

Laurențiu Mihăescu

L I F E

Matter. Evolution. Consciousness. Intelligence.

www.1theory.com

Prime@1theory.com

Bucharest, Romania, 2017



PREMIUS

Copyright © 2017 Laurentiu Mihaescu. All rights reserved.

Fourth edition, March 2020

Prime Theory series

Premius Publishing House, 2017

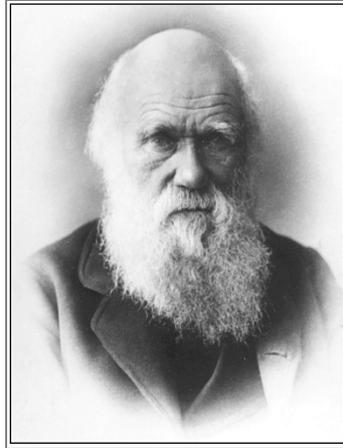
Website: www.premius.ro

E-mail: info@premius.ro

ISBN: 978-606-938439-8

The copyright law protects this digital book, which is intended for personal use only. You may display its content on a computer screen or on a compatible reading device. Any reproduction, printing, lending, exchanging, or trading, including distribution in any form over the Internet or in print is strictly forbidden.

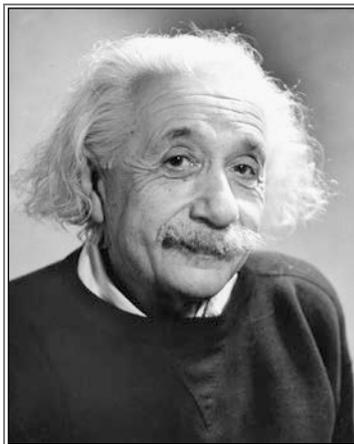
This book represents a humble tribute to all scientists who succeeded through their hard work and their genius to bring a sparkle of starlight into Earth.



Charles Darwin



Isaac Newton



Albert Einstein

Table of contents

Introduction.....	5
1. Our Universe	10
1.1. Matter and space.....	10
1.2. Time.....	12
1.3. Energy.....	13
1.4. Complexity and diversity.....	14
1.5. Consequences.....	17
2. Earth, a special planet?	19
3. The Theory of Life	22
3.1. The general definition of life	22
3.2. The definition of intelligent life	24
3.3. Consciousness and intelligence	26
4. Evolution and adaptation.....	32
5. Principles and rights.....	34
6. The philosophy of good and evil	37
7. References	44

Introduction

This book reveals the mystery lying inside and outside of all of us, answering the fundamental questions related to our Life in the Universe. As you read and understand it, your life may gain more clarity and meaning.

My true intention here is to formulate a global explanation on Life in general, building a coherent and unitary model of the entire physical reality from a deterministic perspective, as neutral as possible. This is my contribution to the scientific knowledge, hoping in this way to help decipher some of the greatest secrets of the Universe and of our existence as living beings. Just a simple analysis is intended to be made in this book, but it will consider the evolution of things over time, starting from the moment matter emerged; a minimalistic set of assumptions is used at first, which will be followed by logic and reason. All principles, postulates and theories stated and proved in my previous works ("Prime Theory"[1] and "The Universe"[2]) will serve as a solid foundation to this particular approach. The granular space, matter, energy and fields, the theories of relativity and of the absolute for the motion of bodies, along with the principles of causality, all of these will be an integral part of the explanations given to the complex cosmic mechanism that made possible the emergence, the evolution and transformation of the primordial matter (13.7 billion years old) up to its current structures. About four billion years ago, so during a recent stage of the universe's history, the continuous "struggle" of the matter components led to an apogee, once the primary single-celled organisms appeared on Earth; the simple bacteria born in water (i.e. the liquid medium that was formed when the surface of the planet had cooled down sufficiently) have rapidly evolved and Life took more complex forms in time - until the most special one, the actual humans, emerged as beings with intelligence and consciousness. The odds of this kind of life to appear somewhere in our quasi-infinite Universe, the chances that some evolved beings have reached the knowledge and understanding in the manner we have, all of these are very slim and it is difficult to quantify them with high accuracy. As this probability has an infinitesimal value, we need to show a great respect for the extraordinary chain of cosmic events that has led to the appearance of Life and to develop and preserve it as much as possible. We should strive to not forget that this sequence of changes and transformations of matter might be unique at the scale of the universe and unrepeatably in this form. There will be no hesitation in showing what we did wrong until now - relative to our social life and to the natural environment - and what keeps us apart from a natural evolution through science and reason, on the path of *normality*.

This whole description is founded on a simple premise: all information we are receiving from the surroundings through our sensory organs is absolutely real and depends on the physical exchange of energy (electrical impulses, no matter how small are their values) with our nervous system. Additionally, we can postulate that the part of information reaching our brains is an accurate and objective impression of reality, and this automatically implies another important fact, namely that our *external reality does really exist* - it is not an illusion. However, it is known that this influx of sensory information, transmitted as electrical signals by neurons through their connections, is not complete. For example, our retina receives only a part of the incoming light, the photons that belong to the visible spectrum. The physical reality that surrounds us is therefore much broader than what we can observe directly, as the matter of any form emits or reflects photons of many more "colors"; however, this missing part of the nature may still reach us, indirectly, via various devices. Humans, therefore, can analyze the whole of reality; we are able to unfold and understand all its "dimensions", as we have this multi-sensorial interface with the outside and certain special capabilities. Our reason, memory and self-consciousness, for example, are all higher brain functions that allow the perception and the understanding of all phenomena. *Knowledge is therefore certainly possible!* It stands to reason that our entire world, namely all we can "sense and perceive" from the environment, has a material nature and it is located inside a huge three-dimensional space, seemingly infinite. Thus, if we observe a few different things of this frame, at any scale, we soon realize that all of them are working in a predictable way, following specific and universal laws; consequently, if we perform a full analysis of today's world and find all of its rules, then we may extrapolate this data to both past and future, making a precise outline of its development mechanism. And here is a serious confirmation for the existence of reality and for our ability to truly perceive it: our sensory organs did not appear directly in their current form, they have gradually evolved over time, as both shape and performance, by continuous adaptation to the external environment - which therefore had and still has an undeniable materiality and existence within this paradigm. *If we exist, our external reality also exists.*

It is therefore interesting to consider *virtual reality*: what if the whole external reality would be in fact a perfect simulation, brought and projected directly to our mind? Or, even more, what if *absolutely everything* is a simulation, including us, our life and our senses - while matter and space we perceive are not actually there, in this form? However, this hypothesis seems completely improbable and no further analysis will be made on it - for the

simple motive that it implies a creator, a special almighty entity which must have created everything for a still unknown reason. And this is not the normal, scientific method to be used. In addition, the dimensions and the huge complexity of this elaborate hoax would imply quasi-infinite energies, impossible to be imagined. And we do not have to forget about the logic problem that would arise immediately, catching us in a vicious circle, namely who has created this hypothetical creator? And how, why, when? And so on...

The full knowledge of reality (whatever it might be, even simulated) and the exploration of micro and macrocosm are mandatory requirements for humans in this context, especially as they have all the means and capacity necessary to carry out these tasks. But why do we have to wonder, research and explore? As beings who possess a great curiosity and who are an integral part of this complex material reality (living inside it and depending on it), it comes natural for us to examine and study extensively our environment. In order to continue our development, we need more resources, more technology, energy and space - so there are at least a few pragmatic reasons to explore and understand. But is it possible for humans to carry out this research by themselves and to eventually find all the laws governing the nature's working mechanisms? Are we able to solve these mysteries, including the most complex one - our Life and our own existence inside this material universe? And could this be accomplished when "the man is part of the mystery", as Max Planck would have said? Whatever the correct approach to these issues of philosophical type would be, it must necessarily include the *physical bounds* of the materiality of nature and the terms *we have to relate to* our measurements and comparisons. We could say, for example, that here on Earth, our species is the most intelligent one at this moment, but this assertion might not be true in a broader context, of our galaxy or of the entire universe. However, this book is not a dissertation about the possibility and the ways of the absolute knowledge; the metaphysics and the other philosophical doctrines involving the principles of ontology will not be further considered. Humans, those beings who have the power of reason, are certainly able to overcome any type of cognitive barriers that would block their path. *Therefore, we may eventually come to understand perfectly our environment and to understand ourselves, as living creatures, in all the material and spiritual aspects involved.*

"I think, therefore I am". If it is possible to continue the perfect logic of Descartes' famous proposition, my updated statement would be: "I think, therefore I live and it comes natural to try to discover the meaning of my own life". And it is not my intention to raise the implicit doubt reflected by the

original sentence to the degree of philosophical principle or postulate. The main idea of my theory is quite different, namely the *causality*; this is the fundamental principle of our Universe, the foundation of the existence and evolution of all things, at any scale. Let's now consider a few of its implications:

- Our reasoning process, based on knowledge and prior experiences, may be partly transposed as thoughts and conclusions in some particular forms, materialized in messages or documents that can be perceived and understood by others.

- Our thoughts, as processes in which the abstract ideas and imagination meet the memory and logic, are continuously produced by the brain, being the result of many higher functions that are allowed by its very complex structure. These sophisticated functions of analysis, learning and reasoning are integrated in a larger frame, a place where they meet the self and social consciousness, together with our personality and the free will.

- Humans have an innate capacity and a certain level of intelligence (seen as degree of adaptation in generating the optimal response to stimuli) which enables us to analyze all data collected by our sensory system, to take the appropriate actions and to understand the environment, its rules and dynamics. Human response is therefore based on the intrinsic "power" of our own cerebral cortex - a major characteristic that has evolved continuously over time, passing genetically from one generation to another. These responses can be simple and concrete (for example, the self-preservation), but they can also be abstract in nature, as a complex resultant of the past experiences. As this higher level of thinking evolved over the ages (across many generations, once the number of brain neurons and their interconnections have increased), humans became *aware* of their own existence, thereby surpassing a certain threshold and eventually coming to understand their very own nature. Furthermore, our cognitive capacity will continue to develop, both genetically (at a lower speed) and technologically (by using new tools and devices), managing to cover in the near future all the attributes of the natural environment.

Seeing life as a unique sequence of evolutionary processes, based on causality and on the laws of the material nature, we may say that humans, intelligent beings who realize the passage of time, have just begun the particular stage described above - the one in which they will fully understand their existence. But how did we get here, what was the "path" we followed up to this phase? And, if there will be another stage of knowledge, what it will look like? Are we able to formulate now a clear and objective definition of life,

as we have no other similar terms for comparison? Are we able to offer coherent answers to some specific questions related to our existence, such as:

Where do we come from?

Who are we, the humans, in fact?

Are we a unique kind of life-form?

What is the purpose of our existence?

My perspective is very clear on these matters, since only the fields of reason and science are involved. Human evolution has taken place at a slower pace on the road of scientific knowledge. As life appeared on this small planet spontaneously and naturally, as it evolved over millions of years through the adaptation mechanisms imposed by the environment, the answers to those questions are no longer required because the questions themselves have no meaning in this context. The emergence of human life on this planet has only scientific explanations, being determined by many factors: the Earth's position in the Solar system, the chance and randomness, the large extent of time and the capacity of the chemical elements to combine together in multiple forms. And indeed, regarded as such, life is a natural construct and therefore we are not able to find its predefined purpose, a universal reason meant to justify it in some way. Once we realized this, once we came to understand all the mechanisms of evolution that led to intelligence and self-awareness, a certain level of development was reached and therefore we may *choose our own purpose of life*, our destiny as individuals and as a species. Our destiny - being intimately connected with the purpose of life - is not something "written" in the stars, it is simply the sum of all decisions made by each of us.

1. Our Universe

Humans have gazed into the skies for many millennia, being very curious to find out their exact place inside this universe with no apparent limits. At this moment, considering the latest astronomical data, we can establish our position accurately: first, our galaxy is one of the billion galaxies that float within a huge observable space of about 10^{26} m. Second, our planet does not have a special position inside the galaxy, among the other billions of stars and their planets; our Solar system is located on the inner edge of one of the spiral-shaped arms, far away from the center, and this thing had positive implications for life. Our "home address" in the Universe may now be formulated exactly: Planet Earth, Solar System, Orion Arm, Milky Way Galaxy, Local Group, Virgo Cluster, Laniakea Supercluster.

The same thirst for knowledge and exploration was manifested recently in the other direction, namely toward the microscopic world. This complex realm may be extremely fascinating as well, especially if you are looking for the building blocks of life, the living cells. Going deeper, at 10^{-11} m we reach into the quantum world, where atoms - the smallest structures of matter - are all located. At 10^{-15} m we meet the elementary particles, the primary constituents of the raw matter. As said earlier, they do not represent a dimensional limit; my Prime Theory [1] introduced the existence of a "truly elementary" granularity of matter, quite possible to lie below the theoretical limit of 10^{-35} m (the Planck length). In this dimensional vastness, the human size is placed somewhere in the middle, around the value of 1...2m; therefore, as humans, we got the extraordinary opportunity to "look" through our senses in both "directions" as well.

1.1. Matter and space

Here is a series of principles, premises and assumptions related to the spatial and material framework of the *granular physics* [1], i.e. of that primary mechanics that helped me to describe exhaustively the movement, transformation and evolution of all things lying inside our universe.

a) We are living in a *material* Universe that "works" deterministically, obeying a pack of clear laws and rules, at any minute and any scale. This principle shall extend and apply to both universe models, namely the open and closed ones. *Essence*, the primordial material [3] that has been previously introduced by my theory, is the sole constituent of the structured matter and of the spatial

fluid [1]; in its actual granular form, this material features a perpetual state of motion.

b) The granular (subquantum) space is governed by the *simplest* laws of nature, the truly fundamental ones; they are the source of all the other laws acting at higher dimensional levels. Here are a few of these basic laws:

- All granules are moving in a straight line, at the absolute speed C (a superluminal speed).
- All granular collisions are perfectly elastic (conservative).
- Both granular impulse and kinetic energy are constant in time.
- The sum of all granular impulses in the universe is quasi-null.

c) Whatever is the universe's birth model we would consider, a distributed one as in my article [3], an explosion of a singularity (Big Bang) as in modern physics - or even a continual existence, a clear fact holds true: about 14 billion years ago, the granular density of space was much greater than the current one. The three-dimensional geometric framework (that place where the primordial essence has turned into a granular spatial fluid) had a very small radius at the beginning, of about a few million light years. This high granular density of space has some major implications:

- Space undergoes a continuous process of expansion. Considering its initial size specified above, we may easily assume that the spatial granules were contiguous at first (even "compressed") and their primordial elastic energy was totally turned into kinetic energy.
- As the initial granular density was very high, the granular fluxes have spontaneously produced some special elementary particles (quarks), which quickly combined with each other; subsequently, these new formations attracted smaller particles (electrons) and thus the first atoms of Hydrogen and Helium have all been created. There was more *matter* (named as such by the current physics) than *antimatter* in the beginning; as matter and antimatter annihilated immediately in equal amounts, the surplus of matter continued to exist in a steady state, forming in fact the primordial material to fuel the first stars.
- The spontaneous creation of elementary particles has stopped at a given moment, when the granular density of space has surpassed a certain *threshold value* (see for more details *The formation of elementary particles* [7]).

- The granular fluxes (the so-called gravity) have immediately started to concentrate the remaining atoms and thus the first chunks of matter were formed; these chunks have rapidly increased in size and mass, gravitationally accreting more gases from around. The directional granular fluxes, as a "force" that determines the shape and stability of all elementary particles, are the basic constituent of any other known field; therefore, the granular fluxes are being indirectly responsible for all the various connections between particles and atoms.

d) Any material body, any field, the Universe itself have formed in processes that obey laws of deterministic nature, expressing the intrinsic causality of all movements and transformations. The "action" of these laws was constant (as it was already stated in the first paragraph); just the absolute value of their parameters has changed over time. As all of these series of changes were *natural*, as some specific laws of physics may apply since the universe's birth, the existence of a creator or of any other form of divinity is no longer required. Due to an inherent nonuniformity of the original granular distribution, certain unevenness was also present in the distribution of matter at larger scales, adding a supplemental, macroscopic randomness to all of these processes.

1.2. Time

Time, as origin, is a derived physical quantity; it results from a few special characteristics of the granular structures that made up the matter. The granular material and its fluxes have, among other specific parameters, a *constant absolute speed*; this thing will affect the behavior of all elementary particles and of the structures they formed. Consequently, any movement, vibration, rotation or oscillation, or any global movement these structures would have at a certain moment, it will be subject to some speed and acceleration constraints. This internal "pace" of matter (also of its connecting fields) will be reflected and averaged at macroscopic level, dictating a certain speed for any movement or a certain time interval for any event [15]. Now is very clear why the laws of relativity [4, 6], applied in the broader context of the *Theory of the Absolute* ([2], Chapter 3), justify the variable rate of the passage of time for a generic material body moving at different absolute speeds (see my related articles [9] and [12], *Mass-energy equivalence* and *Relativity*). An absolute time, having a maximum flowing rate value, is a specific constant of our universe at a given moment; this kind of time depends on space's intrinsic characteristics - practically on the absolute granular speed and the current granular density. It seems natural from this perspective to consider *space* (the geometric framework) and the *granular matter* (fluxes) as being fundamental

physical quantities. They form together a continuum, a special fluid that may be even called space-matter; however, we will keep using the classic term *space* for the sake of simplicity. The inner "rhythm" of the structured matter is therefore caused by the properties of space and by the absolute velocity at which a material body moves. The unevenness of the local granular fluxes, a phenomenon known as gravity, also affects time, slowing down its rate by the asymmetry induced to any interaction between the components of matter.

1.3. Energy

As described in my first book (Prime Theory [1]), the granular matter has self-distributed uniformly within the three-dimensional space and created in this way a granular fluid, i.e. a continuous medium with special properties. A large part of this primordial matter shortly aggregates into various elementary particles, which have formed subsequently the atoms of the ordinary matter. Atoms joined together later and formed by accretion processes some distinct cosmic structures, such as gaseous clouds and stars. The gravitational aggregation of these raw materials (the H/He atoms) has thus created many billions of stars - large nuclear fusion reactors where immense temperatures and pressures are forcing atoms to combine into heavier chemical elements, up to and including the *Iron*.

If seen together, the accretion and fusion processes represent in fact a re-concentration of a part of the universe's primordial energy - which is, as it was already stated, only of mechanical nature. It is all about the energy of the granular spatial fluid and about the material structures it formed. Thus, small stellar volumes can store important masses, i.e. very large amounts of energy. The superdense stars may have, after several million or billion years of fuel combustion, totally different destinies. Depending on their mass, some of them may explode (go supernovas) and others will eventually turn into black holes. In case of star explosions, huge energies are concentrated and transferred within very short time intervals, and this makes the more powerful fusion reactions to produce even heavier chemical elements. All these new elements, simple or composite, are scattered throughout the space and they are forming this way the raw material for other generations of stars, for their planets and moons. The accretion process, which is mostly due to gravitation, may clamp together these new materials (from gaseous clouds and cosmic dust) selectively, depending on their state and atomic mass. This will produce a certain separation of that raw matter into some different types of atoms and molecules; anyway, in the end, large quantities of chemical substances may be located around the stellar cores. Subsequently, the newly born cosmic bodies

will revolve on quasi-circular orbits, colliding and blending these chemicals (previously segregated over mass) into diverse and complex mixtures. Many of these phenomena occurred when matter still had enormous temperatures and pressures, causing special chemical reactions and producing complex substances, alloys and compounds that could not be formed otherwise. The particular dynamics of these stars and protoplanets is very important to us; this is in fact the way, sometimes slowly, sometimes violently, the most complex molecular structures, the indispensable ingredients of Life have all been built.

We have seen how the energy of the spatial fluid concentrates and transforms simple chemical elements into heavier elements during the nuclear fusion reactions in every stellar core, while releasing a part of this energy in the form of electromagnetic radiation. The photons emitted in this process cover almost the entire electromagnetic spectrum, but many of them are in the visible region. This thing is also very important, as over the lifetime of a star, an important stream of energy is sent to all its planets, warming them and therefore catalyzing the chemical reactions on their surfaces.

1.4. Complexity and diversity

The mechanical energy (that energy possessed by the universe's granular matter since the beginning) is constant over time, but it can take different forms. Ordinary matter, as structures of quantum-scale elementary particles, was made at first of the simplest chemical elements (H and He); it will accumulate more complex elements later, once the fusion reactions were ignited in stars. Everything was controlled by a single force, the *gravitational* one, whose intensity varied over time; its action was very simple, but the creative effects on matter were extraordinary. Its action explains why, almost paradoxically if we consider the entropy and the second law of thermodynamics, some increasingly complex material structures have been created naturally. The structures of matter - particles, atoms and cosmic bodies (representing in fact concentrations of the same primordial granular energy) have continuously passed through various transformations, but they all eventually reached relatively stationary and predictable states. Those gaseous clouds and the cosmic dust resulting from supernovae allowed the emergence of other generations of stars and of some new formations, the protoplanets, which clearly have "benefited" in their entire future evolution from the multitude of chemical elements generated in the nuclear reactions described above.

The large number of new chemical elements allowed even more complex structures to form. Different energy values and configurations of the atoms, given by the discrete energy levels of the electrons in their orbitals, made possible several types of chemical bonds. These are the physical premises for the *complex molecules* to appear (structures containing more types of chemical elements, each type having some new physico-chemical properties). Anyway, the laws of quantum mechanics set the upper limit of *complexity* (atomic mass) for stable elements, but the *diversity* resulted from combining more than 118 known chemical elements is practically infinite. We have to mention here the *Carbon* and its special ability to create chains (called concatenation); of all elements, it can form this way the largest number of possible combinations.

Gravity, as it was already stated, is the force that concentrates matter (increases the density of stored energy), allowing the complexity of all things to increase over time. And, in the end, this is the simple reason why the first cells, the first living organisms emerged spontaneously. Life, by continuous adaptation to the environment, has also evolved across millions of years and increased the complexity of all living organisms (Figure 1). However, if we anticipate a little and define the particular force that acted in this case, we may mention the "need" of any being to adapt to its surroundings and to the influence of all natural factors, including the mass-extinction events. In case of ordinary matter, the creation of stable heavier elements is no longer possible, and therefore this kind of increase in complexity has stopped; however, in case of normal life (evolving with no artificial interventions), the increase in complexity will continue naturally. On the other hand, the intelligent life-forms - humans for now - can produce huge complexity leaps when they use their research, innovation and technology achievements.

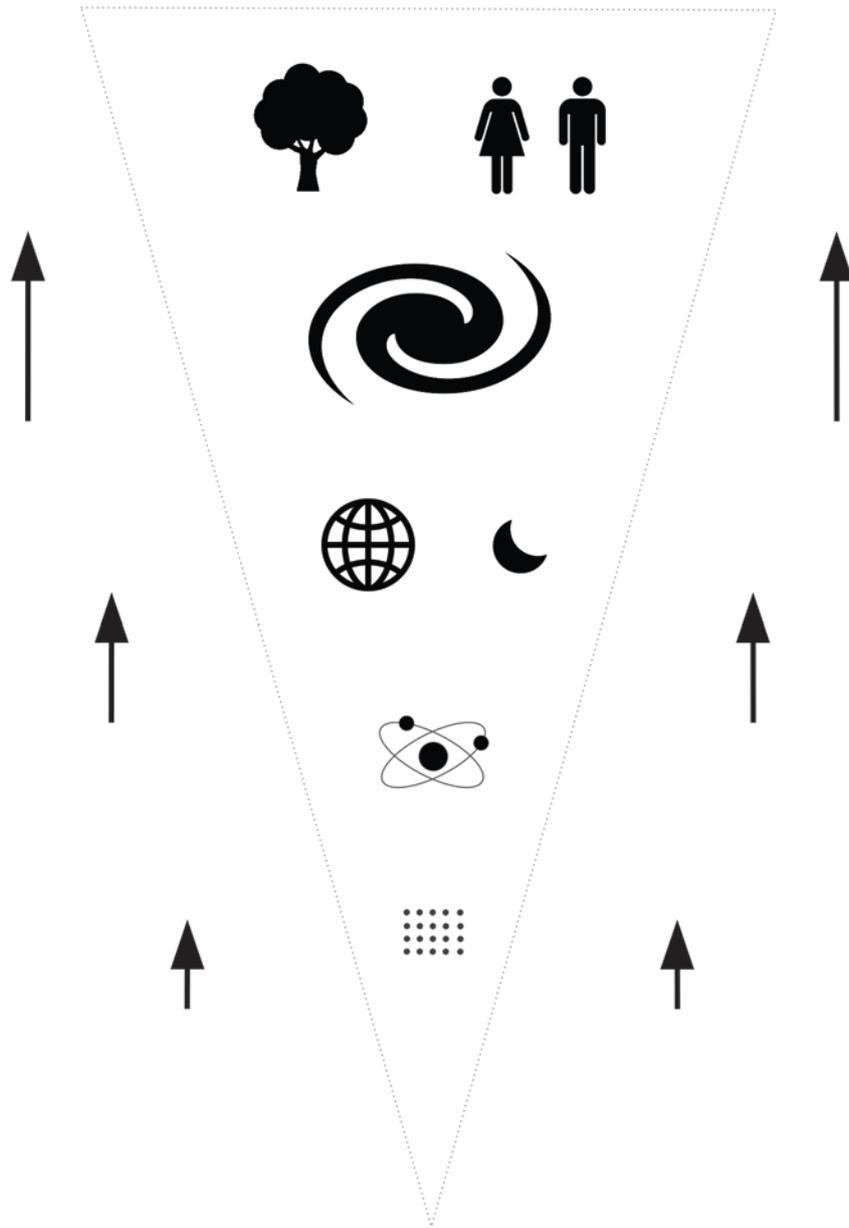


Figure 1 - *Complexity of the material structures*

1.5. Consequences

My mechanistic model of universe, which is entirely based on the laws of granular dynamics, is completely causal and deterministic regardless of the scale it would be seen and analyzed. It fully describes all the mechanisms of reality and offers coherent explanations on all the events that have led to the actual cosmic landscape; therefore, the lack of fundamental information on the fabric of reality is now surmounted by the new characteristics and rules of the granular matter and space, allowing us to build the theoretical foundation of any possible material entity. The rate of macroscopic time, for example, is established at granular level; there is also the source of the absolute and relative seen in the motion of any particle or material body, as it was fully described in my previous book [2]. All ordinary matter has therefore a common origin, and so the same features - *regardless of its state or position in the universe*. The granular flows will bind and shape matter continuously, concentrating in fact that primordial energy and converting it in various ways.

Once we understand this "given" of nature at both quantum and sub-quantum scales, the formation and evolution of all cosmic bodies will seem absolutely natural as the *causality* is truly involved; in fact, the existence of any material structure, whatever complex, may be explained using this causality, a bit of randomness and a certain amount of time. The really huge number of elementary components (particles and atoms), the really vast space, the really long time and the nonlinear interactions can naturally generate the most improbable structures and configurations of things. The energy of several fields may concentrate and connect many particles and atoms in larger assemblies that could remain stable under certain conditions. Therefore, some entities with many new properties could emerge in a *spontaneous and natural* way. If all these processes are seen globally, a new and important notion may be associated to our universe's dynamics: *self-organization*. In this way, the granular dynamics determines and makes possible, at all scales, the natural emergence and transformation of the complex objects through processes of variable dynamics - while the total energy involved is conserved over time.

The primary granular mechanisms, being the basis of the emergence, interaction, motion and transformation of the structured matter, generate observational uncertainty only at microscopic level. If we could know the values of all state variables that describe an isolated system at a given time (and if space would be uniform), its future evolution would become completely predictable. Seen as unitary macroscopic system, its global state may be expressed as a "summation" of all states variables. Therefore, the properties of the macroscopic system are in fact consequences of the primary mechanisms

Thank You for previewing this eBook

You can read the full version of this eBook in different formats:

- HTML (Free /Available to everyone)
- PDF / TXT (Available to V.I.P. members. Free Standard members can access up to 5 PDF/TXT eBooks per month each month)
- Epub & Mobipocket (Exclusive to V.I.P. members)

To download this full book, simply select the format you desire below

