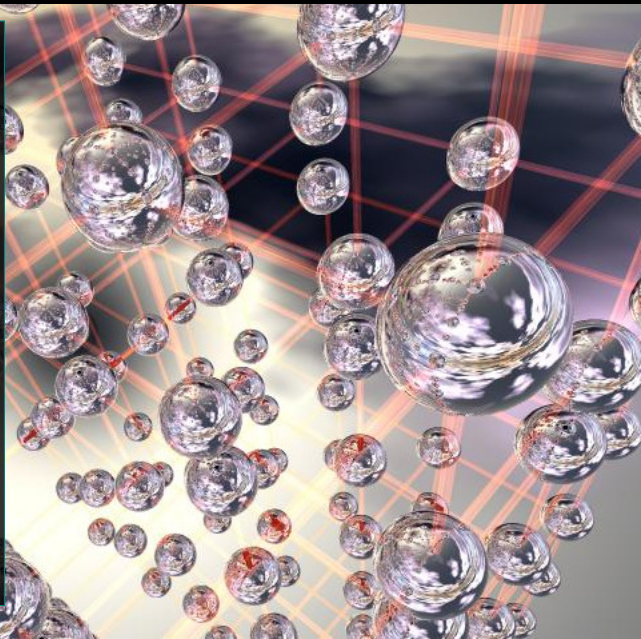
To investigate further:

Gaia: A New Look at Life on Earth [James Lovelock]

The Revenge of Gaia: Why the Earth Is Fighting Back – and How We Can Still Save Humanity [James Lovelock]

## Indra's net

- Legend of the Puranas Hindu cosmology (approx 1000 BC)
- Metaphor used to indicate the nature of the Universe where the whole is in each part
- It is a net of silk strings that expands to infinity in all directions and contains at each intersection a pearl of great brilliance that reflects upon itself each of the pearls of the net, and so on, as mirrors towards infinity.



The Hindu cosmogony contained in the Vedas talk about the god Indra whose palace on Mount Meru, the axis of the world according to the cosmogony, hangs a very curious net.

According to mythology it is a net that has in each node a pearl or jewel that reflects all the others.

"Imagine a multidimensional cobweb in the early morning, covered with drops of dew. And every drop of dew contains the reflection of all other drops of dew. And, in each reflected drop, the reflection of all other drops of dew in that reflection. And so on to infinity. That is the Buddhist conception of the universe in an image."

Alan Watts

This myth has been used by Mahayana Buddhism and other schools as a metaphor to symbolize two fundamental things:

- The interconnection of each part in the Universe. All the jewels are interconnected with each other as all beings and matter in the Universe. Current studies on social networks show us that relationships between humans are very influential. In nature we find many things that work according to the network model.
- The whole is contained in each part. Each jewel reflects in itself to the others and therefore the whole network is reflected in each jewel. The whole is in everything as in a fractal.

The Indra net is a metaphor that clearly shows us that the paradigm of the holographic universe is nothing new but it is present in the oldest esoteric traditions, although its meaning has been misunderstood for the majority. This is not surprising since for the mind that has drawn models from everyday sensory experience it is very difficult to accept how two distant things can be so related and how any of them can contain a reflection of the whole Universe.

To know more:

- Wikipedia: "Indra's net"

## Synchronicity

- Concept defined by Carl G. Jung and Wolfgang Pauli although it has been present in many cultures and philosophies
- It is the temporal coincidence of events not related to each other causally whose **significant** content is identical or similar
- Our consciousness is also reflected in the whole as the waves in the water. A modification immediately affects the whole
- Synchronicity is a consequence of the Unity of Life



Carl G. Jung  
(1875 - 1961)



Wolfgang Pauli  
(1900 - 1958)



**Synchronicity** is a concept defined by the psychologist *Carl Jung* and the physicist *Wolfgang Pauli* to explain the occurrence of events that are not related to each other by cause and effect, that is to say that one is not the cause of the other, but that they have a relevant meaning for the subject who observes or experiences them. It is more than just coincidences.

Jung himself relates that a patient of his who was resistant to change told him that she had dreamed that she received a golden beetle as a gift. At the same time Jung heard a noise in the window and went to see what it produced. He saw that it was a golden insect, resembling a beetle. He caught it and showed it to the patient, who in the face of such a coincidence began to open his mind and see the world in another way. In Egyptian mythology the god Khepri is represented by a beetle and is a symbol of the transformation of the individual.

What makes synchronicity possible? We must consider the unity of the universe not only from the point of view of matter but also of consciousness. As in the network of Indra and entanglement particles a change in our consciousness immediately affects all other consciousness and may predispose us to observe facts that seem relevant to us as signs, premonitions or indications. All consciousness are related. The phenomenon is observed more when there is a certain psychological need for change or to make some decision and can cause the conjunction of external events that would be very unlikely. "*Desire attracts opportunity*" says an adage and this also explains what we call "*good luck*".

To investigate further on the subject:

- Synchrodestiny [Deepak Chopra]
- Wikipedia: "Synchronicity!"

## 1<sup>st</sup> Proposition

*I. An Omnipresent, Eternal, Boundless, and Immutable PRINCIPLE on which all speculation is impossible, since it transcends the power of human conception and could only be dwarfed by any human expression or similitude. It is beyond the range and reach of thought — in the words of Mandukya, "unthinkable and unspeakable."*



In the First Proposition of the Proem of the Secret Doctrine, HPB speaks of the Universal Principle of the Cosmos, enunciating it as infinite, eternal, unlimited, and immutable. You can not assign attributes because this would imply limiting it. The mind can not grasp its essence because it is beyond the capabilities of comparison and analysis.

This Universal Principle is referred to as the **Absolute**, the Absolute Be-ness, the Cause without cause, or **Parabrahman** (which is beyond Brahman) in the literature of the Vedas.

It is of course devoid of all attributes and is essentially without any relation to manifested, finite Being. It is "be-ness" rather than Being (in Sanskrit, Sat), and is beyond all thought or speculation.

Helena P. Blavatsky, *The Secret Doctrine, Proem*

... [Theosophy teaches] that the root of all nature, objective and subjective, and everything else in the universe, visible and invisible, is, was, and ever will be one absolute essence, from which all starts, and into which everything returns. This is Aryan philosophy, fully represented only by the Vedantins, and the Buddhist system.

Helena P. Blavatsky, *The Key to Theosophy*

Therefore the Unity of Life is a consequence of the Universe being a manifestation of the Absolute. It is only real to us when we experience it in our own consciousness, but we have seen many indications that can inspire us.

All Creation exists in you and everything that exists in you also exists in Creation. There is no division between you and an object that is very close to you, just as there is no distance between you and the distant objects. All things, the smallest and the greatest, the lowest and the highest, are in you and are of the same condition. A single atom contains all the elements of the Earth. A single movement of the spirit contains all the laws of life. In a single drop of water lies the secret of the immense ocean. A single manifestation of you contains all the manifestations of life.

Kahlil Gibran

In the next chapter we will see how diversity originates from Sat.

## *To think*



Watch, think, investigate, inquire ...  
Make the following questions or thoughts suggestions  
But don't stay here, ask yourself and find out.

- 1- Cite some passage from someone who describes an experience of being aware of the Unity of Life.
- 2- What human qualities express more awareness of the Unity of Life?
- 3- If we act according to the principle of Unity of Life, how should this influence our attitude towards people and other life forms like animals and plants?
- 4- Are we aware of the Unity of Life? If we are not, could we be?
- 5- What prevents us from being aware of the Unity of Life?
- 6- If we are part of One Life, does it make sense to seek the Truth? Is it not already in us?