

The Vital Needs Theory

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INTRODUCTION

A study on all the residents aged 16-64 living in Sweden with registered schizophrenia treatment¹ shows that life expectancy is 15 to 20 years shorter when compared with the general population. On the other hand, when comparing the schizophrenic population that does not use antipsychotic drugs, life expectancy is 50 years shorter.

Same results are published by the World Health Organization². Those

¹ *Antipsychotics and mortality in a nationwide cohort of 29,823 patients with schizophrenia* www.sciencedirect.com/science/article/pii/S0920996417307624

² https://www.who.int/mental_health/management/info_sheet.pdf?ua=1

who use psychiatric drugs show a reduction in life expectancy. The causes range from cardiovascular diseases, to atherosclerosis, hypertension, strokes, higher rates of Type II diabetes, respiratory diseases, and infections such as HIV, hepatitis, and tuberculosis.

An 11-year follow-up study of mortality which used nationwide registers, in Finland, and compared 66,881 patients with schizophrenia with the total population (5.2 million people) found that patients using second generation antipsychotic drugs have a life expectancy shorter by 25 years.³

³ <https://pubmed.ncbi.nlm.nih.gov/19595447/>

I have always been skeptical of anyone that promises miraculous solutions since, in my personal experience, the way out from suffering requires deep transformations. However, I was following a dear friend with schizophrenia, aged 60, who had been on antipsychotic drugs for more than 25 years, and was on the point of being forced on a wheel chair. I asked her psychiatrist if he could reduce the antipsychotic drug, and she soon recovered the ability to walk. Six months later she was again on the point of being forced on a wheel chair and her psychiatrist reduced another drug by half. My friend recovered a

good ability to walk, but her mood became unstable and negative, she was feeling desperate. At this point something totally unexpected happened. I had received an extremely aggressive old dog. He snarled and attacked my wife Antonella. The vet had prescribed expensive and ineffective remedies, and we were on the point to take him to the kennel when Antonella found that similar problems had been solved by using Bach's flower remedies. Incidentally, 25 years earlier I had developed a questionnaire and a software aimed at identifying Bach's flowers remedies. As soon as I gave to our dog the first drops of the remedy,

diluted in his water, a radical change took place. He asked Antonella for cuddles and started behaving normally. I was not able to explain this change as a placebo effect. I improved the questionnaire, and rewrote the software using a more powerful algorithm. A few days later, my dear friend with schizophrenia told me that she was feeling desperate. Not knowing how to help her, I used the new questionnaire, I described her as faithfully as possible, and I processed the answers with the new software. As soon as she took the first drops of the remedy, she experienced a deep relaxation, and a great inner calm, as she had never experienced

before in her life. For the first time in 25 years her hallucinations had vanished. I was stunned by this immediate effect.⁴ However, her desperation changed into loneliness, coupled with anxiety and depression and feelings of being useless.

The Vital Needs Theory shows that we have 3 main needs: material needs, needs for love and needs for meaning. Since we can die when material needs are not met (hunger and thirst) and we can die when our need for meaning is not met (depression and suicide) or when our need for love is not met (unbearable levels of anxiety and anguish), these needs are named *vital*.

⁴ www.sintropia.it/flowers

The Vital Needs Theory provides a novel explanation of depression and anxiety and a new perspective that can be used to develop effective policies and treatments.

CAUSALITY AND VITAL NEEDS

When we extend our notion of causality to retrocausality, the Vital Needs Theory takes form. This can be understood examining the energy equation. We all associate the energy-mass equation ($E=mc^2$) to Einstein's 1905 theory of special relativity; however it was first published by Oliver Heaviside in 1890⁵, then by Henri Poincaré in 1900⁶ and by

⁵Auffray J.P., *Dual origin of $E=mc^2$* :
arxiv.org/pdf/physics/0608289.pdf

⁶Poincaré H., *Arch. néerland. sci.* 2, 5, 252-278 (1900).

Olinto De Pretto in 1904⁷. Olinto De Pretto presented the energy-mass equation to the Veneto Institute of Sciences in an essay with a preface by the astronomer and senator Giovanni Schiaparelli. It seems that this equation arrived at Einstein through his father Hermann who was responsible for the lighting systems in Verona and that, as director of the “*Privileged Electrical Enterprise Einstein*”, had frequent contacts with the Fonderia De Pretto that made the turbines for the production of electricity.

But the energy-mass equation has a problem: it cannot be generalized

⁷De Pretto O., *Lettere ed Arti*, LXIII, II, 439-500 (1904), Reale Istituto Veneto di Scienze.

since it does not consider speed, which is also a form of energy. In 1905 Einstein solved the problem by adding the momentum (p), obtaining the energy momentum mass equation:

$$E^2 = m^2 c^4 + p^2 c^2$$

Energy is squared (E^2) and in the momentum (p) there is time. A square root must be used and consequently there are two solutions for energy: positive-time energy and negative-time energy.

Negative time energy implies retrocausality: the future that retroacts on the past. This was considered impossible! To solve this paradox, Einstein suggested to remove the momentum, since the speed of

physical bodies is practically nil compared to the speed of light. When the momentum is equal to zero ($p=0$), the equation returns to $E=mc^2$ and only forward-in-time causality exists.

Yet, in 1924 the spin of the electrons was discovered, an angular momentum, a rotation of the electron on itself at a speed close to that of light. Consequently, in quantum mechanics the momentum of the spin cannot be considered equal to zero and the extended energy-momentum-mass equation of special relativity is required, with its uncomfortable retrocausal solution. The first equation that combined special relativity and quantum mechanics was

formulated in 1926 by Oskar Klein and Walter Gordon. This equation has a retrocausal (advanced waves) and a causal (delayed waves) solution. The second equation, formulated in 1928 by Paul Dirac, has two solutions: electrons and neg-electrons (now named positrons) that propagate backwards-in-time. Positrons were experimentally observed in 1932 by Carl Andersen.

Nevertheless, Heisenberg and Bohr, both with key positions in the institutions and academic world, declared that only causality could be taken into consideration. From that moment, anyone who ventures into the study of retrocausality is

discredited, expelled from the academia, and loses the possibility to publish and talk at conferences.

In 1941 Luigi Fantappiè, one of the foremost mathematicians, found himself struggling with the dual-time energy solution. Fantappiè could not accept that physicists had arbitrarily rejected half of the solutions of the fundamental equations of the universe. Listing the properties of the causal and retrocausal solutions Fantappiè discovered that the causal solution is governed by the law of *entropy* (from Greek: *en*=diverging and *tropos*=tendency), while the retrocausal solution is governed by a symmetrical law that Fantappiè

named *syntropy* (*syn*=converging and *tropos*=tendency). With causality energy diverges, and heat dissipates, this is described by the second law of thermodynamics, also known as the law of thermal death and entropy. On the contrary, retrocausality implies converging energy, increase in temperatures, differentiation, complexity and the formation of structures and organizations. These are the mysterious properties of life and in 1942 Fantappiè published a booklet titled “*The Unitary Theory of the Physical and Biological World*” in which he suggests that the physical-material world is governed by the law of entropy and causality, whereas the

biological world is governed by the law of syntropy and retrocausality.

Negative time energy is invisible since we cannot see the future. The energy-momentum-mass equation suggests the existence of a visible reality (causal and entropic) and an invisible reality (retrocausal and syntropic). An example is provided by gravity. We continually experience gravity, but we cannot see it. According to the energy-momentum-mass equation, gravity is a force that diverges backwards-in-time, therefore for us moving forward in time it is a converging force. It is invisible because it propagates from the future.

The first law of thermodynamics states that energy is a unity that cannot be created or destroyed, but only transformed, and the energy-momentum-mass equation shows that this unity is made of two components: a visible and entropic one and an invisible syntropic one.

We can write that energy is equal to the sum of entropy and syntropy: $1 = Entropy + Syntropy$ and that syntropy is the complement of entropy: $Syntropy = 1 - Entropy$.

This can be represented using a seesaw with life in-between the visible and the invisible, in-between entropy and syntropy, causality and retrocausality.

However, Fantappiè failed to provide experimental evidence to this theory, since the experimental method requires the manipulation of causes before observing their effects. Lately, Random Event Generators (REG) allow to solve this problem, designing experiments in which causes are manipulated in the future and their effects are studied in the present.

The first experimental study dates to 1997, it was performed by Dean Radin of the ION (Institute of Noetic Sciences)⁸. Radin measured heart rate, skin conductance, and blood pressure

⁸ Radin D.I. (1997), *Unconscious perception of future emotions: An experiment in presentiment*, Journal of Scientific Exploration, 11(2): 163-180.

in subjects who were shown a blank screen for 5 seconds followed by images that, based on a Random Event Generator, could be calm or emotional. Radin observed a significant arousal (activation) of the parameters of the autonomic nervous system before the presentation of emotional images. In 2003, Spottiswoode and May, of the Cognitive Science Laboratory, replicated these experiments carrying out a series of controls to study possible artifacts and alternative explanations. Results confirmed those already obtained by Radin, of the activation of the parameters of the autonomic nervous system before the

presentation of emotional stimuli⁹. Similar results have been obtained by other authors, always using the parameters of the autonomic nervous system, for example: McCratly, Atkinson and Bradely¹⁰, Radin and Schlitz¹¹ and May, Paulinyi and Vassy.¹²

Daryl Bem, a psychologist, and professor at Cornell University,

⁹ Spottiswoode P (2003) and May E, *Skin Conductance Prestimulus Response: Analyses, Artifacts and a Pilot Study*, Journal of Scientific Exploration, 2003, 17(4): 617-641.

¹⁰ McCratly R (2004), Atkinson M and Bradely RT, *Electrophysiological Evidence of Intuition: Part 1*, Journal of Alternative and Complementary Medicine; 2004, 10(1): 133-143.

¹¹ Radin DI (2005) and Schlitz MJ, *Gut feelings, intuition, and emotions: An exploratory study*, Journal of Alternative and Complementary Medicine, 2005, 11(4): 85-91.

¹² May EC (2005), Paulinyi T and Vassy Z, *Anomalous Anticipatory Skin Conductance Response to Acoustic Stimuli: Experimental Results and Speculation about a Mechanism*, The Journal of Alternative and Complementary Medicine. August 2005, 11(4): 695-702.

describes nine classical experiments in psychology¹³, conducted in a time-reverse mode to obtain the effects before rather than after the stimulus. For example, in a priming experiment, the subject is asked to judge whether the image is positive (pleasant) or negative (unpleasant) by pressing a button as quickly as possible. The reaction time is recorded. Just before the positive or negative image a word is presented briefly, below the threshold (at a speed which is not perceptibly at the conscious level). This word is called “*prime*” and it has been observed that subjects tend to

¹³ Bem D (2011), *Feeling the future: Experimental evidence for anomalous retroactive influences on cognition and affect*, Journal of Personality and Social Psychology, Jan 31, 2011.

respond more quickly when the former is congruent with the image that follows (whether it is a positive image or a negative image), while reactions become longer when they are not congruent (for example, the word is positive while the image is negative). In *retro-priming* experiments, the usual stimulus procedure occurs later, rather than before the subject response, based on the hypothesis that this “inverse” procedure can influence retrocausally the responses. Experiments were conducted on more than 1,000 subjects, and they showed retrocausal effects with statistical significance of $p=1,34/10^{11}$ (one possibility among

134,000,000,000 to be mistaken when stating the existence of the retrocausal effect).

Fantappiè's theory of syntropy explains these results in the following way: "*Since life nourishes on syntropy, and syntropy flows backwards-in-time, the parameters of the autonomic nervous system that supports vital functions must react in advance to future stimuli.*" This general hypothesis can be translated in the following working hypothesis: "*Heart rate and skin conductance should react in advance to future stimuli.*"

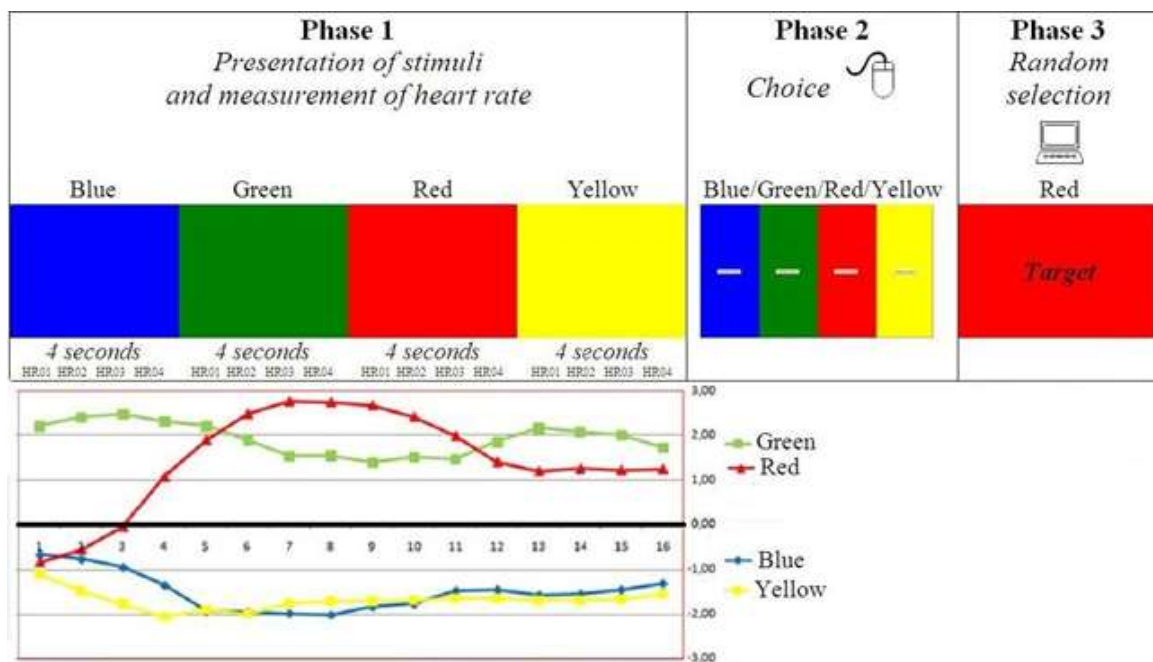
As part of her PhD thesis in cognitive psychology, Antonella Vannini conducted four experiments

using heart rate measurements in order to study the retrocausal effect.

Each experimental trial was divided into 3 phases:

- *Phase 1, presentation*, in which 4 colors are shown one after the other on the computer screen for exactly 4 seconds. The heart rate is measured every second.
- *Phase 2, choice*, in which an image with 4 colored bars is shown to allow the subject to guess the target color.
- *Phase 3, target*, in which the computer randomly selects the target color and shows it full screen.

The hypothesis was that in the presence of a retrocausal effect, differences should be observed between heart rates measured in phase 1 in correlation with the target color of phase 3.



Effect seen in one subject

When the retrocausal effect is absent, the differences of the mean values of the heart rates tend to zero

and the lines vary around the baseline (the 0.00 line), whereas the stronger is the retrocausal effect and the more the lines separate from the baseline. A detailed description of this experiment is available in the books “*Retrocausality: experiments and theory*”¹⁴, “*A syntropic model of consciousness*”¹⁵ and “*The methodology of concomitant variations*”¹⁶

These experiments show that the autonomic nervous system plays a key role in the acquisition of syntropy.

¹⁴ Vannini, A. and Di Corpo, U. *Retrocausality: experiments and theory*, ISBN: 9781520275956, www.amazon.com/dp/1520275951

¹⁵ Vannini, A., *A Syntropic model of consciousness*, ISBN: 9781520834412, www.amazon.com/dp/1520834411

¹⁶ Di Corpo, U. and Vannini, A., *The methodology of concomitant variations*, ISBN: 9781520326634, <https://www.amazon.com/dp/1520326637>

Since syntropy is converging energy, we feel it as warmth in the thorax area coupled with wellbeing produced by the nourishment of the vital functions of our body. On the contrary when the acquisition of syntropy is not sufficient to nourish our vital functions we experience void, chill in the thorax area coupled with distress and pain together with feelings of death, usually named anguish and anxiety. When the flow of syntropy stops completely our vital functions halt and we die. This explains why life expectancy of people using psychiatric drugs is shorter, since suffering is diminished by reducing the flow of syntropy.

To better understand the Vital Needs Theory, it is useful to see how time flows. We are used to the fact that causes always precede their effects. But the energy-momentum-mass equation implies three types of time:

- *Causal time*: when systems diverge, as it is the case of our expanding universe, entropy dominates, causes always precede their effects, time flows forward, from the past to the future, and retrocausal effects are impossible, such as light waves that propagate backwards in time or radio signals that are received before being transmitted.

- *Retrocausal time*: when systems converge, as it is the case with black holes, retrocausality dominates, effects always precede causes, time flows backwards, from the future to the past, and no forward effects are possible. Therefore, no light is emitted from black holes.
- *Supercausal time*: when diverging and converging forces are balanced, as it is the case of atoms and quantum mechanics, causality and retrocausality coexist and time is unitary.

This classification recalls the ancient Greek division into: *Kronos*, *Kairos* and *Aion*.

Where:

- *Kronos* describes the sequential causal time, which is familiar to us, made of absolute moments that flow from the past to the future.
- *Kairos* describes the retrocausal time. According to Pythagoras, kairos is at the basis of intuitions, of the ability to feel the future and to choose the most advantageous options.
- *Aion* describes the supercausal time, in which past, present and future coexist. The time of quantum mechanics, of the subatomic world.

Syntropy and entropy coexist at the quantum level, the Aion level, and that life originates at this level. This consideration provides the first tile to understand: *How syntropy flows from the quantum level of matter to the macroscopic level of our physical reality, transforming inorganic matter into organic matter.*

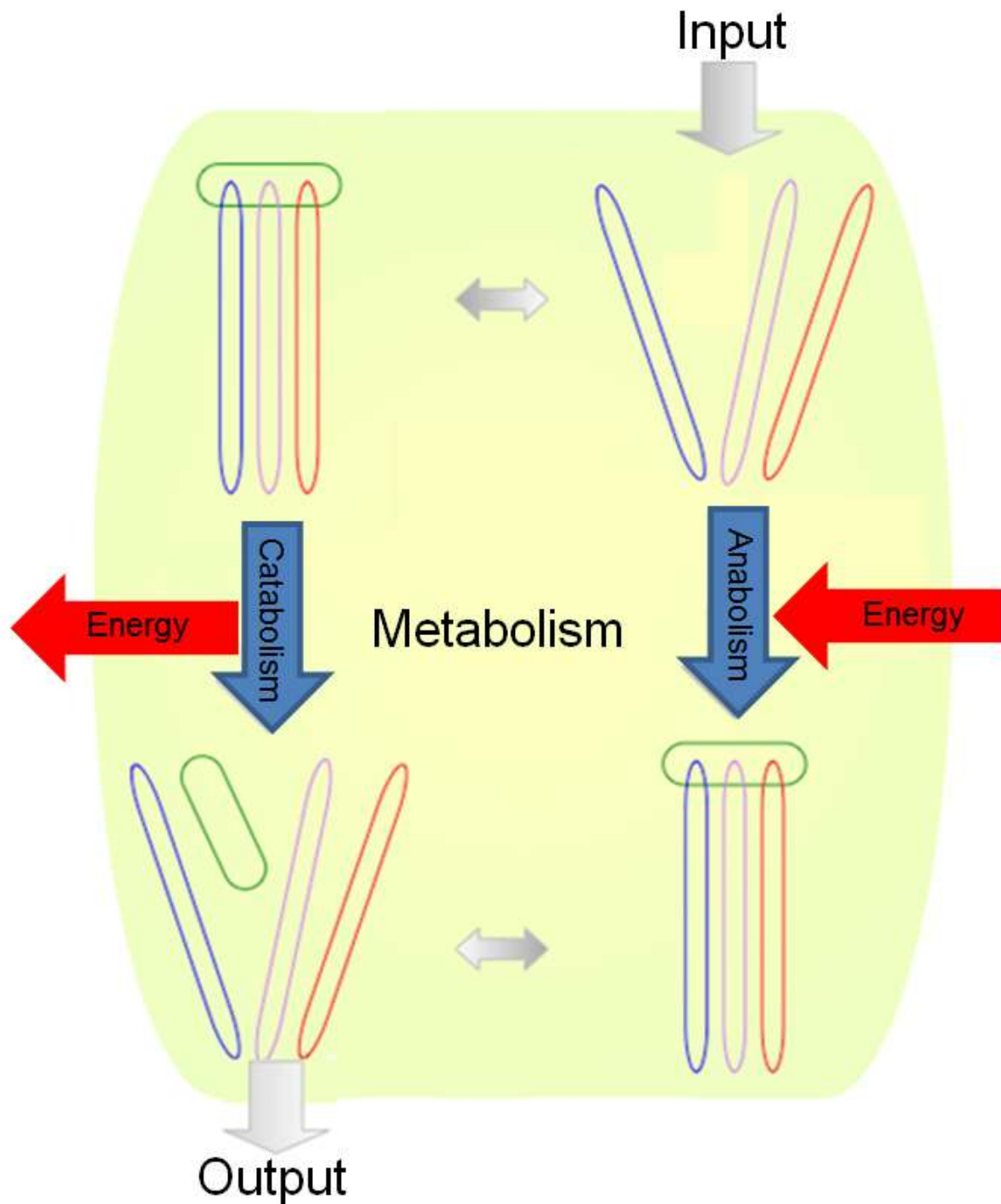
In 1925 the physicist Wolfgang Pauli (1900-1958) discovered the hydrogen bridge (or hydrogen bond) in water molecules. The hydrogen atoms of water molecules are in an intermediate position between the sub-atomic (quantum) and the molecular (macrocosm) levels and provide a bridge that allows syntropy (cohesive

forces) to flow from the micro to the macro. The hydrogen bond increases the cohesive forces (syntropy) and makes water different from all other liquids, with cohesive forces ten times more powerful than the van der Waals forces that hold the other liquids together. Because of these remarkable cohesive forces, water exhibits abnormal properties. For example, when it freezes it expands, it becomes less dense and floats; on the contrary, other liquids when they freeze become denser and heavier and sink. The singularity of water lies in its attractive and cohesive properties (typical of syntropy). The hydrogen bond allows syntropy to flow from

the subatomic level to the level of the macrocosm and makes water essential for life. Ultimately, water is the life-giving lymph, which provides syntropy (i.e. life). According to syntropy water is an essential element for the manifestation of any biological structure. Consequently, the first Vital Need is the availability of water. Without water life cannot exist.

Syntropy concentrates energy in smaller and smaller spaces, increasing order and organization. But, since concentration cannot increase indefinitely, at a certain point, the system releases energy and matter, activating the opposite process of entropy. In this way an exchange of

energy and matter with the environment takes place. Where *catabolic* processes are entropic and transform higher level structures into lower-level structures and *anabolic* processes are syntropic and transform simple structures into complex structures. A game of construction and destruction that allows life to evolve.



This game between entropy and syntropy leads to continually exchanges matter and energy and requires a lymph. Water is the basic

lymph for all living systems and in ancient Rome it was named *Linfā*, the divinity of fresh water that makes nutrients available. In botany the lymph is a liquid, which consists almost all of water. In human societies this function is provided by money. Money is the lymph that is used for exchanges. Consequently, anyone who controls money also controls the vital energy of the people and nations.

- *Vital Needs*

Water provides syntropy to life. Without water life is unable to counteract the destructive effects of

entropy. But the flow of syntropy stops when water freezes. Therefore, heat is so important.

When needs are not met, alarm bells are activated, such as thirst for the need for water, hunger for food and chill for the need for heat.

This first group of vital needs is commonly known as ***material needs***. To combat the dissipative effects of entropy, living systems must acquire syntropy through water, energy and food, they must protect themselves from the dissipative effects of entropy and eliminate the remains of the destruction of structures by entropy. These conditions include shelter, clothing, waste disposal and hygiene.

The partial satisfaction of material needs is signaled by hunger, thirst, and various forms of suffering. The total dissatisfaction leads to death.

But we also have invisible vital needs!!!

The second vital need is commonly named the ***need for love***. Responding to material needs does not prevent entropy from destroying life. For example, cells die and must be replaced. To repair the damage caused by entropy, we must draw on the regenerative properties of syntropy which allow to create order, reconstruct structures, and increase the levels of organization. The autonomic nervous system, which

supports vital functions, acquires syntropy. Since syntropy acts as an absorber and energy concentrator, the intake of syntropy is felt in the thoracic area of the autonomic nervous system, in the form of warmth and well-being that we usually indicate as love; the lack of syntropy is perceived as emptiness and pain in the thoracic area, usually referred to as anxiety. In short, the need to acquire syntropy is felt as a need for love. When this need is partially satisfied there is suffering in the form of emptiness and pain. When this need is totally unsatisfied, living systems are not able to sustain the regenerative and vital processes and entropy takes

over, bringing the system to death.

The third vital need is commonly called the ***need for meaning***.

To satisfy material needs we produce maps of the environment. These maps give rise to the identity conflict.

Entropy has inflated the physical universe towards infinity, while syntropy concentrates consciousness in extremely limited spaces. As a result, when we compare ourselves to the infinity of the universe, we discover that we are equal to zero. On the one hand we feel we exist; on the other hand, we are aware of being equal to zero. These two opposing considerations “*to be or not to be*” cannot coexist. The identity conflict is

characterized by lack of meaning, lack of energy, existential crisis, and depression, generally perceived in the form of tensions in the head accompanied by anxiety. Being equal to zero is equivalent to death, which is incompatible with our feeling of existing. From this arises a vital need for meaning.

- The Theorem of Love

The identity conflict can be represented with the following equation:

$$\frac{I}{\textit{Outside World}} = 0$$

When I compare myself to the outside world, I am equal to zero

This equation shows that there is only one solution to the conflict between being and not being. This solution is here named *The Theorem of Love*:

$$\frac{I \times \cancel{\textit{Outside World}}}{\cancel{\textit{Outside World}}} = I$$

*When I compare myself to the outside world
and I am united to it through love, I am equal to myself*

The *Theorem of Love* says that only when our inner world unites with the outside world through love, we overcome the identity conflict and we experience the meaning of life.

It also explains why anxiety and depression are perfectly correlated: when cohesion (love) diminishes anxiety increases and the identity conflict increase causing depression. Depression and anxiety have two different etiologies, but they are always linked together by the *Theorem of Love*. The *Theorem of Love* posits that depression and anxiety must correlate in a nearly perfect way.¹⁷

The *Theorem of Love* provides the solution to suffering. It says that we must rely on the heart (the solar plexus) and use it intentionally to go towards love.

¹⁷ Di Corpo U and Vannini A (2014) The Methodology of Concomitant Variations:

<https://www.amazon.com/dp/B00MOBIGWC>

DEPRESSION AND THE MEANING OF LIFE

We are usually unaware of our vital need for meaning. We see it in others, but we don't see the strategies that we are using. Depression is the alarm bell that tells that this need is unmet, but instead of using this signal to be guided to the appropriate solution, we usually try to suffocate it. The main strategies used to respond to depression are:

- expand our Ego.
- reduce the outside world.
- cancel the outside world.

Strategy # 1: Expand our Ego

When we expand our Ego, for example thanks to the positive judgments of others, depression vanishes for a few seconds. This brief relief leads to want more approval. We try to satisfy others' expectations and we use masks that isolate us, increase our loneliness and the identity conflict and depression. The more we seek the approval of others, the more we use masks, and the more

we use masks the more we feel lonely and the identity conflict between “*being and not to being*” increases. The approval of others requires “others”, causing the fear of being rejected.

In a famous experiment, Stanley Milgram¹⁸ studied to what extent people obey orders which are clearly wrong. Milgram used volunteers divided into pairs, the first volunteer was asked to play the role of the teacher, while the second volunteer was the student. The student was taken to a nearby room and seated on a kind of electric chair, then entrusted with the task of memorizing a list of words. The teacher was given the task

¹⁸Milgram S. (1974), *Obedience to Authority: An Experimental View*, Harpercollins, New York, 1974.

of listening to the student and of sending electric shocks when he was wrong.

The teacher used a switch. At the first error he was asked to send a shock of 15 volts, then 30 volts for the second error, 45 volts for the third error and so on, with regular successions up to 450 volts. Every six increases in the intensity of the shock a voice warned: *weak shock, medium shock, strong shock, dangerous shock*.

Milgram explained to the teacher that the intensity of the shock had to be increased with each error. When the list was long and difficult, the answers were often wrong, and the teacher was asked to send stronger

and stronger shocks. At 75 volts the students started complaining, at 150 volts they asked to interrupt the experiment, but Milgram ordered to continue. At 180 volts, the students started screaming because they couldn't stand the pain anymore. If the teacher showed any hesitation, Milgram ordered to continue, even when the students, at 300 volts, shouted desperately to be freed.

The purpose of the experiment was to study to what extent the teacher was willing to follow orders. The teacher did not know that the student was a collaborator of Milgram and that he received no electric shocks. The student was in another room, his

prayers and screams were not real, but they were recorded.

A group of psychiatrists estimated in advance that most teachers would stop at 150 volts, when the students started shouting for help. The results of the experiment, however, were surprisingly different: over 80% of the teachers continued the experiment even after 150 volts, and 62% continued up to 450 volts.

However, it was not easy to obey. Many teachers began to sweat but were ordered to continue to increase the intensity of the shocks. Disobedience was easier when Milgram was not present and when orders were given by telephone, from

a nearby room. Many teachers claimed to execute orders, but the students received weaker shocks than they should have. On the other hand, teachers obeyed more easily if the victims were far away; 30% agreed to force students to hold hands on a metal plate that was supposed to transmit very strong shocks, but if the victim was in another room and the protest was limited to kicking the wall, the percentage of obedience exceeded 60%.

Results showed that the “need for approval” was so strong that teachers were unable to disobey orders which were clearly wrong.

Another way to expand our Ego is the equivalence “*I am what I have*”. Examples are money, popularity, power and beauty. But, even when we expand our Ego to the highest limits, comparing ourselves to the infinity of the physical reality we are equal to zero. We can become the emperors of the planet, but we feel depressed and meaningless. We can decide the life or death of people, but we continue to feel equal to zero.

The brief relief from depression turns these strategies into needs. Everything we use to increase our Ego, when it provides a brief relief from depression, becomes vital and we reiterate it. If we receive value

through money, we want more money, if we receive it through beauty, we want more beauty, if through power, we will seek more power.

Power, wealth, popularity, and beauty are based on the equivalence: “*I am what I have*”.

Erich Fromm in the book “*To Have or to Be?*” writes:

“So, if I am what I have, and what I have is lost, who am I? Nothing but a pathetic witness to a wrong lifestyle. Because I can lose what I have I live constantly in the fear of being deprived of what I own. I am afraid of thieves, of economic crises, I fear

revolutions, diseases, death, love, freedom, changes and the unknown.”¹⁹

Strategy # 2: reduce the outside world

When we try to solve the identity conflict by limiting the external world to a group, being accepted by the group becomes vital for us. The pressure of the group can become so strong that we are willing to do anything to be part of it.

One famous example dates to November 18th, 1978, when 918 Americans decided to die in the Peoples Temple, led by Jim Jones.

¹⁹ Fromm E (1974), *To Have or to Be?*
www.amazon.com/dp/B00BBPWBAK

The Peoples Temple was founded in Indianapolis in the mid-1950s. After criticisms of its ideas, the Temple moved to Redwood Valley, California, and in the early 1970s it opened other centers in San Fernando and San Francisco. In the fall of 1973, after a series of articles and the defection of eight members from the Temple, Jones prepared an “immediate action” plan that listed various options, including the flight to Canada or a mission to the Caribbean, to Barbados or Trinidad. The Temple chose Guyana and in 1974, after visiting northwestern Guyana, Jones negotiated a lease for over 15.4 square kilometers of land, located 240 kms

west of the capital of Guyana, Georgetown.

Members of the Temple began building Jonestown and Jones encouraged people to move to what was called the Peoples Agricultural Project.

The relatively large number of Americans who arrived in Guyana tested the government's small but severe immigration infrastructure in a country where most people wanted to leave. Jones reached an agreement to ensure that Guyana would allow mass migration of Temple's members, in exchange for investing most of the church's assets in Guyana. Immigration was asked to inhibit the

departure of the deserters of the Temple and to reduce visas to opponents.

In the summer of 1976, Jones and several hundred members of the Temple moved to Jonestown to escape media investigations. After the mass migration, Jonestown had a population of just under a thousand people. Temple's members attended study activities in a pavilion, including lectures on revolution and enemies. Entertainment activities were prohibited. Jones released long monologues about how his people had to "read" events. No TV and no films, no matter how harmless or seemingly politically neutral, were

allowed. Jonestown's only means of communication with the outside world was a shortwave radio.

Although Jonestown did not have prisons, various forms of punishment were used against members considered unruly. The methods included torture and beatings, and this became the subject of rumors that spread among the locals in Guyana. Members who tried to escape were administered Thorazine, Pentathol, Demerol and Valium in "care units". Armed guards patrolled the area day and night to enforce the rules.

Children were delivered to the care of the community and turned to Jones as "Dad" and could only see their

parents during the night. Jones was called “Father” or “Dad” even by adults.

Money that arrived every month as payment for pensions ended up in the Temple coffer, and the Temple’s wealth was estimated at 26 million US dollars.

Jones often spoke of the risk that the CIA and other intelligence agencies were preparing plans to destroy Jonestown and eliminate its inhabitants. Mass suicide was regularly simulated: *“Everyone, including children, was told to queue up to get a glass of red drinking liquid. We were told that the liquid contained poison and that we would*

die within 45 minutes. We did everything we were told.”

The Temple received half a kilo of cyanide per month for the jewelry workshop. In May 1978, a Temple doctor wrote to Jones asking for permission to test cyanide on Jonestown pigs, as their metabolism was like that of humans.

Jones was becoming increasingly paranoid and kept long monologues on the drastic escalation of repression.

According to Odell Rhodes, one of the escaped members of the Temple, the first to take the poison was Ruletta Paul and her one-year-old child. A syringe with the needle removed was

used to spray the poison into the baby's mouth and then Ruletta took her dose. Mothers with their children approached the table and Jones encouraged them to take the poison. The poison caused death within five minutes. After ingesting the poison, people were escorted along a wooden walkway that led out of the pavilion. Jones repeated: "*Die with dignity, do not die with tears and anguish ... death is a million times better than ten other days of this life. If only you knew what they are preparing, you'd be glad to die tonight.*"

Odell Rhodes stated that while the poison was being sprayed into the children's mouth, he did not observe panic, people seemed in a trance.

Jones was found dead lying in his chair between two other bodies, his head sprawled on a pillow.

The mass suicide of Jonestown shows how far people can come to be accepted by the group and how they can become temporarily blind, in a state of trance, and commit otherwise unthinkable acts.

Strategy # 3: Cancel the outside world

Another strategy is to cancel the outside world and replace it with ourselves. This strategy explains 3 types of psychiatric disorders:

- when the love for ourselves prevails, people can develop a *narcissistic personality disorder*.
- When the comparison with ourselves prevails, people can develop a *paranoid personality disorder*.
- When the love for ourselves and the comparison with ourselves have similar weights, we have a *psychotic disorder*.

A characteristic common to these disorders is the closure in oneself and the perception of the world as threatening or inappropriate in relation to one's expectations.

In the *narcissistic personality disorder*, love for ourselves dominates:

$$\frac{I \times I}{I} = I$$

Individuals who develop a narcissistic personality disorder believe that they are special and unique. They expect to receive approval and praise for their superior qualities and often are proud and arrogant. By virtue of the personal values that they believe they possess, they want to be with prestigious people of high social or intellectual level. Finally, they often have fantasies of unlimited success, power, beauty or

ideal love. Because the outside world has been replaced by their Ego, these individuals show a lack of sensitivity to the needs and feelings of others. They lack empathy and can easily abuse others without regard to the consequences. Furthermore, others are idealized if they satisfy the need for admiration and gratification. Interactions tend to be emotionally cold and detached, irrespective of the pain they generate. These people break rather than strengthen bonds.

In the *paranoid personality disorder*, the comparison dominates:

$$\frac{I}{I} = I$$

Since we live in the identity conflict, we perceive the external world as threatening. This threat is objective, absolute and certain, and not a manifestation of our identity conflict. We believe that we are unjustly victims of a hostile and humiliating world. We experience anger, resentment and irritation and react aggressively. When we feel to be excluded, anxiety and sadness prevail. Individuals with this disorder may also be insanely jealous and may suspect, without a real reason, that

their spouse or partner is unfaithful. These individuals are unable to put themselves in the perspective of others and to distinguish their points of view from those of other people.

In the *psychotic disorder*, comparison and love coexist.

$$\frac{I \times I}{I} = I$$

People replace the external world with their inner world. Their suffering takes the form of hallucinations and beliefs of being unworthy, incapable, and unfit; illogical thoughts that are not accepted by others. The outside

world is felt as conspiring, threatening and persecutory.

- Depression according to psychiatry and psychology

Over 80% of people treated pharmacologically for depression develop a chronic state of depression. Acting on the biological and somatic level, drugs block symptoms but do not remove the cause of depression. Regarding the issue of depression approaches are divided into *strong* and *weak*:

- *Strong* approaches are based on experimental evidence. These approaches have been developed in the field of neurobiology and are at the basis of psychiatry and psychopharmacology.
- *Weak* approaches are not based on experimental evidence. These approaches are typical of psychology and sociology.

The description of depression, made by these two approaches, coincides with the description made by the theory of vital needs, but none of these approaches refers to the identity conflict as the cause of depression:

“Major depressive disorder (MDD), also known as recurrent depressive disorder, clinical depression, major depression, unipolar depression, or unipolar disorder, is a mental disorder characterized by an all-encompassing low mood accompanied by low self-esteem, and by loss of interest or pleasure in normally enjoyable activities. This cluster of symptoms (syndrome) was named, described, and classified as one of the mood disorders in the 1980 edition of the American Psychiatric Association’s diagnostic manual. The term “depression” is ambiguous. It is often used to denote this syndrome but may refer to other mood disorders or to lower mood states lacking clinical significance. Major depressive disorder is a disabling condition which

*adversely affects a person's family, work, or school life, sleeping and eating habits, and general health. In the United States, around 3.4% of people with major depression commit suicide, and up to 60% of those who committed suicide had depression or another mood disorder.”*²⁰

Drug treatments are generally used for major depression. Major depression affects 25% of men and 45% of women.^{21,22} However, the cause of depression remains

²⁰ Barlow DH (2005), *Abnormal psychology: An integrative approach*, Belmont, 2005, CA, USA.

²¹ Harrington R (1990), Fudge H, Rutter M, Pickles A e Hill J, *Adult outcomes of childhood and adolescent depression*, Archives of General Psychiatry, 1990, 47(5): 465.

²² Weissman MM (2000), Wickramaratne PJ, Adams P, Wolk S, Verdelli H e Olfson M, *Brief screening for family psychiatric history: The family history screen*, Archives of General Psychiatry, 2000, 57(7): 675.

unknown, and treatments are limited to symptoms. Depression quickly becomes chronic, a trait that will accompany the person throughout the entire lifetime. Over 80% of people treated pharmacologically show a substantial continuity of depression.

In the textbooks of psychiatry and of psychopathology depression is described as a mood disorder characterized by sadness, hopelessness, helplessness, and guilt that may affect the person's behavior, his ability to adapt to the social environment, the ability to work, to relate to others, the way of reasoning, thinking, attention and concentration

deficits, insomnia, eating disorders, extreme and unexplained fatigue and the way in which the person portrays himself and the outside world. In addition, depression is sometimes associated with suicidal tendencies or self-harm.

In subjects aged 14 to 44 years, the impact of major depression is greater than any other disease, far more than cancer and cardiovascular problems (WHO, 1996). This fact underlines how extensive is the spread of this disease and its social and economic costs in terms of human suffering. In industrialized countries depression is more common in women with an incidence two times higher than in

men, where it is rapidly increasing and becoming common even among the younger population.

The DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) classifies as a depressed person those who show at least five of the following symptoms: depressed mood (sadness), markedly diminished interest or pleasure in all, or almost all, activities, significant weight loss without any diet, or significant weight gain, or decrease or increase in appetite, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or excessive or inappropriate feelings of guilt,

decreased ability to think or concentrate, or difficulty in decision making, recurrent thoughts of death, recurrent suicidal ideation and/or a suicide attempt or the preparation of a specific plan for committing suicide. The DSM-IV also recognizes five further subtypes of depression disorder:

- *Melancholic depression* is characterized by a loss of pleasure in most or all activities, a failure of reactivity to pleasurable stimuli, a depressed mood more pronounced than that of grief or loss, a worsening of symptoms in the morning hours, early morning waking,

psychomotor retardation, excessive weight loss (not to be confused with anorexia nervosa), or excessive guilt.

- *Atypical depression* is characterized by mood reactivity (paradoxical anhedonia) and positivity, significant weight gain or increased appetite (comfort eating), excessive sleep or sleepiness (hypersomnia), a sensation of heaviness in limbs known as leaden paralysis, and significant social impairment because of hypersensitivity to perceived interpersonal rejection.
- *Catatonic depression* is a rare and severe form of major depression involving disturbances of motor

behavior and other symptoms. Here the person is mute and either remains immobile or shows purposeless or even bizarre movements. Catatonic symptoms also occur in schizophrenia or in manic episodes or may be caused by neuroleptic malignant syndrome.

- *Postpartum depression*, or mental and behavioral disorders associated with the puerperium, not elsewhere classified, refers to the intense, sustained and sometimes disabling depression experienced by women after giving birth. Postpartum depression has an incidence rate of 10–15% among new mothers. The

DSM-IV mandates that, to qualify as postpartum depression, onset occur within one month of delivery. It has been said that postpartum depression can last as long as three months.

- *Seasonal affective disorder* (SAD) is a form of depression in which depressive episodes which arise in the autumn or winter and resolve in the spring. The diagnosis is made if at least two episodes have occurred in colder months with none at other times, over a two-year period or longer.

When a first depressive episode is followed by a second episode of

depression the definition of major depressive disorder is used. However, there are other classifications:

- *dysthymia* is a form of depression where the symptoms are less severe than major depression.
- *adjustment disorder* is a form of depression that disappears after the removal of the cause that has generated it.
- *secondary depression* is a side effect of drugs and/or of diseases such as multiple sclerosis, Parkinson's disease, brain cancer, Cushing's disease, and lupus erythematosus.

- *reactive depression* is triggered by a separation or a failure of some kind.
- *masked depression* is manifested by cognitive, somatic, or behavioral symptoms rather than in the form of mood symptoms.
- *dysphoria* is a form of depression characterized by agitation and irritability.
- *bipolar disorder* alternates depression with manic or hypomanic phases.

About the causes that lead to depression, today there are basically two opposing currents of thought, one that gives more emphasis to

biological causes, the other which gives greater importance to psychological causes. For example:

- *Genetic factors.* 70% of monozygotic and dizygotic twins show in conjunction depressive disorder.²³ Although this figure is used as proof of the genetic origin of depression, the fact that over 70% of these depressed children have a parent with a major depression has been used to support the opposite hypothesis, namely that the environmental may increase the likelihood of developing a

²³ Galeazzi A (2004) e Meazzini P, *Mente e comportamento. Trattato italiano di psicoterapia cognitivo-comportamentale*, pag. 281.

depressive disorder.^{24,25} However, some studies report that children of depressed biological parents, raised in adoptive families with no depressed parents, have a incidence of depression 8 times higher than normal. This data is used to support the genetic origin of depression. But even in this case alternative explanations can be used, such as the fact that adoption still involves a load of emotional stress, which may be the real cause

²⁴ Wickramaratne PJ (1998) e Weissman MM, *Onset of psychopathology in offspring by development phase and parental depression*, Journal of the American Academy of Child and Adolescent Psychiatry, 1998, 37: 933-942.

²⁵ Rice F (2002), Harold G e Thapar A, *The genetic aetiology of childhood depression*, Journal of Child Psychology and Psychiatry, Jan 2002, 43: 65-79.

behind the onset of depressive disorders.

- *Biological factors.* In the 50s it was found that reserpine, a drug used to control blood pressure, leads to the onset of depression in 20% of patients²⁶ whereas isoniazid, a drug used to treat tuberculosis, reduces the symptoms of depression. Both drugs regulate the levels of monoamine neurotransmitters: serotonin and norepinephrine. Reserpine decreases, whereas isoniazid enhances them. These observations gave birth to the monoamine hypothesis, according

²⁶ Bear MF (2002), Connors BW e Paradiso MA, *Neuroscienze esplorando il cervello*, Masson, 2002.

to which depression is caused by an imbalance of these neurotransmitters. However, it has never been possible to diagnose depression based on laboratory measurements of these neurotransmitters and this casts doubt on the hypothesis of a biological cause of depression. Other neurobiological factors play a role in depression, such as the hypothalamus-pituitary-adrenal axis, which connects the limbic structures, hypothalamus, and pituitary, the adrenal gland, and regulates long-term response to stress, inducing the release of adrenal glucocorticoid hormones

and cortisol. In depressed patients there is a hyperactivity of the hypothalamic-pituitary-adrenal axis and, consequently, high doses of cortisol in the blood. High levels of cortisol cause harmful effects throughout the body, including insomnia, decreased appetite, diabetes mellitus, osteoporosis, decreased sexual interest, increased expression of anxiety behavior, immunosuppression, damage to cerebral vessels and heart disorders. Stressful events, especially if prolonged, can reduce the rate of some neurotransmitters such as serotonin and noradrenaline and the hyperactivity

of the hypothalamic-pituitary-adrenal axis with consequent increase of cortisol in the blood. This is evident in depressed adults, while in children this association has not been confirmed. Further studies have also revealed a metabolic impairment that includes the orbitofrontal cortex, paralimbic cortex, the anterior cingulate gyrus and the anterior temporal cortex, basal ganglia, amygdala, and thalamus. The use of neuroimaging techniques has also revealed a reduction in the size of the frontal lobes and temporal lobes and has shown not only changes in neurochemical systems, but also

the in the neuroanatomical structure of the person.

- *Environmental factors.* Several studies have shown a strong correlation between depression in adulthood and negative life experiences. Depression arises for example after bereavement, a great sorrow, the departure of a loved one, but even after a big win. In general, any major change can trigger depression. It has also been noted that sexual abuse and neglect in childhood are factors strongly correlated with depression in adulthood.²⁷

²⁷ Guidetti V (2005), *Fondamenti di neuropsichiatria dell'infanzia e dell'adolescenza*, Il Mulino, 2005.

- *Psychological factors*, such as: *cognitive behavioral* approaches emphasize that depression is usually related to stressful events and that coping, i.e. the ability to accept and deal with stressful situations and their meaning, may therefore play an important role in the prevention and treatment of depression; *psychoanalysis* attributes the cause of depression to traumatic emotional experiences or to a persecutory superego; the psychoanalyst *René Árpád Spitz* points to the occurrence of depression in orphans who were hospitalized at an early age. When the hospitalization was protracted,

children acquired a more pronounced form of depression.

- Drug therapies

Therapies for the treatment of depression are mostly symptomatic, based on antidepressant drugs that treat the symptoms of the disease to improve people's everyday lives. Antidepressants are based on the idea of normalizing the altered balance of serotonin, norepinephrine and dopamine and can be divided into three main categories: tricyclic antidepressants (TCA), monoamine oxidase inhibitors (MAOI) and

tricyclic antidepressants of the second generation.

The first category, tricyclic antidepressants (TCA), influence the levels of serotonin and norepinephrine. They are effective in reducing symptoms of depression, but have side effects which are not entirely negligible related to the anticholinergic action, such as: urinary retention, even in the absence of prostatic hypertrophy, dry mouth, visual disturbances, blurred vision, constipation, tachycardia, hypotension, arrhythmias, ECG changes, cardiac arrest, tremors and shocks to the upper limbs, feelings of warmth, defect of attention, mental

confusion, anxiety and memory impairment, delayed ejaculation and decreased libido, weight gain, blood chemistry abnormalities, cholestatic jaundice, or hepato-cellular reactions.

The second category, monoamine oxidase inhibitors (MAOI), act as inhibitors of the enzyme that metabolizes serotonin and catecholamines (adrenaline, noradrenaline, and dopamine). MAOIs increase the concentration of these neurotransmitters in the central nervous system. They do not show greater efficacy or special “benefits” compared to TCA but show greater side effects. Among these: excitement, insomnia, tremors,

hallucinations, hypotension, sweating, delayed ejaculation, urinary retention, skin reactions, weight gain. In some severe cases, MAOIs may cause hypertensive crises with even fatal brain hemorrhage, preceded by severe headaches, vomiting and chest pain. In addition, they produce toxic effects in interaction with foods rich in tyramine, such as cheese, wine, beer, liver, tripe, herrings, beans, bananas, and figs.

Tricyclic antidepressants and MAOIs have existed for decades and were the only pharmacological options. Now their use has decreased mainly due to the creation of drugs with fewer side effects, the so-called

second-generation antidepressants. These antidepressants are more specific and therefore their side effects are slightly reduced, although their effect is similar to those of tricyclic antidepressants and MAOIs.

Treatment with antidepressants requires a period ranging from 2 to 4-6 weeks before an antidepressant effect is observed. This period is also known as latency of the antidepressant drug. According to some studies this latency is shorter for new antidepressants. It is essential that the patient and family members are aware of this latency time, as they may be induced to stop the treatment since they consider it to be ineffective.

Since 2005 in countries like the United States and Britain, departments of health have forced manufacturers to display the warning of the risk of committing suicide, which in some individuals (especially younger ones) seems to increase during the first weeks of therapy.

The only natural product with proven antidepressant properties is St John's wort, of the plant species *Hypericum perforatum*, also known as Tipton's Weed, Chase-devil, or Klamath weed. It has been used with good results as an antidepressant and as a mood stabilizer. Also, lithium salts, such as dopamine agonists pramipexole and other drugs not

classified as antidepressants are used with good results. Folic acid is known for the synthesis of key neurotransmitters: norepinephrine, serotonin, and dopamine. Different authors found an advantage in the use of folic acid in cases of initial symptoms, partial remission or as a factor which enhances other therapies.

- Electroconvulsive Therapy

In the case of drug resistance or the inability to administer any kind of antidepressant, a treatment is represented by electroconvulsive

therapy (ECT). Some authors consider it effective in the case of more severe forms of depression and in terms of remission it shows therapeutic success in 85% of the patients. Side effects are continuous relapses, that with this kind of therapy seem to be frequent, and irreversible impairment of memory.

- Psychotherapy

Cognitive-behavioral therapy, psychotherapy, psychosynthesis, group and family therapy, biofeedback and psychoanalysis suggest different treatments.

However, a lack of effectiveness of these therapeutic approaches is widely observed, although several studies have shown some type of effectiveness of the cognitive-behavioral approach in reducing depressive symptoms and in maintaining these results over time. The benefit of psychotherapy, when effective, is largely in the absence of side effects and in the decrease of relapse: drugs act on the symptoms, but alone they are not able to remove the cause that triggers depression. Another line of clinical research is related to chronotherapy which assumes that depression, particularly seasonal and bi-polar depression,

would be related to a significant phase shift of the sleep-wake cycle. For this reason, therapies use treatments based on light and dark balances, which aim to regulate the sleep-wake cycle.

ANXIETY AND ANGUISH AND THE NEED FOR COHESION AND LOVE

We have seen that the autonomic nervous system provides syntropy to the vital functions of the organism. Consequently, the feelings associated with the autonomic nervous system:

- inform about the acquisition of syntropy. When there is abundant intake of syntropy we feel warmth and wellbeing, on the contrary, when there is insufficient

acquisition of syntropy we feel void, pain and feelings of death.

- Since syntropy propagates backwards in time, emotions can also propagate backward in time, but not information.

The following examples might provide some insights:

- The article “*In Battle, Hunches Prove to be Valuable*”, published on the front page of the New York Times on July 28, 2009, describes how premonitions helped soldiers avoid attacks: “*My body suddenly became cold; you know, that feeling of danger, and I started screaming no-no!*” According to

syntropy, the attack happens, the soldier experiences fear and death and these emotions of distress propagate backward in time. The soldier in the past feels these emotions as premonitions and is driven to choose differently, thus avoiding the attack and death. According to the New York Times article, these premonitions have saved more lives than the billions of dollars spent on intelligence.

- William Cox conducted studies on the number of tickets sold in the United States for commuter trains. Between 1950 and 1955 28 commuter trains had accidents, and in each case fewer tickets were

sold²⁸. Data analysis was repeated controlling all possible intervening variables, such as bad weather conditions, departure times, day of the week, etc. But no variable was able to explain the correlation between reduced ticket sales and accidents. The reduction of passengers on trains that have accidents is strong, not only from a statistical point of view, but also from a quantitative point of view. According to syntropy, Cox's discoveries can be explained in this way: when people are involved in accidents, the emotions of pain and fear propagate backward in time

²⁸ Cox WE (1956), *Precognition: An analysis*. Journal of the American Society for Psychical Research, 1956(50): 99-109.

and can be felt in the past in the form of presentiments and premonitions, which can lead to the decision not to travel. This propagation of emotions can therefore change the past. In other words, a negative event occurs in the future and informs us in the past, through our feelings. Listening to these feelings can help us decide differently and avoid pain and suffering in our future. If we listen to the inner voice, the future can change for the better.

- Among many possible examples: on May 22, 2010, an Air India Express Boeing 737-800 flying between Dubai and Mangalore

crashed during landing, killing 158 passengers, only eight survived the accident. Nine passengers, after check-in, felt sick and could not get on board.

In this regard, the neurologist Antonio Damasio, who has studied people affected by decision-making deficits, discovered that feelings contribute to the decision-making process and make advantageous choices possible without having to make advantageous evaluations.²⁹

Damasio observed that cognitive processes were added to emotional ones, maintaining the centrality of

²⁹ Damasio AR (1994), *Descartes's Error. Emotion, Reason, and the Human Brain*, Putnam Publishing, 1994.

emotions in the decision-making process. This is evident in times of danger: when choices must be made quickly reason is bypassed.

People with decision making deficit show knowledge but not feelings. Their cognitive functions are intact, but not the emotional ones. They have normal intellect but are unable to make appropriate decisions. A dissociation between rationality and decision-making skills is observed. The alteration of feelings causes a myopia towards the future. This may be due to neurological lesions or to the use of substances, such as alcohol and heroin, which reduce the perception of our feelings.

Feelings of warmth point to the path that leads to well-being and to what is beneficial to life. It is therefore good to choose according to these feelings.

Anxiety is an anticipation, and anguish is an indicator that informs of an insufficient acquisition of syntropy. However, anxiety, anguish, fear, and panic, use similar signals. It is therefore important to learn to distinguish between these signals to respond effectively to the vital need for love and cohesion.

- Anxiety

Emotions propagate backwards in time and living systems constantly use emotional signals to feel the future and choose advantageously. For example, we avoid the options associated with anticipatory feelings of discomfort and select the options associated with anticipatory feelings of wellbeing. This takes the form of intuitions, presentiments and heart and gut feelings. The neurophysiologist Antonio Damasio uses the term “somatic marker” to indicate these feelings and noticed that when these feelings are impaired or distorted, decision making

becomes difficult and it is difficult to choose advantageously.

Anxiety alerts us in advance about situations of distress. For example, if our feelings of anguish are triggered by loneliness, anxiety alerts us in advance and can be used to choose “advantageously”, to avoid loneliness and consequently anguish.

- Anguish

We have seen that the autonomic nervous system supports vital functions and is therefore in charge of acquiring syntropy. Since syntropy acts as an energy absorber, when

syntropy is acquired feelings of warmth, love and happiness are experienced, whereas when the acquisition of syntropy is insufficient entropy prevails and a loss of energy takes place in the form of feelings of chill, void and emptiness in the thorax area associated with pain, distress, and symptoms of the autonomic nervous system. Since syntropy is vital, anguish is associated also with unbearable feelings of death.

To counter anguish, it is necessary to enhance cohesion, unity, and love and all those situations which reduce loneliness and isolation. Unfortunately, people are generally unaware of the language of emotions.

When we ask, “*Where do you feel love?*” people are often dubious, do not answer, and after some time they exclaim: “*Well, of course! I feel love in my head!*” Have you ever seen someone take his hands to his head when he declares his love? No one takes his hands to the chest to express their love. Whenever we express a feeling, we spontaneously take our hands to our chests. Although our body language shows that at the unconscious level, we are aware of the place where feelings are placed, most people are unaware, at a conscious level, of this location of feelings. Many believe that love is an abstract concept, a utopia that cannot be

reached. Love is often confused and reduced to sex and sex to a commodity which is there to be consumed. This situation is far from the love that is required to effectively counter anguish. Today, people consume love, however feelings of anguish, emptiness, and loneliness increase. We are not able to acquire enough syntropy and the vital need for love and cohesion is generally unmet. To reduce the unbearable feeling of anguish, people use several strategies, among which:

- *Substances* that produce feelings of warmth in the chest, like love. These substances are, for example,

alcohol, tobacco, heroin, and drugs. When the vital need for love is answered using such substances, these substances become “vital”, and we become addicted to them. Any substance that produces feelings of warmth similar to love reduces anguish but produces also addiction. A typical example is provided by heroin. Heroin is described as “the cold lover” and consumers speak about their “honeymoon with heroin”. Heroin replaces the need for love and therefore leads to develop a strong form of addiction. Even alcohol causes feelings of warmth, like love, and can replace the need for

love, causing addiction. Alcohol addiction starts, typically, when it is used to overcome feelings of emptiness and anguish, and this fact is unfortunately very widespread and common.

- *Activities.* We fill our life with activities and commitments, we spend all our time working, volunteering, busy with sports, political, religious, or ideological groups. We do not allow ourselves a moment of relaxation and in the rare moments of relaxation we light a cigarette, drink alcohol, turn on the TV, or feel the need to eat compulsively, in order not to feel

our inner sensations of anguish and suffering.

- *Avoiding silence.* When the suffering becomes unbearable, we try to avoid any moment of silence. During silence we perceive our inner state and to avoid silence, we become addicted to TV, radio, loud music, games and violence.

These strategies do not satisfy the need for love and, as a result, the acquisition of syntropy continues to be insufficient and anguish persists. This can lead towards progressively serious organic diseases since the body enters into a chronic state of lack of life energy (syntropy).

Moreover, anything that removes the distress associated with anguish becomes for us “vital”. For this reason, when we respond to the vital need for love by using substances, we rapidly develop a craving. These substances become vital for us. This mechanism is at the basis of drug addictions and any other type of addiction.

Furthermore, the use of substances, severely impairs our ability to decide and takes us away from those advantageous strategies that guide us towards wellbeing. Damasio shows that when the perception of feelings is distorted because of the use of substances, our decision-making

process is jeopardized, and we develop the inability to choose advantageously for our future. People who are undergoing treatment with anxiolytic drugs lose their ability to feel the future and to choose advantageously. Moreover, their behavior is not finalized, and this increases the lack of meaning and the identity conflict. The identity conflict increases depression and the feelings of discomfort and suffering.

Feelings of anxiety, depression, and anguish, although painful, are necessary since they can guide us towards wellbeing. The use of substances which preclude the perception of feelings, limits the

possibility to reach a state of wellbeing. On the contrary anxiety, depression, and anguish, if well understood and used, guide us towards the satisfaction of our vital needs. Anguish and depression are important signals that we must learn to understand. These signals tell that our vital needs for cohesion and meaning are not satisfied. When we cancel these feelings, our ability to choose advantageously decreases and we get in a chronic state of suffering.

Anxiety, depression, and anguish are primary indicators of our invisible vital needs.

- Anxiety according to psychiatry and psychology

Fear, terror, anxiety and panic are characterized by the hyperactivity of the autonomic nervous system and show similar symptoms: gut feelings, hunches, pain in the stomach, difficulty breathing, palpitations, excessive sweating, rapid heartbeat, chest pain, nausea, internal tremors, chill, increased blood pressure and decrease in immune system functions.

In Latin languages the English word “anxiety” is usually divided into two words: anxiety and anguish. The term anxiety is used to describe the feeling of fear for something that is going to

happen, the term anguish is used to describe a state of grief and inner pain, a de facto state. Anguish is a feeling of emptiness, pain felt in the chest, heart, stomach. Although anguish and anxiety share symptoms like fear, their meaning is radically different: anxiety is linked to something negative that we feel is going to happen whereas anguish describes a fact. Diagnostic tools developed in English tend to use only the term anxiety.

There are some distinctions that need to be done:

- *fear* is a strong and intense emotion that we feel in the presence of a real, immediate danger.
- *anxiety* is a state of fear not connected with any real danger.
- *anguish* is an emotional state characterized by intolerable levels of pain, often accompanied by physical or even neurological manifestations, which may include involuntary contraction of muscles, and which can become extremely disabling.

The symptoms of fear, anxiety and anguish are all associated with the hyperactivity of the autonomic nervous system and include palpitations, chest pain, shortness of

breath, nausea, tremors, increased blood pressure, blood flow and heart rate, sweating, decreased digestive and immune function, pale skin, and pupillary dilation.

Anxiety disorders are also:

- The *generalized anxiety disorder* (GAD) which is characterized by a permanent state of anxiety. People who have this disorder feel afraid of something but are unable to express specifically what they fear. Because of muscle tension and hyperactivity of the autonomic nervous system, anxiety can develop headaches, palpitations,

dizziness, and insomnia. These symptoms, combined with the psychological aspects associated with anxiety, cause difficulties in dealing with normal daily activities.

- *Panic disorder* (PD) is characterized by attacks of terror that cause tremor, dizziness and breathing difficulties. Panic attacks begin abruptly and reach their peak in 10 minutes or less. They seem to appear without reason and are often mistaken for heart attacks. Consequently, people begin a series of medical investigations, sure to be suffering from heart problems, and even when medical examinations show that everything

is normal, the physical manifestations of panic reinforce the fear of a heart attack which leads to more complex analyses or treatments to find a remedy for symptoms such as palpitations. Normal changes in heart rate are noted and reinforce the idea that a heart attack is imminent. When the fear of panic attacks becomes excessive people can abandon their jobs and refuse to go out of their house. A common complication of panic disorder is agoraphobia, which is the terror of being in a situation which is perceived difficult with no way out, which is a combination of claustrophobia

(fear of physical closed places) and hypochondria (fear of dying).

- *Phobias* are characterized by a strong and irrational fear of an object or situation. Phobias differ from fear because they are irrational fears and from anxiety since there is an object or situation that causes the phobia. People with phobias recognize that their fear is excessive and unreasonable but are generally unable to control it. In addition to specific phobias, such as fear of knives, rats or spiders, there is another type of phobia, known as social phobia, that manifests itself as an intense fear of being negatively evaluated by

others. When this fear becomes pervasive it is impossible to live a normal life.

- *Obsessive-compulsive disorder* (OCD) is characterized by obsessions and/or compulsions. Obsessions are repetitive thoughts or images that the individual knows to be nonsense. Compulsions are repetitive behavior that the person feels compelled to do to reduce anxiety. An example is the extreme obsession with cleanliness and fear of contamination that can lead to the compulsion to wash one's hands continuously. Another example of obsession is the fear of gas and the need to check and

recheck that the gas burners are turned off.

- *Post-traumatic stress disorder* (PTSD) is the strong psychological suffering that follows a traumatic, catastrophic, or violent event. The diagnosis of PTSD requires that symptoms are always the consequence of a critical event. But having experienced a critical event does not automatically generate a post-traumatic disorder. It is also known as war neurosis because it was initially found in soldiers involved in heavy fighting or dramatic war situations.

The strong involvement of the autonomic nervous system, in anxiety disorders, can be used to diagnose such disorders. For example, in 2005 a team of the Hebrew University of Jerusalem, headed by the Dean, Sorega Hermon, has shown the possibility to diagnose anxiety disorders calculating the levels of the acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) enzymes in relation to age.

The treatments of anxiety disorders are the following:

- *Selective serotonin reuptake inhibitors* (SSRIs), a class of antidepressants,

are considered by many to be the first-choice medication for anxiety disorders. Benzodiazepines are also used; however, they produce addiction and prolonged use should be carefully monitored.

- *Cognitive-behavioral therapy* (CBT) can be effective for several anxiety disorders, particularly panic disorder, and social phobia. CBT, as its name suggests, has two main components: cognitive and behavioral. In cases of social anxiety, the cognitive component can help the patient question their certainty that others are continually watching and harshly judging him or her. The behavioral component

seeks to change people's reactions to anxiety-provoking situations. A key element of CBT is gradual exposure, in which the patient is confronted by the things they fear in a structured manner. The aim is to learn from acting differently and observing reactions. CBT for social phobia also includes anxiety management training, which may include techniques such as deep breathing and muscle relaxation exercises. CBT can also be conducted partly in group sessions, facilitating the sharing of experiences, a sense of acceptance by others and undertaking

behavioral challenges in a trusted environment.

- *Psychodynamic therapies* are based on the idea that anxiety stems from conflicts and when unconscious memories are brought to light anxiety vanishes. In clinical practice, the opposite is often observed. When conflicts and traumas are brought to light people start thinking that they are condemned to suffer since they cannot change the past.
- *Alternative medicine* such as regular aerobic exercise, improved sleep hygiene and reduced caffeine intake are often useful in treating anxiety.

- *Herbal remedies*, such as valerian and chamomile have anxiolytic properties.

THE ROAD TO HAPPINESS

The Vital Needs Theory describes happiness as a state in which the person is charged with vital energy (syntropy) and experiences strong feelings of warmth, love and happiness in the thorax area. It also indicates some basic rules that allow to reach this state of happiness.

1) *Entropy Reduction*

Entropy and *Syntropy* are the two polarities of *Energy*:

- *Entropy* is diverging energy, acts from the past, destroys, and goes towards disorganization and disorder.
- *Syntropy* is converging energy, builds, increases complexity and organization and is goal oriented.

Entropic energy governs the visible world, whereas syntropic energy rules the invisible world. These two energies are complementary since

when one increases, the other decreases.

Life always seeks to: *lower entropy and increase syntropy*. We can represent this using a seesaw. Where entropy and syntropy are placed in the opposite sides. To go towards wellbeing and happiness we have to lower entropy and raise syntropy.

But entropy is produced by our activities! How can we stay active and increase syntropy? This is the challenge!

This challenge will be described in the next chapter, chapter 5, using some real cases.

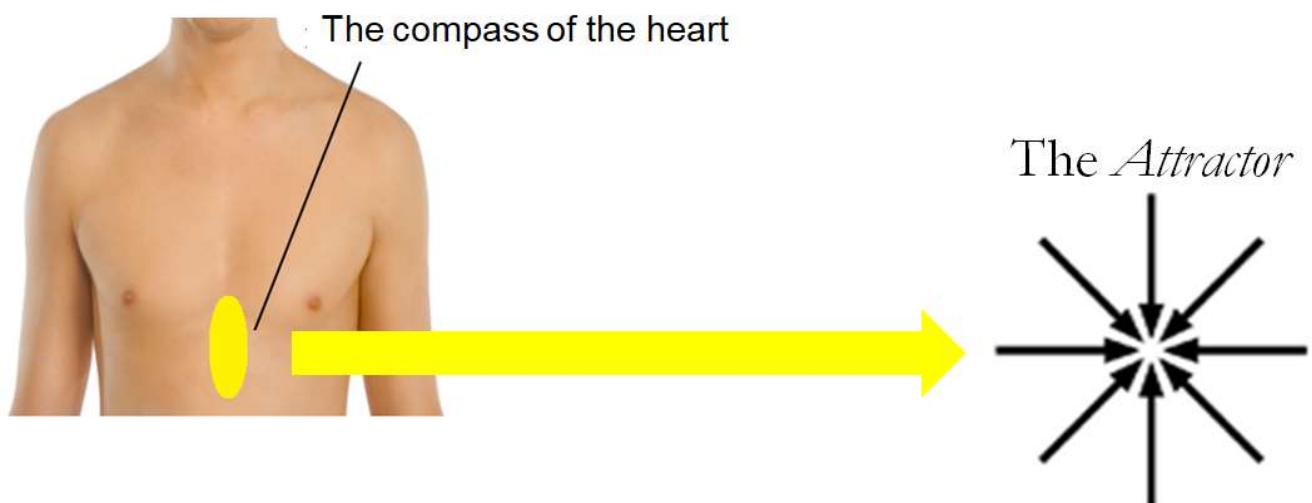
2) The compass of the heart

The experiments on the anticipatory activation of the parameter of the autonomic nervous system, support the hypothesis formulated by Antonella Vannini that the autonomic nervous system acquires syntropy which is then used to nourish the vital functions of the organism.

Syntropy is the source of wellbeing, and since it is converging energy, it is felt as warmth and wellbeing in the area of the autonomic nervous system (the heart/thorax area), these feelings are usually indicated with the words love and happiness. On the contrary, when the acquisition of syntropy is

low, entropy prevails, the regenerative processes of the organism don't function well and we feel void, chill, distress, and pain in the heart/thorax area.

These feelings work like the needle of a compass.

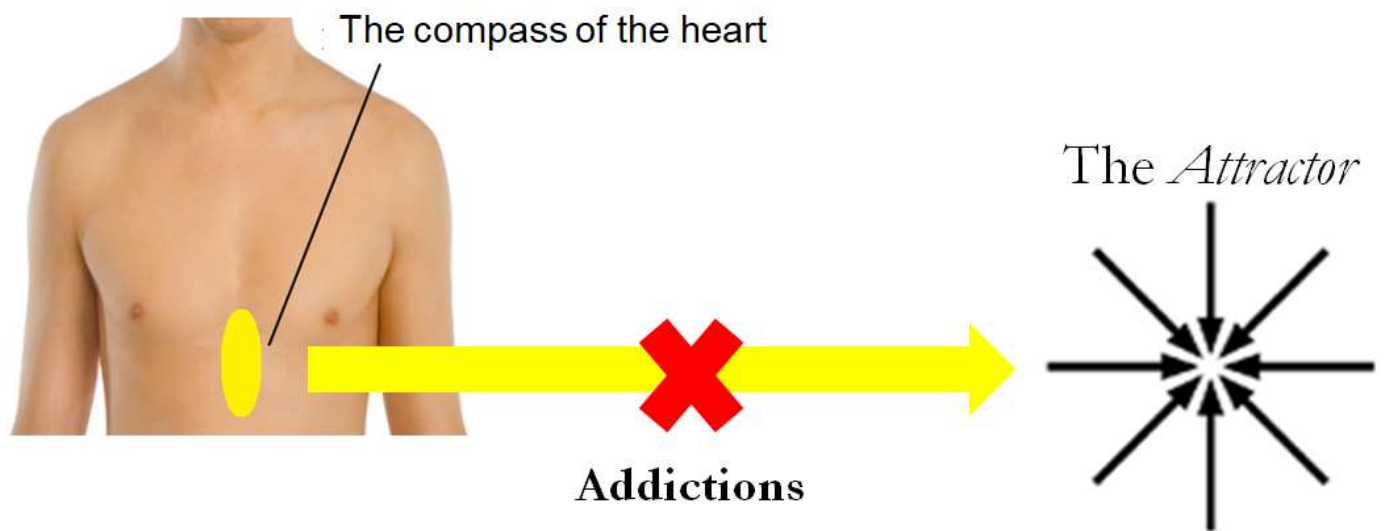


When we feel love, wellbeing, and warmth it means that we are going towards the *Attractor*, the source of syntropy and happiness. On the

contrary when we feel void, chill and distress we are diverging from the *Attractor*, and we need to correct our path.

Most people are unaware of this compass and instead of using it to correct their path and be guided towards wellbeing, they try to suppress the feelings of void and pain using substances that act on the autonomic nervous system, such as alcohol and heroin.

In this way the compass of the heart stops working, or malfunctions and we are not able to correct our path and go towards happiness.



The compass of the heart will be described in greater details in chapter 6.

3) Truth

We are constantly immersed in false narratives: in our families, among friends, in society and science. The path towards wellbeing and happiness requires that we learn to recognize

truth and develop the courage to move away from false narratives. People that follow truth are usually considered misfits, rebels, troublemakers, those who see things differently, with no respect for the status quo.

Henri Poincaré³⁰, one of the most intuitive mathematicians of the last century, observed that when faced with a new problem, whose solutions could be countless, the rational approach did not work, and another type of process was needed. He discovered the role of intuitions, that select the correct answer among the endless possibilities, without the help

³⁰ Henri Poincaré, *Mathematical Creation*, from *Science et méthode*, 1908.

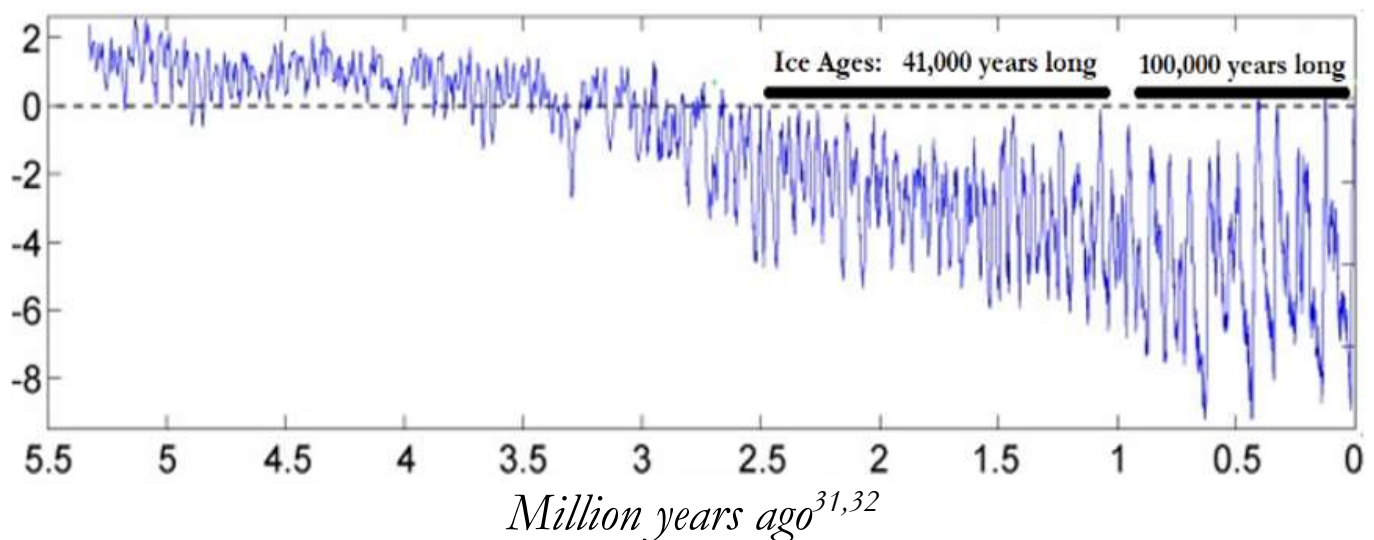
of rationality. Poincaré noticed that intuitions are always accompanied by feelings of warmth, wellbeing, love, and happiness: *“Among the large number of possible combinations, almost all are without interest or utility. Only those that lead to solving the problem are illuminated by an inner feeling of truth and beauty.”*

Truth requires that we learn to trust the compass of the heart and avoid being misguided by the rational mind and the opinions of others.

The process of truth and intuitions, guided by the heart, will be described in greater details in chapter 7, using some real examples.

4) *Be in perspective*

We live in the *Quaternary*, a geological era which started 2.58 million years ago, when temperatures decreased causing the first glaciations and dramatic climate changes.



Initially, glaciations lasted 41,000 years and temperatures were on

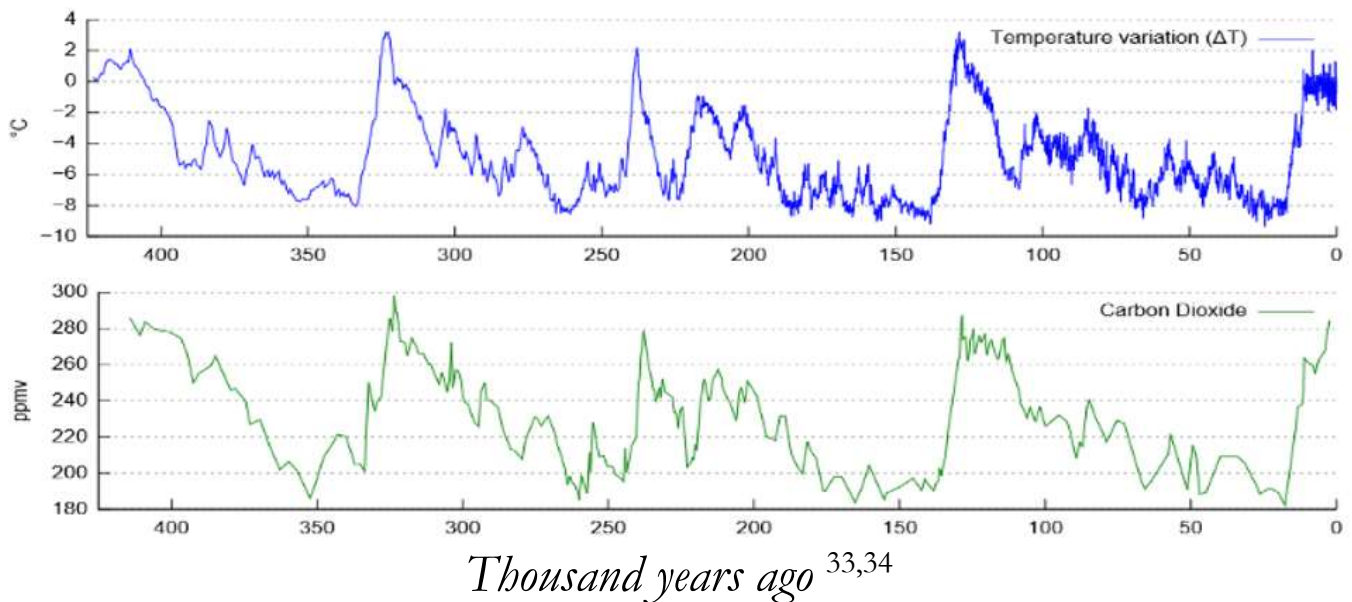
³¹ valentirull.net/2019/05/27/new-book-on-quaternary-ecology-evolution-and-biogeography/

³² it.wikipedia.org/wiki/Quaternario#/media/File:Five_Myr_Climate_Change.png

average 4 degrees (Celsius) lower; now glaciations last beyond 100,000 years, with temperatures on average 8 to 10 degrees lower. Short interglacial warm periods, of about 10,000 years, separate each glaciation. The warm period in which we now live began 11,700 years ago and ocean sediments show that we are now entering the next ice age.

Antarctica's ice-core data confirm this scenario. Air bubbles trapped in ice rings are used to determine the variations of methane, carbon dioxide, temperature and dust due to volcanic eruptions and allow to reconstruct temperatures, carbon dioxide and atmospheric

composition, for the entire *Quaternary* period.



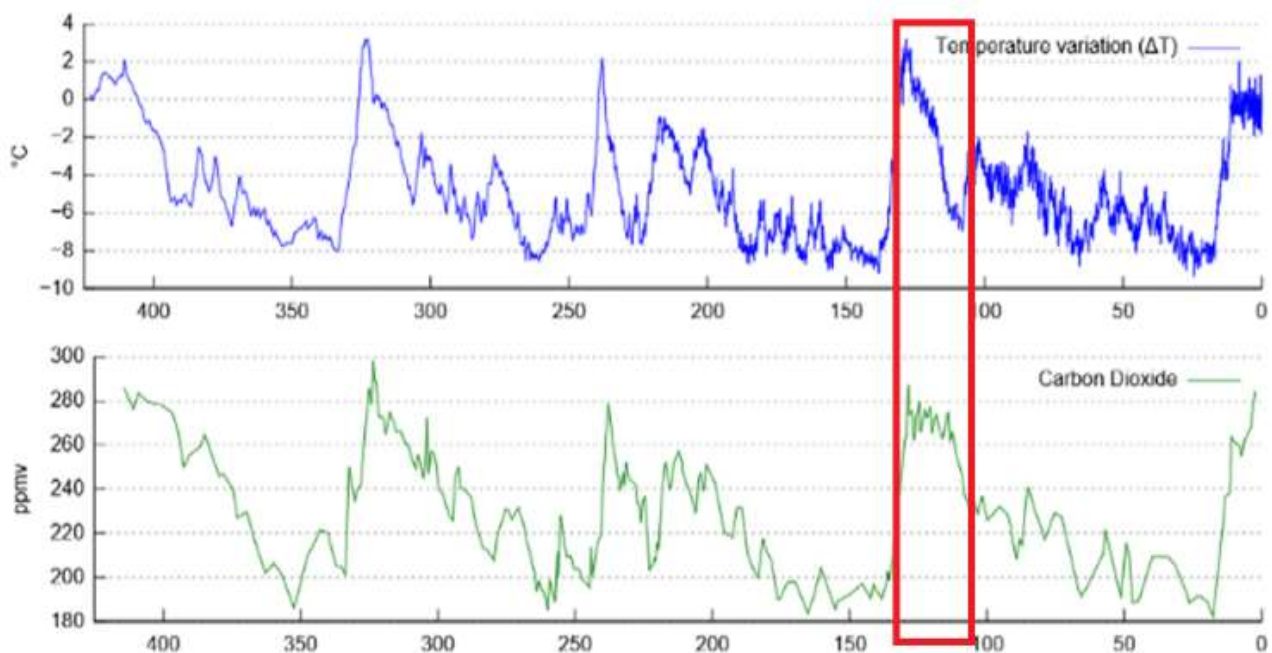
In this graph we see the history of CO_2 and temperatures up to 400 thousand years ago. We are at the right of the graph and the more we move left, the more we go back in time, until we reach four hundred

thousand years ago. Each warm, interglacial period is associated with increasing temperatures and increasing levels of CO₂.

However, we see that temperatures rise before CO₂. This means that CO₂ is not the cause of rising temperatures but the consequence. The explanation is quite simple: during warm periods life proliferates and, since life is carbon based, CO₂ levels increase *CO₂ is an indicator of life*. We also see that temperatures decrease before CO₂. This means that CO₂ has a limited greenhouse effect. CO₂ levels decrease when life succumbs to freezing temperatures.

Furthermore, ice core data show that

in the first 20,000 years of the last glaciation CO_2 levels remained high although temperatures became freezing. This “unnatural” situation suggests that an advanced civilization was intentionally keeping life levels high. But, after approximately 20,000 years into the ice age, this civilization surrendered to the glacial temperatures.



Thousand years ago

Ice core and geological data point to the fact that advanced civilizations existed during previous interglacial warm periods, but none managed to survive the ice age. Probably our civilization is headed for the same fate.

If our civilization is doomed, if we will not be able to leave remains of our civilization that can last for the next 120,000 years of ice age, what is the meaning of all what we are now doing? Is it all useless?

This will be discussed in chapter 8, where some examples will be given.

5) Putting life at the first place

Money allows for exchanges and exchanges are vital for life. Who controls money also controls the life energy of nations and people. To progress towards happiness, it is fundamental that money is governed for the wellbeing of people, life and nations.

The Bank of England, founded in 1694, has been the first Central Bank. It grouped the major commercial banks and had the monopoly on banknotes. The Bank of England was a private institution that concentrated immense powers in the hands of a few unscrupulous bankers. The founding

fathers of the United States prohibited, in the first article of the constitution, the establishment of a private central bank: “*Only the Congress shall have power ... to coin money, regulate the value thereof.*”

The Astor, Guggenheim and Straus, the most powerful bankers were strong supporters of the first article of the constitution and were against the establishment of a central bank. The Rockefellers, Morgan and Rothschild pushed for the establishment of a private central bank. Strangely enough, the Astor, Guggenheim and Straus died on April 15th, 1912, in the sinking of the Titanic. Soon after the newly elected president of the USA,

Woodrow Wilson, signed the Federal Reserve Act which was firmly in the hand of the Rockefellers, Morgan and Rothschild. In 1914, the FED started printing the first banknotes, and only eight months later, in August 1914, the First World War transformed the dollar into the main international currency. The US government spending increased fifteen times, causing it to borrow from the FED. The same happened to the European allies and the FED favored the indebtment of nations by lending the dollars generously. President Woodrow Wilson, who had signed the Federal Reserve Act, wrote: *“I am a most unhappy man. I have unwittingly*

*ruined my country. A great industrial nation is controlled by its system of credit. Our system of credit is concentrated. The growth of the nation, therefore, and all our activities are in the hands of a few men. We have come to be one of the worst ruled, one of the most completely controlled and dominated governments in the civilized world. No longer a government by free opinion, no longer a government by conviction and the vote of the majority, but a government by the opinion and duress of a small group of dominant men.”*³⁵

Louis McFadden, Republican Member of the United States House of Representatives from 1915 to

³⁵ Woodrow W. “*The New Freedom*”, Doubleday Page Company, 1918, New York, under the chapter IX titled: BENEVOLENCE, OR JUSTICE?

1935, principal sponsor of the McFadden Act of 1927, described the FED with the following words: *“Some people think that the Federal Reserve Banks are United States Government institutions. They are private monopolies which prey upon the people of the United States for the benefit of themselves and their foreign customers; foreign and domestic speculators and swindlers; and rich and predatory money lenders.”*

The First and Second World War and most of the tragedies that humanity has witnessed in the last century can be traced back to the people that control the FED.

The path towards happiness requires that nations shift from a monetary

system controlled by private central banks to a monetary systems controlled by the people (the government), in the interest of the people and nation, putting life at the first place.

This point will be the topic of chapter 9.

6) Synchronicities

In the psychological literature of the 20th century Carl Gustav Jung and Wolfgang Pauli added synchronicities (syntropy) to causality (entropy). According to Jung, synchronicities happen when two or more events that

are apparently causally unrelated or unlikely to occur together by chance, are experienced as occurring together in a meaningful manner.

The concept of synchronicity was first described in this terminology by Carl Gustav Jung in the 1920s. The concept does not question, or compete with, the notion of causality. Instead, it maintains that just as events may be grouped by causes, they may also be grouped by finalities, a meaningful principle. Jung coined the word synchronicities to describe what he called “*temporally coincident occurrences of acausal events.*” He variously described synchronicities as an “*acausal connecting principle,*”

“*meaningful coincidences*” and “*acausal parallelisms*.”

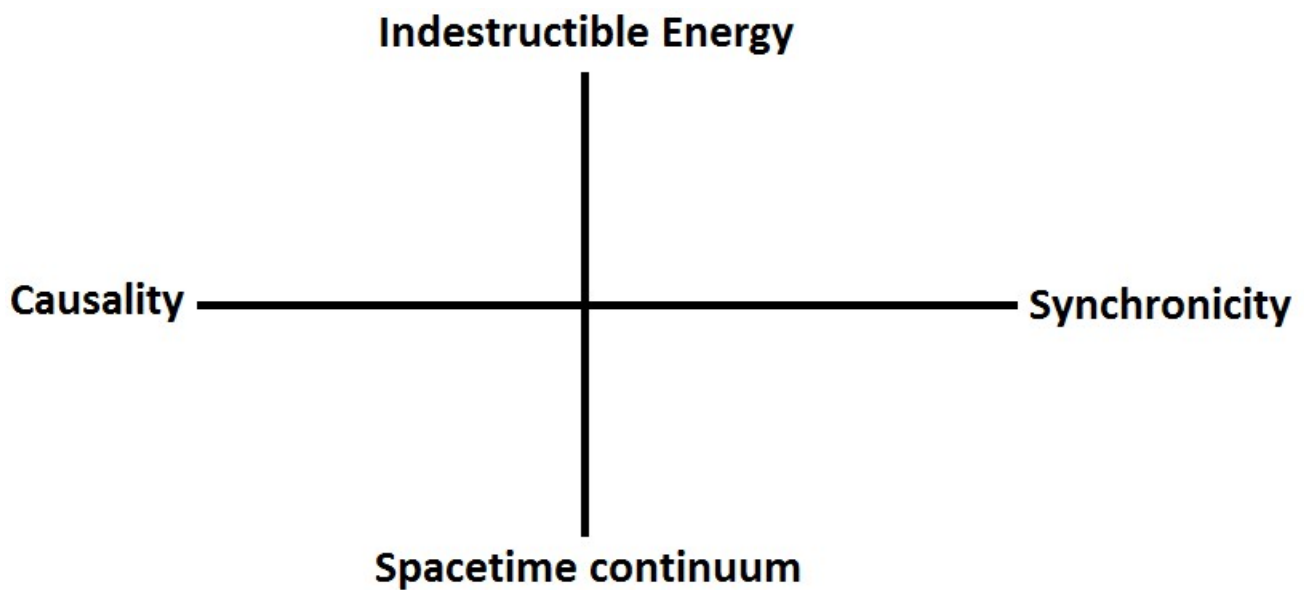
Jung gave a full statement of this concept in 1951 when he published the paper *Synchronicity - An Acausal Connecting Principle*,³⁶ jointly with a related study by the physicist Wolfgang Pauli.

In Jung’s and Pauli’s description causality acts from the past, whereas synchronicities act from the future. Synchronicities are meaningful since they lead towards a finality, providing a direction to events, linking them in an apparently acausal ways.

Jung and Pauli described causality

³⁶ Jung C.G. (1951), *Synchronicity - An Acausal Connecting Principle*, Princeton University Press, www.amazon.com/Synchronicity-Connecting-Principle-Collected-Bollingen/dp/0691150508

and synchronicity acting on the same indestructible energy. They are united by this energy, but at the same time they are complementary.

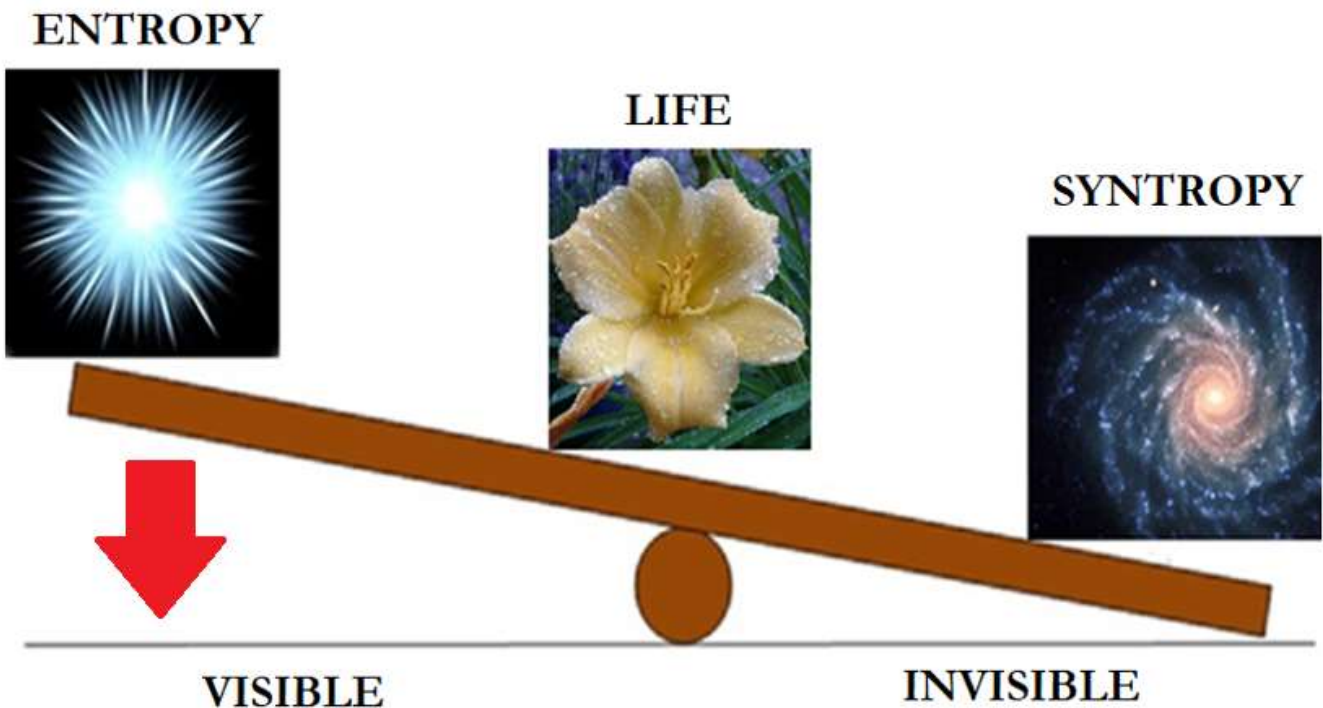


Synchronicities show intelligence, direction and finality and are fundamental in our path towards wellbeing and happiness.

This will be the topic of chapter 10, where some examples will be provided.

ENTROPY REDUCITON

Life always seeks to *lower entropy to increase syntropy*.



To better understand this game, some very simple examples of financial coaching are here used.

Case # 1

«I am a freelance, single, my expenses exceed incomes by five hundred euros per month. Savings are ending. I'm cutting all the expenses: no money in the wallet, no credit in my mobile phone. But things are going from bad to worse.»

Let's see how it went.

«How much do you spend for your mobile phone?» I asked.

«About 40 euros a month, but I always

find myself without credit.»

«Why don't you change provider? There are interesting promotions. With only 8 euros a month you can have unlimited minutes and SMS and 100 gigabytes of internet.»

Changing provider and choosing a new contract increased the quality of life and decreased the expenses (i.e. entropy) by over three hundred euros a year!

The trick is to reduce entropy by improving the quality of life!

When entropy (expenses) and syntropy (incomes) are balanced, the invisible world begins to manifest. In

this example we need to reduce spending by at least six thousand euros a year before the magic of the invisible world starts showing.

«Do you take shirts to the laundry to be ironed?» I asked.

«I wash them, but I am not able to iron them. I take them to the laundry to have them ironed.»

«How much does it cost you?»

«Between 50 and 70 euros a month.»

«Why don't you ask your maid if she can iron them for 8 euros per month?»

The maid immediately accepted. Another small optimization that led to save over six hundred euros a year,

and increased the quality of life by eliminating the hassle of going to the laundry. Again an increase in the quality of life while saving! These first two optimizations reduced entropy by one thousand euros a year and increased the quality of life. The goal is to reach six thousand euros to balance incomes and expenses.

«Do you go to work by car?»

«I also use the scooter to save money, but the traffic is really dangerous!»

«Why don't you use your bicycle?»

«On these roads?!»

«No, on alternative roads.»

«My house is in the city center, the office is not far away, but I have always considered

the bicycle impossible due to the difference in altitude of over 30 meters. I would arrive tired and sweaty.»

«If you have to climb it is better to choose a steep but short road, get off and push, rather than pedaling.»

Thus, he discovered the beauty of the streets of the old city center and of the parks. In less than 25 minutes he could reach his office by bicycle. It took more time by car or scooter. The next day he sold the scooter, canceled the insurance and the garage. Another three thousand euros saved per year. With this simple optimization, he received other advantages: he exercised and no longer needed to go

to the gym, more money and time saved! Moreover, he spends less on fuel.

Entropy has now decreased by over four thousand euros a year and the quality of life has improved! We need to find another two thousand euros before syntropy, the invisible world, can begin to show.

«Your electricity bill exceeds 200 euros every two months! As a single you should not pay more than 50 euros.»

«What should I do?»

«Try using low energy light bulbs, such as LED lamps, and set the timer to the water heater.»

Small changes that required little time and money. One hundred and fifty euros saved every two months, nine hundred euros a year. With this small optimization he felt consistent with his ecological beliefs and the quality of life increased. Now he reduced his expenses by over five thousand euros a year! We must reach the goal of six thousand euros a year!

«How much do you pay for electricity in your office?»

«About 300 euros every two months.»

«Do you use halogen bulbs!?»

«Yes.»

He discovered that he could save over

a thousand euros a year simply by replacing halogen spotlights with LED spotlights.

Now that the expenses no longer exceed the incomes, syntropy starts showing in the form of synchronicities: meaningful coincidences.

The psychologist Carl Jung and the physicist Wolfgang Pauli coined the term synchronicity to indicate an invisible causality different from that familiar to us. Synchronicities manifest as meaningful coincidences because they converge towards an end.

Invisible causality acts from the future and groups events according to

a purpose, to an *Attractor*.
Synchronicities are meaningful since
they have a purpose.

*«How much do you pay for the rent of your
office?»*

«Nothing. It is owned by my aunts.»

*«They could rent it and make a profit, but
you use it for free?!»*

«Exactly.»

«And what are your aunts living on?»

*«They both receive a pension and have some
savings, but their financial situation is not
good, they constantly complain.»*

*«Have you ever thought about renting a
room in an office and letting your aunts rent
their apartment?»*

«I have no money, I can't afford to pay a

rent!»

«How's your business going?»

«I have few clients, perhaps because of the economic crisis, but also because of the position of the office.»

«A less prestigious office, but in a strategic and well-connected place could help you have more customers?!»

The first synchronicity is the following. The day after this dialogue, as if by magic, he received the offer of a room in an office in the most central area of the city, at the price of only 250 euros a month, including all utilities! The aunts' apartment was in a very beautiful and prestigious place, but difficult to reach and with no

parking places: beautiful, prestigious, but inconvenient and very expensive. However, he hesitated, he didn't dare!

The next day another synchronicity occurred. He received a call from the doorkeeper. An airline company offered 2,800 euros a month for his aunts' apartment. Obviously, the aunts asked him to find another place. Fortunately, the day before he had received the offer of a room. But still, the office in the city center was in a very noisy area: well-connected, but chaotic.

The third synchronicity is the following. That same afternoon he was walking in the area of the city he likes most. It is not central, but it is

green, quiet, and well connected. At a shoemaker's window, he saw a notice for a room in an office. The apartment was in the building next to the shoemaker. He called and immediately went to see it. He instantly decided to rent the room. In a city like Rome, it is difficult to find rooms for rent in professional studios and above all in such a beautiful place of the city.

Synchronicities attract to places and situations that otherwise we would not have taken into consideration and solve our problems. Synchronicities are accompanied by feelings of warmth and wellbeing in the thoracic area that inform us that we are on the

right path.

«I began to feel warmth and wellbeing in the chest area. My clients like the new studio. There is parking place, it is nice, quiet and it is near an underground station. My business is thriving, my savings are increasing and my sentimental life has improved.»

Syntropy together with synchronicities offers wealth and happiness. But when things go well it is easy to fall into entropic and dissipative lifestyles and this reverses the trend.

A few months later he received a job offer, a prestigious job abroad: his

dream!

He immediately accepted and moved. The salary was high, and taxation was low. Suddenly he could become a rich man living the rich life he had always dreamed. But in this way entropy increases and syntropy decreases and we fall back into failure and suffering!

«The foreign company was only interested in making money, without any ethics. I had to work almost fifty hours a week, there was nothing else outside the company. It was necessary to give absolute priority to what was profitable, even if immoral. A few months later I felt disgusted with my profession. Taxes were low, but I had to pay

all the services. By adding the rent of the house and the expenses related to the fact that I was a foreigner, I paid much more than I earned. After only six months I had accumulated more than twenty-eight thousand euros of debts! The dream had broken and had become a nightmare. From heaven I fell into hell. I had no time for myself or for my love life. First, I felt discomfort, then suffering, and then depression and panic exploded. I decided to return to Italy!»

Case # 2

«I had joined a gym class. The instructor behaved as a guru with seductive ways that

hooked me. He asked to join seminars and retreats, for extra money. Within a few months I was totally addicted and was unable to stay away from him. For the gym and seminars, I was paying several hundred euros a month. This self-proclaimed guru wanted always more money and was asking to join rituals and practices, that had little to do with spirituality. I felt an unbearable pain in my chest. I was able to calm this pain only with coffee.»

Let's see how it went.

«Do you keep track of your expenses?» I said.

«No, I never do. What should I do?»

«Keep a diary, write down what you spend and for what.»

Most people are unaware of what they do with money. Keeping a diary is an exercise of awareness. After few days we met again:

«The diary made me discover that I go to the bar 5 times a day. More than I thought!» She said.

«And how much do you spend?»

«Each time at least 2 euros. All together I spend more than 10 euros per day.»

«That is 4 thousand euros a year!» I added. *“Are you happy with the quality of the coffee at the bar?»*

«No! I often have acidity, and the coffee is usually terrible!»

«Do you have alternatives?»

«Yesterday I went to an appliance store and a saleswoman asked me to try the coffee made with a small Nescafe machine. It was great and creamy as I like it!»

«What is the price?» I asked.

«Just 49 euros!»

«How much do you spend for the bar?»

«Over 10 euros per day!»

«This Nescafe machines costs 5 days at the bar!»

«Yes 49 euro.»

«Then buy it!»

«I don't have the money!»

«Buy it straight away, and stop going to the bar. You'll find yourself with a lot of money!»

«Isn't it a luxury?»

«No, it is a necessity. You will save money!»

We met a few days later:

«How are you? Did you buy the Nescafe machine?» I asked.

«Yes I bought it straight after our last meeting and I have not been back to the bar since.»

«Something else happened?»

«When I stopped going to the bar the guru asked me to join activities that I could not accept.»

«Such as?»

«The first request was a blood pact that could only be dissolved with death.»

«And then?»

«The second request was to use drugs that would facilitate the spiritual path.»

«And what was your reaction?»

«I didn't know how to leave. He had isolated me from my family, from my profession, from my husband and from all that is good and important in my life.»

«Did something happen?»

«I was trapped in a pattern that I was repeating automatically and obsessively. Even though I knew that what I was doing caused me pain and suffering and caused pain and suffering to those around me, I felt compelled to repeat this pattern. I went to a

dinner at a friend's house, and I met a psychotherapist specialized in freeing people from these types of patterns. After a couple of sessions, I felt the courage to abandon the guru. Others are now following my example. I no longer feel the inner pain in my chest and my need for coffee has diminished. I now have money. I can spend it on healthier activities. Yesterday I went to a music school near my home, I have enrolled in a piano course!»

The Nescafe machine lowered entropy, and syntropy increased opening the way to synchronicities and healing.

Friends and family had tried to help her, even offering money if she abandoned the guru.

Just lowering entropy thanks to the coffee machine triggered synchronicities that gave her the strength to solve the situation.

A 49-euro Nescafe machine neutralized the diabolic guru!

Case # 3

«Tell me, which is the problem!» I said.

«It is two years now that I have lost my job and my wife lost her job six months ago. The situation is difficult. Despite the help of friends, I am not able to find work. I

have been sending job applications without receiving any response. We have a three year old child who is ill. At home there are continuous tensions. We live in a poor area of the city. My father pays for the rent of our apartment and for the food.»

«Where do your parents live?»

«They live in the center of Rome. They constantly ask us to go and live with them. They would be happy to have us. The house is big, and we would have a lot of space, compared to the ugly small apartment we live now in.»

«Why don't you accept?»

«I believe in an independent life.»

«But your father is paying for all your expenses!»

«Yes, this makes me feel very bad!»

«And what do you do?»

«I have fallen into a depression, which is becoming more acute. I am followed by a psychiatrist.»

«Did you try Bach's flower remedies, they can be very powerful.»³⁷

When we met again:

«Did something new happen?»

«My wife threatened to return to her parents with our son!»

«And?»

«Maybe because of Bach's flowers I had flashes of the past.»

«For example?»

³⁷ www.sintropia.it/flowers

«I was two years old and had to go to the toilet. We were at the sea, and I needed the help of my father but he didn't listen to me. I kept asking, and he was just not paying notice.»

«And?»

«Last week I decided to move back to my parents with my wife and son. My depression has faded away. I help my parents and my grandmother. My son is feeling better. My life now has a purpose and a meaning. I no longer must pay the rent and the expenses have dropped. The house in which we live is big and comfortable. My son is happy, the area is beautiful, and we can go out for walks. The work is flourishing again.»

THE COMPASS OF THE HEART

Life shows an incredible complexity that converges towards common projects, despite individual differences. Considering only the contribution of the past, it is impossible to explain why individuals converge towards common projects and it is impossible to explain the stability of these projects over time.

Attractors explain this stability and this convergence. Attractors are not just causes that retroact from the

future, but they behave like antennas. When an individual solves a task, if it is beneficial for life it is selected by the attractor that sends this information to all the other individuals. Attractors establish an invisible link among individuals that allows to develop a shared knowledge which is beneficial for life. At the same time attractors behave as goals and when individuals converge towards the attractor, they experience wellbeing and happiness and contribute to a shared knowledge, without the involvement of any physical means. This is based on the quantum properties of entanglement and non-locality. Attractors receive information from individuals, select

what is advantageous and redistribute it. This process transforms individual experiences into intelligent information, and provides solutions, projects, and form.

People often ask if attractors imply that the future is already determined. The answer is simply *NO*. They imply exactly the opposite! Attractors indicate that we will inevitably return to where syntropy originates, and that the path depends on our choices. If attractors did not exist, we would live in a mechanical universe totally determined by the past. Instead, we are constantly forced to choose.

Attractors in-form our body and life and guide towards specific solutions,

shapes and structures. This different type of causality is at play with life. Hans Driesch (1867-1941) developed experiments in the field of embryology that have provided a proof that supports this type of causality.

Driesch suggested the existence of final causes, which act in a top-down way (from global to analytical, from the future to the past) and not in a bottom-up way, as it happens with classical causality.

Final causes coincide with the purpose of nature, the biological potential, which Driesch named *entelechy*.³⁸ Entelechy is a Greek word

³⁸ Driesch H. 1908, *The Science and Philosophy of the Organism*, www.gutenberg.org/ebooks/44388

whose derivation (*en-telos*) means something that contains in itself its own end or purpose, and that evolves towards this end. So, if the path of normal development is interrupted, the system can achieve the same end in another way.

Driesch believed that the development and behavior of living systems are governed by a hierarchy of entelechies, which all result in an ultimate entelechy.

The experimental demonstration of this phenomenon was provided by Driesch using sea urchin embryos. Dividing cells of the embryo of sea urchins after the first cell-division, he expected each cell to develop into the

corresponding half of the animal for which it had been designed or preprogramed, but instead he found that each developed into a complete sea urchin. This also happened at the four-cell stage: entire larvae ensued from each of the four cells, albeit smaller than usual. It is possible to remove large pieces from eggs, shuffle the blastomeres and interfere in many ways without affecting the resulting embryo. It appears that any single monad in the original egg cell can form any part of the completed embryo. Conversely, when merging two young embryos, a single sea urchin results, and not two sea urchins.

These results show that sea urchins develop towards a single morphological end. When we act on an embryo the surviving cells continue to respond to the final cause that leads to the formation of structures. Although smaller, the structure which is reached is like that which would have been obtained by the original embryo.

It follows that the final form is not caused by the past or by a program, a project or a design which act from the past, since any change we introduce in the past leads to the same structure. Even when a part of the system is removed or the normal development is disturbed, the final form is reached,

and it is always the same.

Another example is that of the regeneration of tissues. Driesch studied the process by which organisms can replace or repair damaged structures. Plants have an amazing range of regenerative capabilities, and the same happens with animals. For example, if a flatworm is cut into pieces, each piece regenerates a complete worm. Many vertebrates have extraordinary capabilities of regeneration. If the lens of the eye of a newt is surgically removed, a new lens is regenerated from the edge of the iris, whereas in the normal development of the embryo the lens is formed in a very

different way, starting from the skin.

Driesch used the concept of entelechy to account for the properties of integrity and directionality in the development and regeneration of bodies and living systems.

Independently in 1926 the Russian scientist Alexander Gurwitsch³⁹ and the Austrian biologist Paul Alfred Weiss⁴⁰ suggested the existence of a new causal factor, different from classical causality, which was named morphogenetic field. Apart from the claim that morphogenetic fields play an important role in the control of

³⁹ Gurwitsch A.G. 1944, *The Theory of Biological Field*, Moscow: Soviet Science.

⁴⁰ Weiss P.A. 1939, *Principles of Development*, Henry Holt and Co.

morphogenesis (the development of the shape of the body), neither author showed how causality works in these fields.

The term “field” is currently fashionable: gravitational field, electromagnetic field, individual field of particles and morphogenetic field. However, the word field is used to indicate something that is observed, but not yet understood in terms of classical causality; events that require a new type of explanation based on a new kind of causality.

The entropy/syntropy model replaces the terms entelechies and fields with the term *Attractor*. An attractor is a cause retroacting from

the future which guides using a field.

The biologist Rupert Sheldrake⁴¹ refers to the theory of René Thom “*The theory of catastrophes*” which identifies the existence of attractors at the end of any evolutionary process.⁴²

Thom introduced the hypothesis that the shape could be due to causes that act from the future and Sheldrake added the hypothesis of formative causation according to which morphogenesis (the development of the shape) is guided by attractors (i.e., retrocausal processes). The term comes from the Greek root

⁴¹ Sheldrake R. 1981, *A New Science of Life: The Hypothesis of Formative Causation*, Blond & Briggs, London.

⁴² Thom R. 1972, *Structural Stability and Morphogenesis*, in Benjam W. A. 1972, ISBN 0-201-40685-3.

morphe/morphic and is used to emphasize the structural aspect.

Experimental results that can be easily explained in terms of attractors, were provided by Sheldrake.

Members of the same group, such as animals of the same species, can share knowledge, without using any physical transmission. Experiments show that when a mouse learns a task, this same task is learned more easily by each other mouse of the same breed. The greater the number of mice that learn to perform a task, the easier it is for each mouse of the same breed to learn the same task.

For example, if mice are trained to perform a new task in a laboratory in

London, similar mice learn to perform the same task more quickly in laboratories all over the world. This effect occurs in the absence of any known connection or communication between the laboratories.

The same effect is observed in the growth of crystals. In general, the ease of crystallization increases with the number of times that the operation is performed, even when there is no way in which these nuclei of crystallization may have been moved from one place to another infecting the different solutions.

Sheldrake explains these strange results introducing the concept of morphogenetic field:

“Today, gravitational effects and electromagnetic ones are explained in terms of fields. While Newtonian gravity rose somewhat unexplained by material bodies and spread into space, in modern physics fields are the primary reality and by using fields we try to understand both material bodies and the space between them. The picture is complicated by the fact that there are several different types of fields. First there is the gravitational field (...) then there is the electromagnetic field (...) third, the quantum field theory (QFT), and so on.”

Sheldrake's morphogenetic fields are a combination of the concepts of

fields and energy.

Energy can be considered the cause of change. Fields can be considered the project, the way in which energy is guided.

Fields have physical effects, but are not themselves a type of energy, they guide energy in a geometric or spatial organization.

The Vital Needs Theory translates the word fields into attractors and “morphogenetic fields” into “morphogenetic attractors” or “morphogenetic retrocausality.” It agrees with the statement that morphogenetic fields are at the basis of formative causation, morphogenesis, macroevolution, and

the maintenance of the shape of living systems at all levels of complexity, not only on the surface, but also in internal processes.

Attractors provide the project and the design, with properties like Driesch's entelechies.

For example, to build a house, we need building materials and a project (an attractor) which determines the shape of the house. If the project is different, the same building material can be used to produce a different house.

When building a house there is a field that corresponds to the project. The project is not present in the building materials, which can

therefore be used in many different types of projects. The project gives stability and leads the building material to converge and cooperate, despite individual differences.

The project represents the cohesive force of syntropy that brings parts together and contrasts the diverging tendency of entropy.

This can be extended to cells, organs, trees, and living systems in general. For each species, for each type of cell and organ there is at least one attractor which coincides with what is normally called a field. Each morphogenetic field corresponds to a project that drives the living system towards a specific form and

evolution.

The role of attractors becomes clear when studying living systems. For example, amino acids are the building blocks of proteins, but are not considered to be living forms. Proteins involved in the metabolism of cells are composed of chains which include more than 90 amino acids. Simple combinatorial calculations show that more than 10^{600} (one followed by 600 zeros) permutations are required to combine amino acids by chance in a “spontaneous” protein⁴³. This number is greater than all the spontaneous combinations which are possible in the entire

⁴³ Fantappiè L. 1993, *Conferenze Scelte*, Di Renzo, Roma.

history of the universe, since the Big Bang.

In a work published in the American Scientist, Walter Elsasser⁴⁴ shows that in the 13-15 billion years of our Universe no more than 10^{106} events took place (also considering the level of nanoseconds). Consequently, any event requiring a combinatorial value greater than 10^{106} is simply impossible in our Universe.

The number 10^{600} is by far greater than all the possible combinations in the history of our Universe. In other words, the possibility that only one protein is formed by chance is null. Elsasser concludes that: “*the notion of*

⁴⁴ Elsasser W.M. 1969, *A causal phenomena in physics and biology: A case for reconstruction*. American Scientist, 57: 502-16.

chance in biology has no logical foundation ... its use to explain life is at best metaphorical, but there is a danger that this metaphor may divert attention in the wrong direction.”

In other words, the possibility of random formation of just one protein is nil.

Attractors play a key role also in our daily life. Since attractors are the source of syntropy we can feel them thanks to our autonomic nervous system. When we are converging towards an attractor, we feel warmth and wellbeing and experience intuitions and insights.

An important example has been provided by Steve Jobs, the founder of Apple. Jobs has been one of the

most creative and intuitive men. He had a complex psychology, partly because he had been abandoned by his natural parents, a drama that accompanied him throughout his life. Having been rejected made him feel meaningless, depressed, and tormented to the point that he quitted university during the first semester of the first year.

He ventured in India searching for his true self and he discovered a completely different world based on intuitions: “*in the Indian countryside people do not let themselves be guided by rationality, as we do, but by intuitions.*” He discovered that thanks to intuitions he could “*feel the future*”, an ability that

was very developed in India, but practically unknown in the West.

Feeling the future, through intuitions, was for Jobs more powerful than rationality. In India he learned that to cultivate intuitions it was necessary to live a minimalist life, be vegan, avoid alcohol, tobacco, and coffee. He also discovered that Zen meditation could play an important role. When an intuition came to his mind it was like an order that he had to follow, without being influenced by the judgment of others: “*Others do not know the future, only our heart can show us the path.*”

He lived in a thrifty way, a life so essential and austere that his children

believed he was a poor man. He avoided wealth because it could distract from the inner voice of the heart. He was one of the richest men, but he lived in a minimalist way that favored insights and intuitions, the source of his innovations and fortune.

Jobs opposed marketing studies, as he believed that people do not know the future. Only intuitive people can feel the future.

Jobs was not an engineer, he had no scientific or technical mind, he was an artist! What do computers have to do with arts? Jobs knew little about electronics, but his intuitive mind showed him an object of the future. Thirty years earlier, in 1977, he had

the vision of an object that combines aesthetics, simplicity, technology and minimalism! A product that had to be technologically perfect, beautiful, simple, and silent! At his friend Steve Wozniak's house, he had the intuition of the smartphone, a computer that could be held in one hand. He asked Wozniak to develop a prototype of a personal computer, which he named Apple-I. He managed to sell a few hundreds of them, and this sudden success gave him the impulse to develop a more advanced model, suitable for ordinary people, which he named Apple-II.

His obsession with beauty and simplicity led him to devote an

enormous amount of time to details. Apple-II had to be beautiful, silent and at the same time essential and simple! It was an unprecedented commercial success that made Apple one of the leading global companies.

For Jobs intuitions were commands that he had to follow, regardless of the opinions of others. The only thing that mattered was to find a way to give shape to his intuitions.

The vegan diet, Zen meditation, a minimalist life immersed in nature, no alcohol and coffee, nourished his inner voice, the voice of his heart and strengthened his ability to intuit the future.

At the same time, this was the cause

of great difficulties. He was irrational and bad tempered. He was aware that his irrationality was incompatible with the management of a large company, and he therefore chose a rationalist manager, John Sculley, a famous manager he admired but with whom he entered continually in conflict, to the point that in 1985 the board of directors decided to fire Jobs from Apple, the company he had founded.

Apple continued to make money for a while with the products designed by Jobs, but after a few years the decline began. In the mid-1990s, Apple came to the brink of bankruptcy and on December 21st, 1996, the board of directors asked Jobs to return as the

president's personal advisor. Jobs accepted. He asked for a salary of one dollar a year; in exchange his insights, even if crazy, had to be accepted unconditionally. In a few months he revolutionized the products and on September 16, 1997, he became interim CEO. He resurrected Apple in less than a year. How did he manage?

“We should not let the noise of others’ opinions dull our inner voice and, more importantly, we must always have the courage to believe in our heart and intuitions, because they already know the future and know where we need to go.”

For Jobs, everything else was secondary.

Being *interim* marked all his new products. Their name had to be preceded by the letter *i*: *i*Pod, *i*Pad, *i*Phone, and *i*Mac.

He talked about important business walking in parks or in nature. To celebrate a success, he invited colleagues to restaurants for \$10 per person. He collected flowers in the fields, and he wore the same clothes for years. Despite the immense wealth he had!

At the time of Apple I, he repeated that his mission was to develop a computer that could be held in one hand and not to become rich. For him money was exclusively a tool.

The ability to feel the future was the

source of Jobs' wealth, the ingredient of his creativity, genius, and innovation.

Einstein believed that: *“the intuitive mind is a sacred gift and the rational mind is its faithful servant. But we have created a society that honors the servant and has forgotten the gift.”*

Jobs emphasized that almost everything, expectations, pride, and fears of failure, vanish in the face of death. When we are aware of death, we pay attention only to what is important. Being constantly aware that we are destined to die is one of the most effective ways to understand what is important and to avoid the trap of attaching ourselves to

materiality and appearance. We are already naked in the face of death. Since we must die, there is no reason not to follow our heart and do what we must do.

Jobs believed in synchronicities. He built the headquarters of Pixar around a central space, a large square, where people had to go if they wanted to eat or use the services. In this way chance encounters were favored, allowing the invisible world to activate intuitions, creativity, synchronicities, aesthetic sensibility and make visible what is not yet visible.

Jobs loved Michelangelo's famous words: *'In each block of marble I see a statue as if it were in front of me, shaped and*

perfect in attitude and action. I just have to remove the rough walls that imprison the beautiful appearance to reveal it to others as my eyes see it.”

Jobs believed that we all have a mission and that in order to fulfill it we must remove what is not necessary.

He died a few months after the presentation of the iPad, the computer that can be held in one hand, the mission of his life.

Jobs' life testifies that creativity comes from the invisible world and that we can access the invisible through intuitions. He showed that the voice of the heart brings the future into the present.

Jobs was considered by many a misfit. Back from India he was so poor that he started begging. He thought that his fruitarian diet prevented his body from smelling and did not use deodorants or take showers. At his first job, at Atari, they asked him to do the night shift, alone. No one wanted to be next to him.

When he discovered that the future influences the present, through intuitions and the heart, he developed the belief that reality is not determined, but can be shaped by our choices and our will.

He followed his intuitions, without the fear of others' people judgments and without the fear of being

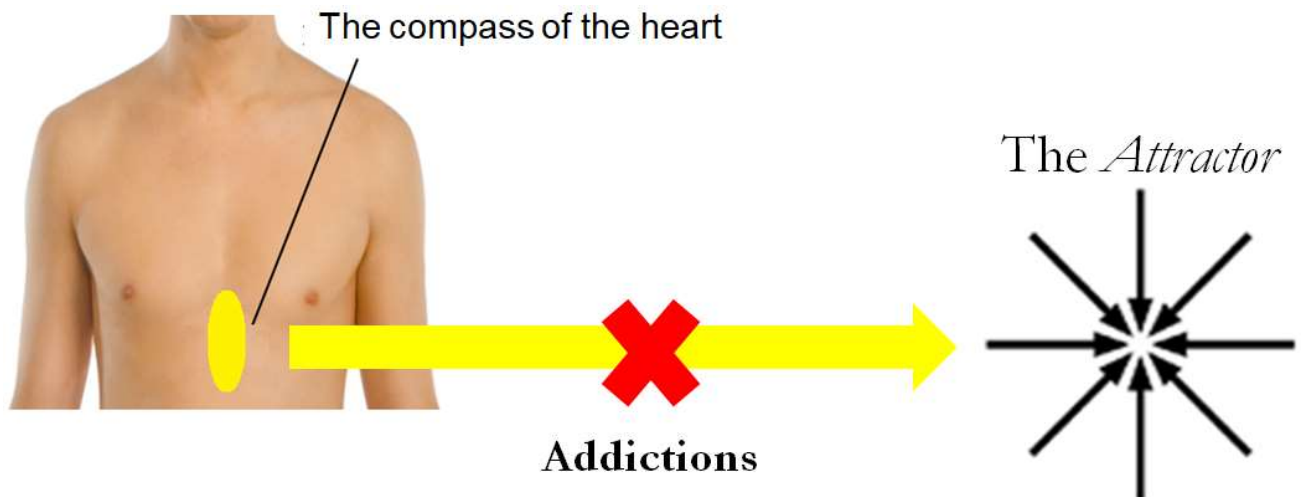
considered different.

He summarized his vision with these words: *“Here’s to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They’re not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify, or vilify them. About the only thing you can’t do is ignore them. Because they change things. They push humans forward. And while some may see them as the crazy people who are crazy enough to think they can change the world, are the ones who do.”*

Jobs focus on the heart, on intuitions and a minimalist lifestyle brought him to regard rationality and money as

tools. For him the invisible world was real and the visible one was instrumental. He fasted and meditated to enhance the perception of the invisible world. The key elements of Jobs' success were a minimalist life, being a vegetarian/vegan, not drinking alcohol or coffee, Zen meditation, following the heart and being guided by intuitions.

Most people are unaware of the compass of the heart and instead of using it to be guided towards wellbeing, they use substances that act on the autonomic nervous system, such as alcohol and heroin, to cover the feelings of void and pain.



To progress towards wellbeing and happiness, we must abandon all our addictions, and all what undermines our ability to feel the compass of the heart.

The attractor is our purpose, our mission. Finding our attractor is challenging, but in the absence of it, life is meaningless and not worth living. Depression and anxiety inform

that we are not going towards the attractor, while happiness and wellbeing tell that we are converging towards the attractor.

When we are converging towards the attractor synchronicities and amazing facts happen, by far more wonderful than we would ever imagine.

LOVE AND TRUTH

We are constantly immersed in false narratives, often presented as scientific truths. The path towards wellbeing requires that we learn to recognize truth and have the courage to move away from false narratives.

Example #1: Natural selection and struggle for survival

Thomas Robert Malthus (1766-1834) in *An Essay on the Principle of Population*⁴⁵, published in 1798, stated that every twenty-five years the population grows according to a geometrical ratio (1, 2, 4, 8, 16, 32, 64, 128, 256 ...), while the amount of food available grows according to an arithmetical ratio (1, 2, 3, 4, 5, 6, 7, 8, 9 ...); therefore, while the population doubles, food resources show a much more modest increase. Consequently, Malthus predicted that in the year

⁴⁵ Malthus T.R. 1798, *An Essay on the principle of population as it affects the future improvement of society*, Reprint, London: Reeves and Turner, 1878.

2000, the proportion between population and food resources would be 4,096 to 13 and food resources would not be sufficient for the needs of the population.

Malthus' believed that the planet is overpopulated. However, if we consider that the amount of land and resources needed to feed a meat eater are 600 times greater than those needed to feed a vegetarian, we see that the planet could easily support a population of over 100 billion people, and if we add the fact that desertification is often the result of the intensive production of fodder for animal farming industries, we come to

the conclusion that the planet is at the moment underpopulated.

Malthus believed that hunger, epidemics, wars, and the extermination of babies would contribute to control the population, thus balancing the population and the resources. This vision required that the poor and needy had to be oppressed. In Malthus's view, the poor, the uneducated, sick, crippled, and unsuccessful had to die.

The idea of evolution by natural selection and struggle for survival took shape in Darwin's mind after reading Malthus' works. Darwin described Malthus' theory of natural selection in the following way: "As

more individuals are produced than can possibly survive, there must in every case be a struggle for existence, either one individual with another of the same species, or with the individuals of distinct species, or with the physical conditions of life. It is the doctrine of Malthus applied with manifold force to the whole animal and vegetable kingdoms.”

Darwin gave to Malthus views the scientific validation which allowed to translate them in a social doctrine. This doctrine is named *Social Darwinism*, a doctrine which considers wars of conquest an application, to the human species, of the law of natural selection. According to Social Darwinism there is a biological reason for disparities: less-fit individuals and

nations must remain relegated to the primitive stage. This ideology has been at the basis of colonialism, eugenics, fascism, and savage capitalism.

According to Social Darwinism happiness, well-being, peace, and security have no scientific backing. Social Darwinism has given rise to a science where no compassion is felt towards those who suffer and cry for help, for those who cannot provide for their children, for elderly parents and families without shelter, food, and medicine, for the poor and powerless. In this vision a poor but honest citizen has no value, and his death will benefit the race. But

someone rich but morally corrupt is regarded important for the “progress of the race”.

This vision has led to the collapse of moral and ethical values. When a society undergoes moral degeneration, the economy turns into *savage capitalism* in which the poor and oppressed and the marginalized do not receive any aid, assistance, or social justice. Injustice is not seen as a problem but as part of a natural law. Savage capitalism does not protect weaker firms (and weaker individuals) against the risk of being subdued, exploited, and eliminated. This philosophy is summed up in the saying “*the big fish eats the smaller one*”.

Social Darwinism provided a scientific basis for savage capitalism, and savage capitalism still governs the global economy.

The United States of America was the first country to apply Social Darwinian in business practices and economy. This system, camouflaged under the name “capitalism”, was based on the idea of the “survival of the fittest”. The result was the beginning of a fierce competition in business which even culminated in murder, which was considered a legitimate act guided by the laws of nature.

Recent financial and corporate scandals recall the period of the late

nineteenth century, which was marked by social and economic dictatorship, now named the “*robber barons*”. This name was given to the unscrupulous and despotic nobility of the medieval period in Europe and in the modern US is used to describe unscrupulous industrialists.

During the late nineteenth century, the ideology of Social Darwinism controlled the President, Congress, the Supreme Court and the two major parties, and was used to brutally quell social unrest. The only goal was to get more money and increase power. The robber barons had no interest in social welfare, even that of their own workers. Millions of lives were ruined

by extremely low wages, by the upheaval of working conditions and long working hours. The lack of security precautions meant that workers fell ill, were wounded, and often killed.

Industrialists did not pay importance to the value of human life (especially that of their workers) ignoring any form of safety precaution and causing the multiplication of incidents in the workplace. In the early twentieth century, in the United States, over one million workers were victims each year of accidents. For workers who spent their lives in the factory, the loss of a limb was almost inevitable. During the working life, more than

half of workers were badly mutilated or lost their sight or hearing. Industrialists did not take any measures since they believed that the planet was overpopulated, and that human life had no value.

In Darwin's doctrine which considers life a product of chance without any purpose and value, love is alien. The British Eugenics Society, founded by Darwin's cousin, Francis Galton, his son George, and Aldous and Julian, sons of his great friend Thomas Huxley, based their vision on assumptions which disregarded any reference to love, cooperation, and unity.

When we expand science to syntropy we discover that life is a manifestation of cooperation orchestrated and guided by attractors. Darwin's idea that life is a product of chance without any purpose is incompatible with combinatorial calculations that show that not even one single protein could take shape by chance in the whole history of the universe. To explain the evolution from simple to complex and from inorganic to organic final causality and attractors are required, and this provides a purpose to life.

- *A simple exercise*

Truth requires that we expose ourselves to different views and opinions and have the courage to choose what is coherent. However, ideas provide values and mitigate the identity conflict. This is the reason why it is so difficult to change ideas. When we try to understand different narratives, we discover that the compass of the heart always points to what is true, even when the rational mind tells a totally different story.

In Latin intuition means to look inside (*in*=inside + *tueri*=glance). Intuitions are coupled with feelings of warmth and wellbeing in the compass of the heart (the solar plexus).

Henri Poincaré, one of the most intuitive mathematicians of the last century, observed that when faced with a new problem, whose solutions could be countless, the rational approach is initially used, but being unable to arrive at the result another type of process is activated. This process selects the correct answer among the endless possibilities, without the help of rationality. Poincaré named this process intuition and noticed that intuitions are always accompanied by feelings of truth, warmth, and wellbeing:⁴⁶

“Among the large number of possible

⁴⁶ Henri Poincaré, *Mathematical Creation*, from *Science et méthode*, 1908.

combinations, almost all are without interest or utility. Only those that lead to solving the problem are illuminated by an inner feeling of truth and beauty.”

Truth requires that we learn to trust the compass of the heart and avoid being misguided by the rational mind and the opinions of others.

In this regard, the neurologist Antonio Damasio, studying people affected by decision-making deficits, discovered that feelings contribute to the decision-making process, making advantageous choices possible without having to make advantageous evaluations.⁴⁷

⁴⁷ Damasio AR (1994), *Descartes's Error. Emotion, Reason, and the Human Brain*, Putnam Publishing, 1994.

People with decision making deficits show knowledge but not feelings. Their cognitive functions are intact, but not the emotional ones. They have normal intellect but are unable to make appropriate decisions. A dissociation between rationality and decision-making is observed. The alteration of feelings causes a myopia towards the future. This can have neurological origins, but it can also be caused by the use of substances, such as alcohol and heroin, which affect the solar plexus (ie the compass of the heart).

During the next example try to discover the truth following the feelings of warmth in your heart!

Example #2: Money

Life continually exchanges matter and energy and to do so a medium is required. In ancient Rome this medium was named *Linha*, the divinity of fresh water that made nutrients available. In botany it is a liquid, which consists almost all of water. In human societies this function is provided by money. Money is the lifeblood of society and anyone who controls money also controls the vital energy of the people and nations.

With the formation of States, coins were created as tools for the exchange

of goods and services, as well as for the payment of taxes. In modern economies coins have been accompanied by banknotes, which are easier and cheaper to produce and use. Banknotes were introduced for the first time in 806 AD in China. People who had precious coins and metals deposited them with the banks, for their preservation and protection from thieves, and the banks gave a receipt, a bank-note. In Europe, the first account about banknotes was made by Marco Polo and the first banknotes appeared in 1661 in Sweden. In 1694, Norman Montagu replaced commercial banknotes with national banknotes by

grouping the banks that issued banknotes in a private institution, the *Bank of England*, with long-term banking privileges. The Bank of England gave banknotes in exchange for gold and applied an interest to cover the costs of the deposits and the security of gold. Banknotes were perceived as gold substitutes since the conversion to gold was certain.

But the Bank of England concentrated immense powers in the hands of a few and unscrupulous bankers. The war of independence of the United States of America was mainly a war against the Bank of England. To prevent America from falling again under the dictatorship of

a few greedy bankers, the founding fathers of the United States prohibited, in the first article of the constitution, the establishment of a private central bank: “*Only the Congress shall have power ... to coin money, regulate the value thereof.*”

Without a central bank each commercial bank could print its banknotes, which had to be secured by Treasury bonds. This made the dollar unattractive, compared to the British pound that was used in international transactions, and a war started between bankers.



The Astor, Guggenheim and Straus, the most powerful bankers of the time, were strong supporters of the first article of the constitution and were against the establishment of a central bank. Instead, the Rockefellers, Morgan and Rothschild pushed for the establishment of a private central bank. Oddly enough,

the bankers who opposed the establishment of a central bank (the Astor, Guggenheim and Straus) died on April 15th, 1912, in the sinking of the Titanic, the largest ocean liner in service at the time.

Soon after, on December 23, 1913, the newly elected president Woodrow Wilson signed the Federal Reserve Act. A congressional act that established the Federal Reserve System (FED), the central banking system of the United States, which centralized the US financial system in a privately owned entity.

In 1914, when the FED started printing the first banknotes, the international trading system was

under the rule of the British pound. But, only eight months later, in August 1914, the First World War transformed the dollar into the main international currency. The United States remained neutral until April 1917, when it declared war on Germany. With the war, the US government spending increased fifteen times, causing it to borrow from the FED. The same happened to the European allies and the FED favored the indebtedment of nations by lending the dollars generously. At the end of World War I, the FED had become the main player on the world stage.

President Woodrow Wilson, who

had signed the Federal Reserve Act, declared:

“I am a most unhappy man. I have unwittingly ruined my country. A great industrial nation is controlled by its system of credit. Our system of credit is concentrated. The growth of the nation, therefore, and all our activities are in the hands of a few men. We have come to be one of the worst ruled, one of the most completely controlled and dominated governments in the civilized world. No longer a government by free opinion, no longer a government by conviction and the vote of the majority, but a government by the opinion and duress of

*a small group of dominant men.*⁴⁸

Louis McFadden, Republican Member of the United States House of Representatives from 1915 to 1935, principal sponsor of the McFadden Act of 1927, described the FED with the following words:

“Some people think that the Federal Reserve Banks are United States Government institutions. They are private monopolies which prey upon the people of the United States for the benefit of themselves and their foreign customers; foreign and domestic speculators and swindlers; and rich

⁴⁸ Woodrow W. *“The New Freedom”*, Doubleday Page Company, 1918, New York, under the chapter IX titled: BENEVOLENCE, OR JUSTICE?

and predatory money lenders.”

The power of the FED had become a danger to the United States and several bankers, along with the US Treasury, were starting an alternative monetary system based on banknotes secured by the silver of the US Treasury (*silver certificates*). In the book “*A Monetary History of the United States*”, Milton Friedman and Anna Schwartz⁴⁹ show that in autumn 1929 the FED intentionally reduced the money supply triggering the collapse of the US stock market and causing the Great Depression. The policy of the FED caused the bankruptcy of

⁴⁹ Friedman M. and Schwartz A.J., “A Monetary History of the United States, 1867-1960”, ISBN: 9781400829330

one-third of all US banks. All the banks that were working on the new silver dollar monetary system were swept away by the great depression. Silver certificate dollars disappeared, and the FED had again the monopoly on the currency.

The debt ensured the domination of European nations by the FED. After the United States entered World War I, the allies (mainly England and France) received loans amounting to \$8.8 billion. The total sum of war debts, including loans granted in the period 1919-1921, was over \$11 billion.

The German industrialists began to sabotage all the obligations to repay

war debts. They refused to pay taxes and moved capitals abroad. This led to a deficit in the state budget that was covered by the issuance of unsecured marks causing hyperinflation. In November 1922 the American dollar was worth 320 marks, a year later in November 1923 it was worth 4,210,500,000,000 marks. The collapse of the German currency caused considerable political instability, the occupation of the Ruhr by foreign troops and the misery of the population.

In 1924 the American banker Charles G. Dawes was commissioned by the Committee for Allied Repairs to investigate the problem. His report,

published in April 1924, proposed a plan to establish annual debt repair payments on a fixed scale. He also recommended the reorganization of the German State Bank into a private central bank. In the summer of 1924, the “Dawes plan” was adopted at the London conference.

In August 1924, the old German mark was replaced by a new stabilized banknote. The gold that Germany had paid in the form of war reparations was acquired by the FED and returned to Germany in the form of an “aid” plan, granted by England and France, in turn to pay the war debt. This aid plan was covered with interests. In the end, all the German

population lived in debt, under the blackmail of the FED that could withdraw its loans at any time and cause complete bankruptcy.

An unstoppable tide of FED banknotes poured into Germany in the form of foreign investments which in the period 1924-1929 amounted to almost 63 billion gold marks. In 1929 the German industries were in second place in the world. But they were largely in the hands of major American financial groups. American cooperation with the German military-industrial complex was so intense that in 1933 the key sectors of German industries and large banks such as Deutsche Bank,

Dresdner Bank and Donat Bank were under the control of the FED.

In 1922 a meeting between Adolf Hitler and the US military attaché in Germany, Captain Truman, took place in Munich. Immediately afterwards, a financial miracle occurred for the Nazi party. Following substantial donations from abroad, in September 1930 the Nazi party obtained 6.4 million votes, thus winning the second place in the Reichstag.

Heinrich Brüning, former German chancellor, wrote in his memoirs: “... *since 1923, Hitler received large sums from abroad. Where they went is unknown, but they were received through Swiss and Swedish*

banks.”

On January the 4th, 1932, a meeting was held between the major English financiers, Adolf Hitler, and von Papen. This meeting was also attended by US politicians and the Dulles brothers. Hitler's program was fully approved. It was at this meeting that the question of transferring powers to the Nazis was finally resolved, and on January 30th Hitler became Chancellor.

When Hitler refused to pay war debts, neither Britain nor France made any claims. Furthermore, the Reichsbank, the German central bank, was now a private central bank. In May 1933 it was given a loan of \$1

billion and the cessation of payments of old debts and in June England assigned \$2 billion. Thus, the Nazis got what the Weimar Republic failed to achieve. At the same time, the Nazis received the most modern technologies from the United States, including military patents by the American companies Pratt & Whitney, Douglas and Curtis Wright which were used to build the Junkers-87, the military bombers that the Luftwaffe used during the Second World War. The close economic and financial cooperation of the Anglo-Americans and the Nazis was at the basis of the policy that led to the Second World War.

When the United States entered the war, the FED declared that it was: “...*prepared to use its powers to assure at all times an ample supply of funds for financing the war effort.*” Financing the war was at the core of the FED’s policies. To finance the war, the FED asked the Congress to amend the Federal Reserve Act by allowing to buy government bonds in unlimited amounts, without guaranteed deposits, thus indebting the US government beyond any measure.

At the end of World War II, the gold standard no longer existed, and between the 1st and 22nd of July 1944, 730 delegates from the 44 countries that were winning the war gathered at

the Mount Washington Hotel in Bretton Woods, New Hampshire, in the United States, to redefine a new international monetary order. The outcome of the Bretton Woods conference was to give the US dollar the role of the only international currency. It took three weeks, but eventually the Bretton Woods delegates had to accept the full triumph of the FED. The gold standard was limited to the dollar which had a fixed value against gold of \$35 per ounce. All other currencies were tied to the dollar with a fluctuation between the currencies of 10%.

The American president John

Fitzgerald Kennedy was aware of this situation of excessive power of the FED, and with his executive order 11110 of the 4th of June 1963, he tried to rebalance the monetary policy by authorizing the Treasury of the United States of America to issue banknotes guaranteed with silver deposits.

The intention was to move the monetary control from the FED to the Treasury.



JOHN F. KENNEDY

XXXV President of the United States: 1961-1963

Executive Order 11110—Amendment of Executive Order No. 10289 as Amended, Relating to the Performance of Certain Functions Affecting the Department of the Treasury

June 4, 1963

By virtue of the authority vested in me by section 301 of title 3 of the United States Code, it is ordered as follows:

SECTION 1. Executive Order No. 10289 of September 19, 1951, as amended, is hereby further amended --

(a) By adding at the end of paragraph 1 thereof the following subparagraph (j):

"(j) The authority vested in the President by paragraph (b) of section 43 of the Act of May 12, 1933, as amended (31 U.S.C. 821 (b)), to issue silver certificates against any silver bullion, silver, or standard silver dollars in the Treasury not then held for redemption of any outstanding silver certificates, to prescribe the denominations of such silver certificates, and to coin standard silver dollars and subsidiary silver currency for their redemption," and

(b) By revoking subparagraphs (b) and (c) of paragraph 2 thereof.

SEC. 2. The amendment made by this Order shall not affect any act done, or any right accruing or accrued or any suit or proceeding had or commenced in any civil or criminal cause prior to the date of this Order but all such liabilities shall continue and may be enforced as if said amendments had not been made.

JOHN F. KENNEDY
THE WHITE HOUSE,
June 4, 1963

“Silver dollars” were issued without interests and did not indebt the government. They were like the FED banknotes, with the difference that they were labeled “Silver Certificate” while the FED banknotes were

marked “Federal Reserve Note” and the seal and the serial number instead of being green were red.



Five months later, on November 22nd, 1963, Kennedy was assassinated, and the 4 billion “*Silver Certificate*”

Treasury notes were immediately withdrawn, giving the full control of the dollar back to the FED. At this point the FED had also total control of the government, the media, and the US military establishment.

Communist countries had not succumbed to the FED's dictatorship and had become number one enemies. This justified the Vietnam war that caused massive debts which forced Richard Nixon to end the Bretton Woods agreements and give birth to the petrodollars system; a system based on private central banks, on the supremacy of the dollar and on its exclusive use in the purchase and sale of oil.

The first nation that was sanctioned for violating this policy was Chile. Salvador Allende had nationalized the central bank. The reaction was swift. On September the 11th, 1973, the world witnessed one of the bloodiest coups.

In the year 2000, Saddam Hussein challenged this system, nationalizing the Iraqi central bank and selling oil in currencies other than the dollar. Economic sanctions and war were immediate. Other countries, including Syria, Libya, Venezuela, Russia, Iran, and Indonesia, began to consider the nationalization of their central banks and the use of currencies other than the dollar for the sale of oil.

Anyone trying to break away from the petrodollar system and the FED dictatorship knew they would suffer the same fate as Saddam Hussein.

Gaddafi tried to establish a supranational currency, the gold dinar, which would have unified Africa under the same currency, pushing it away from private central banks and debts. Support was widespread, but the revolutions of the 2011 Arab Spring in North Africa and the assassination of Gaddafi stopped this project.

In 2005, Iranian President Ahmadinejad Mahomoud announced that the small island of Kirsh would soon host a stock exchange for

hydrocarbons where oil and other hydrocarbons would be traded in euros or other currencies, but not in dollars. Henry Kissinger summarized in an August 2006 interview: “*If Tehran insists a military confrontation with America is inevitable.*”

In 2018 Vladimir Putin was re-elected president of the Russian Federation with the aim to bring the Russian central bank under parliamentary control.

The monetary system built on private central banks is based on a scam. Imagine a central bank (ie a typographer) commissioned by a match organizer to print 10,000 tickets.

The printing of 10,000 tickets costs \$50. But the central bank does not ask for the cost of printing, it asks for the value printed on the ticket (on the bill). If it prints 10,000 banknotes of \$10 it asks for \$100,000 in Treasury bonds, since the banknotes “are worth” \$10 each.

It is true that they are worth \$10 each, but their value does not depend on the number printed on the banknote, but on their demand. The central bankers know this, but blackmail the organizers (ie the politicians), promising a generous gift to support their candidacy in the upcoming elections. On the contrary, they will fund other candidates and

discredit those honest people who have opposed this system. This is what happens in all countries where central banks are private.

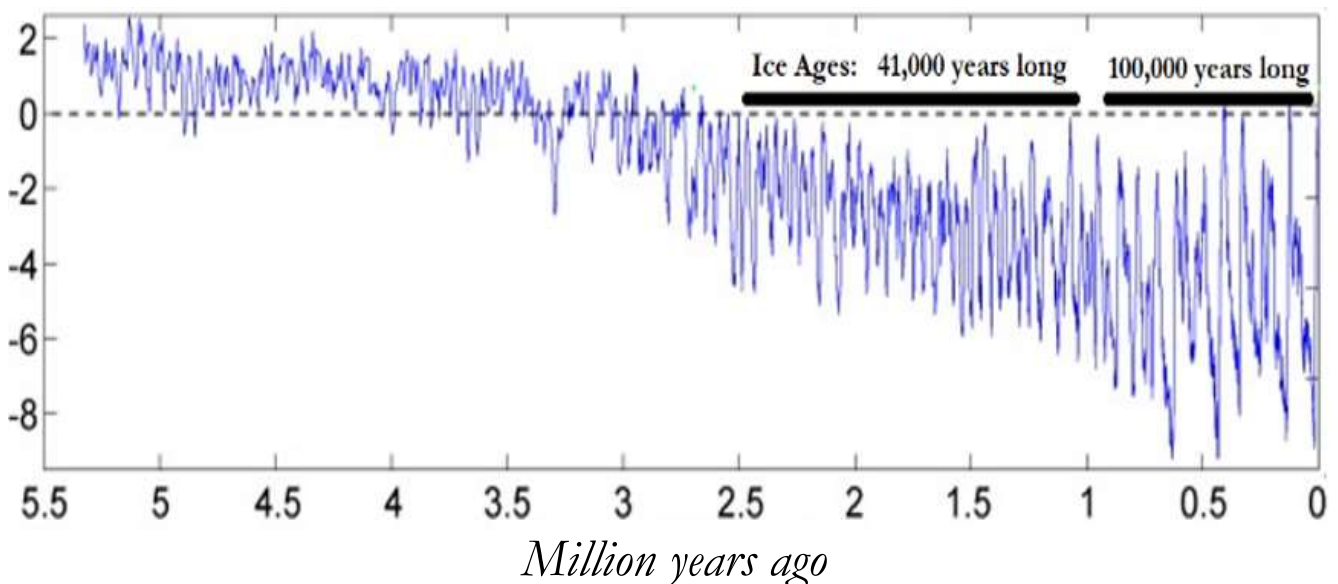
Those who own the central banks usually control mass media and legislators and this gives them total power over the nations.

Henry Ford said:

“It is well enough that people of the nation do not understand our banking and monetary system, for if they did, I believe there would be a revolution before tomorrow morning.”

BE IN PERSPECTIVE

The *Quaternary* began 2.58 million years ago when temperatures gradually decreased, and glaciations started.



The first glaciations lasted 41,000

years and temperatures were on average 4 degrees Celsius lower. The last glaciations stretched beyond 100,000 years, with temperatures on average 8 to 10 degrees lower.^{50,51}

Short interglacial warm periods, lasting about 10,000 years, separate each glaciation. The warm period in which we now live began 11,700 years ago.

Ocean sediments show that we have just re-entered the next ice age and those temperatures will soon return glacial.

In 1972 the leading geologists met at Brown University and felt obliged to

⁵⁰ <https://valentirull.net/2019/05/27/new-book-on-quaternary-ecology-evolution-and-biogeography/>

⁵¹ https://it.wikipedia.org/wiki/Quaternario#/media/File:Five_Myr_Climate_Change.png

inform the president of the United States of America.



BROWN UNIVERSITY *Providence, Rhode Island • 02912*

DEPARTMENT OF GEOLOGICAL SCIENCES

(401) 863-2240

December 3, 1972

The President
The White House
Washington, D. C.

Dear Mr. President:

Aware of your deep concern with the future of the world, we feel obliged to inform you on the results of the scientific conference held here recently. The conference dealt with the past and future changes of climate and was attended by 42 top American and European investigators. We enclose the summary report published in *Science* and further publications are forthcoming in *Quaternary Research*.

The main conclusion of the meeting was that a global deterioration of climate, by order of magnitude larger than any hitherto experienced by civilized mankind, is a very real possibility and indeed may be due very soon. The cooling has natural cause and falls within the rank of processes which produced the last ice age. This is a surprising result based largely on recent studies of deep sea sediments.

Existing data still do not allow forecast of the precise timing of the predicted development, nor the assessment of the man's interference with the natural trends. It could not be excluded however that the cooling now under way in the Northern Hemisphere is the start of the expected shift. The present rate of the cooling seems fast enough to bring glacial temperatures in about a century, if continuing at the present pace.

The practical consequences which might be brought by such developments to existing social institutions are among others:

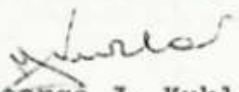
- 1) Substantially lowered food production due to the shorter growing seasons and changed rain distribution in the main grain producing belts of the world, with Eastern Europe and Central Asia to be first affected.
- 2) Increased frequency and amplitude of extreme weather anomalies such as those bringing floods, snowstorms, killing frosts etc.

December 3, 1972

With the efficient help of the world leaders, the research could be effectively organized, and could possibly find the answers to the menace. We hope that your Administration will take decisive steps in this direction as it did with other serious international problems in the past. Meantime however it seems reasonable to prepare the agriculture and industry for possible alternatives and to form reserves.

It might also be useful for Administration to take into account that the Soviet Union, with large scientific teams monitoring the climate change in Arctic and Siberia, may already be considering these aspects in its international moves.

With best regards,


George J. Kukla
Lamont-Doherty Geological Observatory

R. K. Matthews, Chairman
Department of Geological Sciences

GJK/RKM:mc
Enclosure

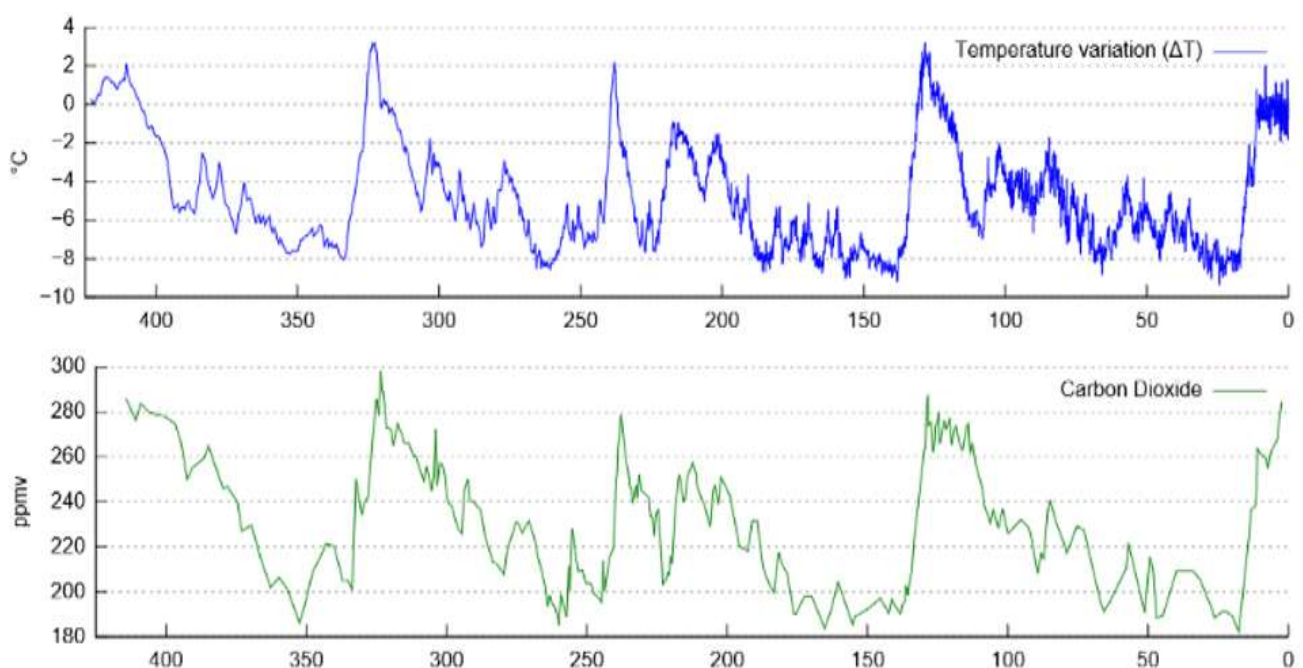
Glaciations were understood in the 18th century, when extensive observations showed that continental glaciers had covered much of Europe,

North America, and Siberia. The position and orientation of the moraines, striations, and glacial ice flows were detected and detailed maps of the extension of the ice caps, their direction and the meltwater channel systems were compiled. This allowed to decipher a story made of multiple glacial and interglacial periods.⁵²

Recently, ice-core data have confirmed this scenario. Ice retains the same chemical properties that were present when the snow fell and it is possible to distinguish years similarly to the rings in a tree trunk. Air bubbles trapped in ice rings are

⁵² https://en.wikipedia.org/wiki/Quaternary_glaciation

used to determine the variations of methane, carbon dioxide, temperature, and dust due to volcanic eruptions. Antarctica's ice cores allow to reconstruct temperatures, carbon dioxide and atmospheric composition, for the entire *Quaternary* period.



Thousands of years ago^{53,54}

53

en.wikipedia.org/wiki/Ice_age#/media/File:Vostok_Petit_data.svg

g

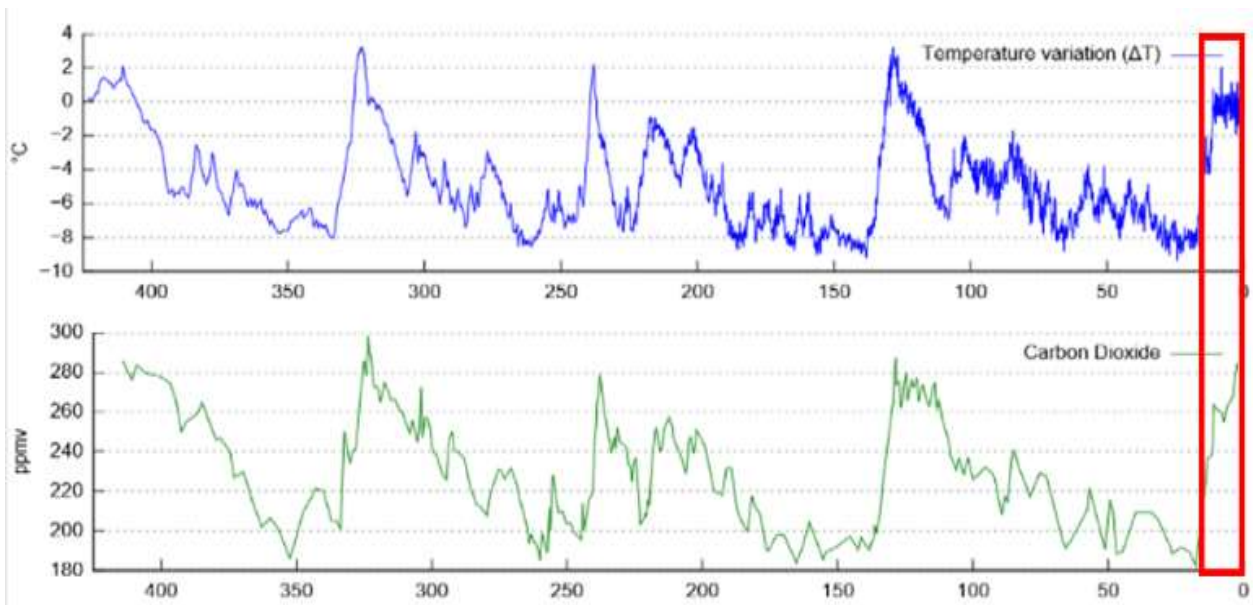
⁵⁴ cdiac.ornl.gov/images/air_bubbles_historical.jpg

This graph shows the history of CO₂ and temperatures up to 400 thousand years ago. We are on the right of the graph and the more we move left, the more we go back in time, until we reach four hundred thousand years ago.

Each warm, interglacial period is associated with increasing temperatures and increasing levels of CO₂.

The following graph shows that temperatures rise before CO₂. This means that CO₂ is not the cause of rising temperatures but the consequence. The explanation is quite

simple: during warm periods life proliferates and, since life is carbon based, CO_2 levels increase *CO_2 is an indicator of life.*



In the graph we also see that temperatures decrease before CO_2 . This means that CO_2 has a limited greenhouse effect. CO_2 levels decrease when life succumbs to freezing temperatures.

During glacial periods the ice caps reach 4 kilometers of thickness in Europe, America and Siberia and ocean levels drop approximately 150 meters. Life is possible only in the equatorial area, in the lowest lands which were previously covered by oceans.

At the end of the ice age, temperatures suddenly rise, ice caps melt in huge interglacial lakes and the banks of these lakes suddenly break pouring immense quantities of water into the oceans wiping out the remains of the civilizations that survived the ice age. Reports of these floods can be found in all cultures and date back to approximately 12,000

years ago.

- *Which is the cause of glaciations?*

In the 1920s Milutin Milankovitch, a Serbian geophysicist and astronomer, suggested that orbital changes could cause periodic cooling of the Earth, with the coldest periods occurring every 41,000 years. Milankovitch believed that the Earth's orbital changes were the cause of glaciations. The orbital eccentricity of the Earth follows a cycle of about 100,000 years and the inclination axis varies periodically between 22° and 24.5° in a 41,000 year cycle. The inclination axis is responsible for the seasons, the

greater the inclination, the greater the contrast between summer and winter temperatures. The precession of the equinoxes and the oscillations of the rotation axis have a periodicity of 26,000 years. Milankovitch's model explains the changes in the contrast between the seasons, and this is confirmed by oceanic sediments and fossils. However, since the overall exposure to the Sun remains the same it does not account for glaciations. Astronomical cycles have lasted for millions of years, while glaciations began 2.58 million years ago. Orbital changes are at the most a co-factor of glaciations.

Another theory⁵⁵ argues that the reduction of CO₂ has given way to long-term cooling and glaciations. But ice-core data show that the reduction of CO₂ starts after temperatures decrease. CO₂ variations are not the cause, but the consequence of temperature fluctuations.

Solar cycles were discovered in 1843 by Samuel Heinrich Schwabe who, after 17 years of observations, noted a periodic change in the average number of sunspots in a progression that follows an 11 year cycle. Scientists were perplexed by the fact that each cycle was a little different. None of the models could explain

⁵⁵ Pagani, M. et. al., (2011), *The Role of Carbon Dioxide During the Onset of Antarctic Glaciation*, Science. 334 (6060): 1261–4.

these fluctuations.

In 2014 Valentina Zharkova⁵⁶ discovered that solar cycles are caused by a double dynamo effect between two layers of the Sun, one near the surface and one deep in its convection area. This model reconstructs past irregularities and predicts what will happen in the future. *“We found magnetic waves that appear in pairs, originating from two different layers within the Sun. Both have a cycle of about 11 years, even if they are slightly out of phase. During the cycle, the waves float between the northern*

⁵⁶ Shepherd SJ, Zharkov SI and Zharkova VV, 2014, *Prediction of Solar Activity from Solar Background Magnetic Field Variations in Cycles 21–23*, The Astrophysical Journal, 795:46 (8pp), The Astrophysical Journal, 795:46 (8pp), 2014 November, <https://phys.org/news/2015-07-irregular-heartbeat-sun-driven-dynamo.html>

and southern hemispheres of the Sun. Combining these waves and comparing them with the real data for the past solar cycles, we found that our predictions are 97% accurate.”

Using this model to predict the future we see that waves will become increasingly out of phase during cycle 25, which reaches its peak in 2022. In cycle 26, which covers the decade from 2030 to 2040, waves will become totally out of phase, and this will cause a significant reduction in solar emissions. *“In cycle 26, the two waves are opposed to each other, with their peak at the same time but in opposite hemispheres of the Sun. Their interference will be destructive and will cancel each other*

out ... when the waves are in phase, they can show a strong resonance, and we have strong solar activity. When they are out of phase, we have solar minima.”

In the mini-ice age that took place between 1645 and 1715, a period known as the Maunder minimum, temperatures dropped globally by 1.3 degrees Celsius, leading to shorter seasons and food shortage. The double dynamo model predicts a 60% drop in solar emissions, and this could well account for the 10 degrees Celsius drop in temperatures of the ice-age. This drop should start in the 2030-2040 solar cycle. The sharp reduction in temperatures will increase snow and ice formations

which will reflect the heat of the Sun (albedo) further reducing temperatures.

When solar emissions decrease, the magnetic shield that protects the planet weakens and cosmic rays enter the core, activating the magma and causing earthquakes and volcanic eruptions.

In the ocean floor there are more than one million volcanoes, against 15,000 on the surface. The magma emitted by submarine volcanoes increases the temperature of the oceans, and this causes extreme weather conditions.

Glaciations have created more lakes than all the other geological processes

put together. The surface on which glaciers move is eroded, leaving myriads of undrained depressions. These depressions fill with water and become lakes.

In North America and Europe, the ice cap reaches 4 km in thickness and the weight of the ice lowers the Earth's crust. When at the end of the glacial period the ice melts, the crust rebounds, producing slopes and forming large basins, such as the Baltic Sea and the Great Lakes of North America. Numerous Canadian, Swedish, and Finnish lakes originated in this way.

The Earth's crust rebounds cause unique earthquakes not associated

with tectonic plates. The lifting of the crust occurs in two phases. The first is elastic and fast and can reach several hundred meters, the second is slow. Today the typical lifting rates are in the order of 1 cm per year or less.

Glaciations influence arid and semi-arid regions. Precipitations that feed the glaciers determine the formation and development of large rain lakes that develop in relatively arid regions, where there were no established drainage systems.

In Canada, the weight of the ice has created a vast depression around the Hudson Bay which is now below sea level. The same happened in Europe for the Baltic Sea.

Since the end of the last ice age, sea levels have risen about 130 meters, and have remained relatively stable over the last 6,000 years.

Carbon dioxide (CO_2) is a product of life: respiration, decomposition of plants and animals, burning of wood, coal, oil and gas, and it is a necessary element for the growth of trees, plants and vegetations. Together with water, CO_2 is the very essence of life! Life dies in the absence of water and CO_2 !

Three scenarios are possible:

- *Scenario #1*: Humanity will migrate to the equatorial area and build cities in places that were previously

covered by oceans. But when the ice age ends, ice caps quickly melt into interglacial lakes, that suddenly flood the ocean basins wiping away the remains of previous civilizations.

- *Scenario #2*: In the belief that entropy (thermal death) governs the universe, an elite is concentrating enormous amounts of energy and resources for a chosen group that will ferry humanity to the next interglacial period and they are doing this thanks to the control of money and private central banks systems.
- *Scenario #3*: Dual to entropy we find syntropy that concentrates

energy and is at the basis of life. Maximizing life, glaciations can be mitigated, and life can continue to survive. This scenario offers an incredible opportunity for the advancement of life and civilizations.

Water hydrogen bond provides syntropy but stops working when water freezes. Consequently, living systems need water and cannot live in freezing environments. In scenario #3 the main goal is to keep water above freezing temperatures, and this can be achieved thanks to architectural designs that are based on pyramidal structures. Let's see why.

Not having a roof, pyramids don't have to support the weight of snow and ice, which during the ice-age can reach 4 kilometers in thickness in areas such as central Europe. A small example of a pyramid in extreme cold climates has been built in the early 1990's by the CNR, the Italian National Research Institute.

At 5050 meters of altitude, in the Khumbu Valley, in the Sagarmatha National Park, at the foot of the Everest on the Nepalese side. The CNR built a glass pyramid named Pyramid Ev-K2-CNR.



www.evk2cnr.org

It is a pyramid of negligible size compared to those that humanity will eventually need during the ice age. However, it is in a glacial environment and shows that the pyramidal shape allows to combine stability and resistance to atmospheric agents and

earthquakes and the glass coating ensures the greenhouse effect that facilitates the concentration of solar thermal energy despite the glacial temperatures of the surrounding place. The pyramid Ev-K2-CNR is a totally self-sufficient structure.

Ev-K2-CNR is universally appreciated for the studies it allows to do at high altitudes. It uses solutions that favor sustainable development in extreme climatic and environmental conditions. Studies that require extreme conditions can be conducted at the pyramid, which has become the place of numerous scientific studies. Over 200 scientific institutions, universities, organizations and

research institutions, thousands of scientific missions and more than 400 researchers from all over the world carry out their scientific research every year at the CNR pyramid.

Another interesting example is provided by the pyramids of the Botanical Gardens located on the main campus of the University of Oulu, one of the coldest cities in Finland. While outdoor gardens grow plants suitable for local weather, there are two pyramid-shaped greenhouses housing plants from warmer climatic zones.

These transparent pyramids absorb light and heat waves that guarantee warm climate conditions in an

environment that for most of the time is glacial.



It might be just fake news, but in 2012 a leading oceanographer, Dr Meyer Verlag, claimed to have found not one but two gigantic pyramids, three times the size of the Great Pyramid of Giza, on the ocean floor in the heart of the Bermuda Triangle. Dr Meyer Verlag found the pyramids

during a routine oceanographic survey in mid-April 2012, and he reported the discovery on the 29th of April, after he finished checking and rechecking the data. His report to the scientific community and to newsmen in Freeport, Bahamas, included maps and sonar readings.

Dr Meyer Verlag stated that the pyramids appeared to be made of solid glass and were in such good conditions that he was almost certain that they were built within the past 50 years: *“Sonar readings taken from the surface indicate that the two pyramids are uncommonly large and in perfect condition. That would seem to indicate that the pyramids were built within the last 50 years*

or so and leads to more pressing questions such as who made them and why.”

At the press conference held in the Bahamas he gave the exact coordinates of the pyramids, 800 miles east of Miami: “*Sonar data indicated that the bases of the pyramids are 2,000 feet (600 meters) wide. They stand almost 700 feet high and are roughly double the size of Egypt’s Great Pyramid of Cheops. A superior technology is needed to build these pyramids. Whoever or whatever built them clearly had underwater capabilities far superior to our own. And while there’s always room for error, our sonar readings suggest that the pyramids have the texture and density of glass which is most unusual indeed.*”

It seems that Pyramids are scattered across the planet, from America to Asia, archaeologists have found that nearly all ancient cultures built massive pyramids thousands of years ago. Some of them served as tombs, while the purpose of many other remains a mystery.

It isn't therefore surprising to learn that pyramids have been found also in Europe. The *Bosnian Pyramid Complex* was built by an unknown civilization near Sarajevo, the capital of Bosnia and Herzegovina. These pyramids were discovered in 2005, by Dr. Semir Osmanagic, beneath the hills of Visoko. A pyramidal complex which in addition to being one of the largest

on Earth, was interconnected through a network of underground tunnels. Dr. Osmanagic claims that these pyramids provide the traces of a lost civilization. His thesis holds that the Mesoamerican, the Egyptian and the Bosnian pyramids are the work of the same people and that the pyramidal complex in Bosnia could be “*the mother of all the pyramids.*”

In 2006, a great project was set up to restore the top of the Pyramid of the Sun, which Dr. Osmanagic assures is the most important of the four Pyramids measuring 360 meters in height. The Bosnian Government made available the necessary funds for the excavation work in the Visoko

region. The decision of the Bosnian Government to fund the project raised a controversy in the European Association of Archaeologists, which in 2006 wrote the following letter against the decision of the Government of Bosnia and Herzegovina:

“We, the undersigned professional archaeologists from all parts of Europe, wish to protest strongly at the continuing support by the Bosnian authorities for the so-called “pyramid” project being conducted on hills at and near Visoko. This scheme is a cruel hoax on an unsuspecting public and has no place in the world of genuine science. It is a waste of scarce resources that

would be much better used in protecting the genuine archaeological heritage and is diverting attention from the pressing problems that are affecting professional archaeologists in Bosnia-Herzegovina daily.”

The letter was signed by Hermann Parzinger, President of the German Archaeological Institute in Berlin, Willem Willems, Inspector General of Rijksinspectie Archeologie in The Hague, Jean-Paul Demoule, President of the Institut nationale de recherches archéologiques préventives (INRAP) in Paris, Romuald Schild, Director of the Institute of Archaeology and Ethnology of the Polish Academy of

Sciences in Warsaw, Vassil Nikolov, Director of the Institute of Archaeology of the Bulgarian Academy of Sciences in Sofia, Anthony Harding, President of the European Association of Archaeologists and Mike Heyworth, Director of the Council for British Archaeology in York.

But why did they go to this extent to stop the excavations? Some experts consider that this letter documents a massive cover-up.

Pyramids made of transparent absorbing materials, in extreme environments such as those of the ice age, would maximize the absorption of energy and heat. Not having a roof,

snow or ice do not accumulate. Their broad base makes them stable and durable. When solar emissions diminish, the magnetic shield that protects the planet weakens, cosmic rays increase and activate the magma and earthquakes of strong intensity. Transparent pyramids can be self-sufficient from an energetic point of view and for food. They need air from outside and releases CO₂ and heat. Exactly what is needed during the ice age.

Depending on the conditions of the land the height could even reach a thousand meters with a square base of two kilometers per side. These pyramids can shelter special

environments from the weight and destructive effect of ice. For example, a city like Rome, would be reduced to dust by the weight of the ice and its slow motion. Old historical places could be incorporated into the ground floor of the pyramids.

Pyramids of these proportions could be divided into levels up to 50 meters high. Independent levels with buildings, open spaces, gardens, and public places such as piazzas, recreational and commercial areas, surrounded by nature and without mechanical noises and pollution, with trees, green area, birds, fishes and pets that can keep people in contact with nature. Unlike cities built using

skyscrapers, where there are frequent deficiencies due to low exposure to the Sun, the shadow of the pyramids does not cover the other pyramids. Inhabitants of the pyramids will receive a fair exposure to the Sun, with considerable benefits for their health.

Structures of this kind could accommodate a hundred thousand people each. The excess heat, produced by the absorption of the Sun's rays and by the activities inside the pyramid, would be used to melt the snow, thus providing drinking water for life and its activities. According to some simulations, one million pyramids could compensate

the effects of the ice age. They would occupy a total of three million square kilometers, one-fiftieth of the land of the planet. Some pyramids could be used only for productive activities or activities aimed at regulating the CO₂ levels of the planet.

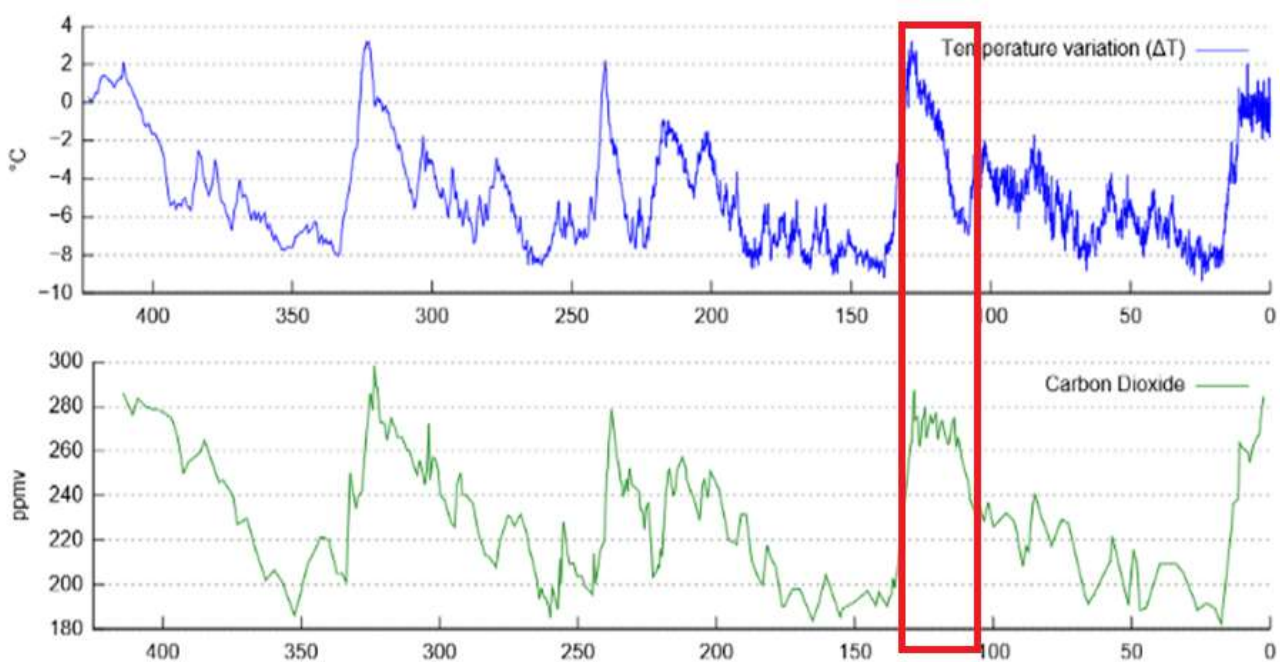
They would be built using “soft matter” which is a material capable of withstanding the entire ice age and the most adverse conditions. A lightweight material that can repair itself and which has a positive energy balance. It is made of DNA, which is highly resistant, flexible and can maintain the structure intact, autonomously, activating self-healing processes. Instead of following the

law of entropy, that is thermal death and disorder, soft matter responds to the law of syntropy, concentrating and absorbing energy and heat. Just what is needed during the ice-age.

Looking at the data coming from ice cores it seems that this solution was intentionally used to offset the destructive effects of the last ice-age.

The high levels of CO_2 during the first 20,000 years of the last ice-age suggest that life levels were intentionally kept high. This testifies the existence of a highly advanced civilization which could have built large-scale “transparent” pyramids that provided living conditions for life introducing in the atmosphere large

quantities of CO_2 . But something went wrong and after 20,000 years from the start of the ice-age this civilization succumbed to the freezing temperatures.



What was missing? Some suggest that we need permanent structures that divert the Sun's energy towards our planet providing in this way extra energy and heat. This idea was first

described by Olaf Stapledon in his science fiction novel *Star Maker* published in 1937, in which he described “*every solar system... surrounded by a gauze of light traps, which focused the escaping solar energy for intelligent use.*” The concept was later popularized by the mathematician and physicist Freeman Dyson in his 1960 paper “*Search for Artificial Stellar Sources of Infrared Radiation.*” Dyson speculated that such structures would be the logical consequence of the escalating energy needs of a technologically advanced civilization and would be a necessity for its long-term survival. He proposed that searching for such structures could lead to the detection

of advanced, intelligent extra-terrestrial life. Different types of Dyson energy-harvesting structures would denote different levels of technological advancement.

According to astronomical observations, stars that show repeated bouts of darkening might be circled by harvesting energy structures. The first star with this behavior was discovered in 2015 when scientists noticed unusual fluctuations in the light from a star named KIC 8462852. Now over a thousand stars with this behavior are known. Our galaxy seems to be populated by thousands of highly advanced civilizations!

Another possibility is to harvest energy from moon-based solar power plants. A Japanese company is developing the project “Luna Ring”, which envisions the construction of a gigantic solar power plant on the moon, with a belt of solar cells around its equator that will harvest energy and transmit it to Earth. Installing a solar generation plant away from Earth’s surface makes sense since Earth based solar power plants can only produce energy during daylight hours and are all susceptible to cloud cover. Since the moon doesn’t have an atmosphere, it isn’t cloudy and doesn’t deflect the Sun’s energy, solar power generation could be five times

more efficient on the Moon than it is on Earth.

Are pyramids and energy harvesting structures enough to provide the possibility for humanity to survive the ice-age or does humanity have to answer first the vital needs for meaning and love?

- *Which political system is required to face the ice age?*

The ice-age will be incredibly more challenging than the COVID-19 crisis. We often think that Western democracies are the best possible system. However, this could be part of a false narrative.

The word *democracy* was coined in Athens in 507 BC, combining *demos* (people) and *kratos* (power) and means that the power is in the hands of the people. Greek democracy was direct, and it allowed all citizens to participate, speak and vote in the legislative assemblies.

Conversely, we now use the word democracy to mean something different. With democracy we denote a system that is based on the election of people's representatives. These representatives have the power to elect other representatives. In many countries they elect the president or the prime minister.

Yet few representatives have the financial resources to get elected. For example, in the 2016 US Presidential campaign Hillary Clinton raised \$1.4 billion and spent most of it for the campaign. It is self-evident that ordinary people are not able to raise this amount of money.

In the book *“Political Parties, A Sociological Study of the Oligarchical Tendencies of Modern Democracy.”*⁵⁷

Robert Michels argues that the costs of the electoral campaigns and the organization of the party are so high that they have transformed representative democracies into the dictatorship of a small elite that pursues aims which are different from the wellbeing of the people and the nation. Democracies allow to put servants of the establishment in the key positions of power. An example was provided by Adolf Hitler. When Hitler accepted to transform the central bank into a private institution,

⁵⁷ socserv.mcmaster.ca/econ/ugcm/3ll3/michels/polipart.pdf

he received financial and media support and gained the 11 million votes that allowed him to become Chancellor.

In the 2016 US Presidential election, a President was elected without the support of the establishment. Donald Trump managed to win the 2016 US Presidential elections without receiving any financial support and any support from the Mainstream Media. It is quite natural that the establishment got into panic and started a fierce campaign against Trump.

Representative democracies have been inefficient in tackling the COVID-19 crisis. The country that

has been most successful was China, which is based on a pyramidal system that at the local/ground level uses direct democracy and continuous consultations, that permit, to select qualified people, loyal to the wellbeing of the people and the nation. Moving upward in this pyramidal structure, the most capable people reach the key positions of power, and this allows to respond in effective ways to crises, as severe as COVID-19.

The ice-age crisis will require a political system like the Chinese pyramidal one.

PUTTING LIFE AT THE FIRST PLACE

We all need water, and this makes water valuable. We all need food, and this makes food valuable. Needs are at the foundation of demands: we demand food, we demand water, we demand energy, we demand safety.

Value results from the balance between demand and supply. When water is plentiful, its value is low, on the contrary when water is scarce, such as in a desert, the value can be

immense.

Needs are a manifestation of syntropy and provide value. Similarly, to a lymph which responds to visible and invisible vital needs a new monetary system will have to promote syntropy, life and wellbeing.

The entropic monetary system based on private central banks preys on nature, people and nations looting their vital energies and causing crises, wars, destruction, suffering, illnesses, and debts.

On the contrary, the “syntropic monetary system” nourishes nature, people, nations with vital energy, generating wealth, wellbeing, and happiness.

The syntropic monetary system:

- acknowledges that value originates from the needs of people and therefore provides an unconditional basic income to each citizen.
- Money authority is not private but public. Private central banks are replaced by the Treasury.
- When there is inflation, the unconditional basic income is reduced and/or taxes are increased, when there is deflation the unconditional basic income is increased and/or taxes reduced.

- The State cannot borrow money, but only receive it through taxes. There is no indebtedment of the State.
- Since there is no debt to pay back and no interests on the debt, taxes are low or inexistent.
- Loans can only be part of a partnerships where lender and client share profits and risks. Interests are illegal.
- Entropy reduction is a priority which leads to optimization and wealth. Whatever increases entropy and is damaging for life is discouraged or banished. This leads to limit taxation to a flat tax which

never exceeds 10% and which is applied to all the money transactions, making tax returns no longer necessary.

- Anonymous non traceable money is illegal since it favors entropic activities. Paper money, Bit Coins or other privately owned systems of money are illegal and replaced by bioelectronic (traceable) money under the authority of the Treasury. Bioelectronic money reduces entropy and increases syntropy, restoring confidence among citizens and the State.
- Bioelectronic money requires bioelectronic identification. Citizens who are not registered

have no access to money. Invisible residents and illegal migrants have no access to money.

- The syntropic monetary system requires the transition from representative democracy to direct democracy and meritocracy.

Let us see some examples.

- Bioelectronic identification

On September 29, 2010, India founded the UIDAI (Unique Identification Authority of India), an agency of the Government of India which is responsible for the

centralized database which provides bioelectronic identification of the population.

Biometric parameters allow instant and reliable identification of people.

Each Indian citizen receives an identification number of 12 characters, associated with biometric information (photograph, fingerprint, and iris), demographic information and an electronic deposit account. This system does not include information that may lead to discrimination such as caste, religion, and political beliefs.

UIDAI was inaugurated by Prime Minister Manmohan Singh and the initial goal was to develop a system

which permits to distribute aid directly to the people without intermediaries, providing money in the electronic deposit accounts, and solving the problems encountered during elections, where a few people were able to manipulate results by playing on the uncertainty of identity.

In the West we usually associate identification with the reduction of freedom, but according to the Indian project just the opposite happens. A person with no identity is, in fact, a person deprived of rights. He/she cannot vote, receive welfare benefits, work regularly, and be protected by the law. Identification opens the door to rights and security and allows

citizens to become part of a modern economy.

Indians collaborated with great enthusiasm in the UIDAI system and in the aftermath of the 2016 withdrawal of 87% of paper money, bioelectronic digital payments have become an instant hit.

A key condition is the fact that the RBI (the Reserve Bank of India, India's Central Bank), which originally started as a private entity, was nationalized in 1949, when India became independent from the British Empire. RBI's directors have since then been appointed by the government and RBI is owned by the government of India, as it is clearly

stated in the Reserve Bank of India Act.

On the one hand, electronic bioelectronic identification provides citizen with rights, on the other hand the government receives information useful to plan policies such as those relating to food, water and energy distribution, construction of infrastructures, housing, urban mobility, hospitals, and schools.

India is a country where a large size of the population still lives in poverty, and which is not yet able to address some of the basic needs of the population. However, bioelectronic identification favors cooperation,

wealth, health, education and welfare policies.

Paper money is anonymous and allows to avoid taxes and engage in corruption. For example, in India real estate sales were often split into two parts: a smaller portion, which was reported to the government, paid by check, and a larger, undeclared sum paid with stacks of paper money, or “black money.” Businessmen and criminals used to buy government officials and politicians with envelopes and briefcases filled with paper money.

The end of paper money and anonymous financial transactions has the power to reduce illegality and

restore confidence among citizens and institutions. It makes it impossible for a public official to ask for money to “speed up” paperwork. It is no longer possible to steal money and act against the common good.

Without paper money illegal migration becomes impossible. Everyone wants bioelectronic identification in order to have money.

- *No debts no interests*

The Southeast Asian *Guānxi* system provides an interesting example. *Guānxi* means network of intimate relationships.

Chinese children learn to share food, toys, and money in the belief that: “*one finger alone can do nothing, but in one hand it acquires power.*”

By sharing they learn to build relationships of trust, honesty, fairness, and reciprocity which then become their guānxi (close relations networks).

Guānxis are the pillar of the Chinese society and of the Southeast Asian societies. They differentiate the East from the West and make China so incomprehensible to Westerners.

Any Chinese gives total dedication to his guānxi and knows that when needed he will receive any help from

it. Guānxis are the basic asset of any person living in Southeast Asia.

This system of sharing and cooperation has its roots in the rice farming tradition: “*a history of farming rice makes people more interdependent, whereas farming wheat makes individuals more independent, and these agricultural legacies continue to affect people in the modern world.*”⁵⁸

Rice farming is extremely labor-intensive, requiring about twice the number of hours from planting to harvest as does wheat. Because most rice is grown on irrigated land, it

⁵⁸ Talhelm T, Zhang X, Oishi S, Shimin C, Duan D, Lan X and Kitayama S (2014), *Large-Scale Psychological Differences Within China Explained by Rice Versus Wheat Agriculture*, Science, 9 May 2014: vol. 344, no. 6184, pp. 603-608, DOI:10.1126/science.1246850.

requires the sharing of water and the building of dikes and canals that constantly need maintenance. Rice farmers must work together to develop and maintain an infrastructure upon which all depend, and this leads to a cooperative and collective mindset. Wheat, on the other hand, is grown on dry land, it relies on rain for moisture. Farmers can depend more on themselves and this leads to a more individualistic mindset.

During holidays, anniversaries and birthdays Chinese give red envelopes containing money. Since the spring of 2015 red envelopes have also become electronic, and in the first 24 hours of

2016 WeChat, the Chinese messaging system, has seen sending 2.3 billion electronic red envelopes.

In marriages red envelopes reach their peak. Invitees deliver the offer for the newlyweds in a red envelope. A cashier at the entrance of the restaurant opens the envelope and writes in a public register the name and surname of the guest and the amount. Chinese spouses receive on average (in Europe) between 250 thousand and 400 thousand euros. Enough to buy a house or start a business.

Red envelopes are an example of the traditional Chinese culture of sharing

and cooperation that originates from rice.

The average Chinese puts aside at least one third of his/her income. The money saved, however, does not end in the bank, but is given to those in the *guānxi*, who want to start a new activity. When a Chinese venture into the world his *guānxi* provides support and money. The *guānxi* is the social capital, the wealth on which every Chinese relies.

Guānxis are built on trust and reciprocity. Who receives without giving is a 黑人 *hei rén*, a corrupt person, decadent and reactionary, contrary to the principle of sharing. For Chinese *hei rén* is the ultimate

infamy and leads to exclusion, “*a finger alone that can do nothing.*”

To be accepted in a guānxi, the person must feel you in his heart. If this heart feeling is missing, people are not allowed into the guānxi, and relations are only formal. Guānxis are networks of trust, based on the certainty that people will not betray you.

Paper contracts imply the absence of trust, and they are considered a sign of decadence. In the West trust has failed, the social fabric has disintegrated, and transactions are based on written contracts, that are often not honored. Guānxi requires trust and the focus on the heart,

which in China is the core. Chinese have difficulties understanding Westerners who behave like *hei rén*, corrupt people, decadent, and reactionary. Mixing East and West is complex. Our corrupt culture can easily fascinate young people, whereas it is more difficult to evolve towards the values of cooperation and sharing typical of Southeastern Asia.

Guānxis cannot be improvised. They are built with patience throughout life and last a lifetime. It is an extended family that involves a series of mutual aid modalities through which Chinese build together their future.

It is a principle of reciprocity which is manifested in the long term and

usually takes place at the right time, maybe with demonstrations of generosity, in a kind of “escalation of gratitude.”

The ability to build a guānxi ensures the success and future of both individuals and organizations. For this reason, for Chinese people it is more important to give than to receive. The guānxi system allows to grow, it is a safety net, but also an obligation always present:

“I am an entrepreneur, I have twenty employees, but when a worker wishes to start his own activity, I am obliged to give my contribution. (...) Two months ago one

*of my workers bought an appliance store.
He received from me 12,000 Euros.”*

While in the West the savings rate is around zero, or in some countries even negative, because people spend more than they earn, borrowing money from the banks, the average Chinese sets aside half of his/her income. The money, which is saved, however, is not put in a bank, but invested in the *guānxi*. This, after some years will allow to ask maybe 100,000 euros or more to open a restaurant or start a business.

Chinese wealth and businesses are based on the *guānxi* culture. This makes them profoundly difficult to

understand for Westerners. The difficulties that Western entrepreneurs face in China is mainly linked to the guānxi culture.

It is in difficult moments that guānxis give their best.

For example, during the SARS⁵⁹ many owners of restaurants found themselves with no customers and with very big financial problems. If they had been exposed with banks, they would have lost the restaurants. The guānxi system solved the crisis, but it also has requirements. The important thing is that the entrepreneur demonstrates to their

⁵⁹ Severe Acute Respiratory Syndrome (SARS) a form of atypical pneumonia which appeared for the first time in November 2002 in the Guangdong province of China

guānxi that he is putting his heart into his activity. Such a system can only work if all the individuals are going in the same direction, if there is total trust, and common aims are shared. Success is based on the utmost confidence in each other.

But working with the Western world challenges the guānxi system. Chinese manufacturers usually send goods, even a whole container, without requiring advanced payments or signed contracts. In recent years, however, a growing number of Chinese have found themselves in difficulties because of the unreliability of Western clients who often do not pay or pay late.

Due to the unreliability of the Western clients several Chinese failed to pay for goods from China, thus contravening the principle of trust which is at the basis of the guānxi and forcing Chinese suppliers to start demanding payments in advance, especially for goods sent to countries where it has become a practice not to pay. Consequently, Chinese manufacturers now require a deposit of at least half the value of the goods when sending containers to Europe.

In the guānxi system interests and debts are banned. The person who has received money from its guānxi does not have a debt and is not expected to pay interests. Though,

when other people in the guānxi need, he/she will contribute freely according to his possibilities.

The guānxi system of giving and receiving is at the basis of the incredible ability of Chinese people to produce wealth.

It is a win-win financial system since the risk and benefits are shared. The western system, instead, is a “risk transfer” system, where the creditor always wins even when the debtor loses.

- Paper money and criminality

The end of paper money and anonymous financial transactions has the power to reduce illegality and restore confidence among citizens.

With bioelectronic money, sellers don't have to give change because the exact amount of money is always paid, and it is always possible to check how much was paid. Bribes and corruption become impossible since bioelectronic money always leaves a trace and it is never anonymous. Suppliers can check if the client has been paid and in turn require the payment for their work. Robbery and common crime become impossible.

Citizens can control the spending of public money, thus preventing administrative frauds.

A description of the devilish nature of paper money was clearly provided by Gary Webb in the book “Dark Alliance”, published in 1999.

Investigating the sharp increase in cocaine and crack addicts in the slums of American big towns, Webb discovered that drug dealers were protected by the CIA, with the complicity of the DEA, DIA, and FBI. Local authorities were forbidden to arrest drug dealers and the CIA protected international smugglers, allowing the entry of large quantities of cocaine into the United States. In

return, the CIA demanded a share of revenues in paper money (anonymous money) which was then used to finance activities prohibited by law and by the U.S. Congress.

In our win-lose system illnesses, wars, conflicts, tensions, and natural disasters increase debts and provide power to the owners of the private central banks. This is the reason behind the limitless amount of money that is allocated for wars and for all what predates life, whereas there is always no or little money for welfare and the promotion of wellbeing.

Gary Webb describes that the money made from drugs were used to support the illegal war in Nicaragua.

Paper money played a key role. It made crack and cocaine readily available in the slums, destroying the lives of millions of Americans who became addicted, went to prison, died, or became disabled and allowed to circumvent the prohibitions of the U.S. Congress.

In 2004, Webb was found dead with two bullets in his head. His work had caused great controversy, but eventually the governmental investigation initiated within the CIA, conducted by Inspector General Frederick Hitz, recognized the validity of the Webb report, and discovered that the situation was even more severe than what Webb himself

had reported.

SYNCHRONICITIES

The invisible side of reality usually manifests in the form of synchronicities and intuitions. In this chapter I will describe my personal experience with synchronicities. I'll start with what helped me discover the invisible reality and then share some of the synchronicities that I found most amazing.

Many situations have helped me focus on the heart. One has to do with the

fact that my father was Catholic and my mother Protestant, with opposite views. My father had grown in a mountain village during hunger and extreme physical conditions. For him, the priority was to save and put on a side. My mother grew up in England and believed that since we live once, we must enjoy life as much as possible, now.

I was receiving diverging ideas and answers. I remember when at the age of 6 I asked a question and received again opposite answers, and I thought that it was useless to ask. I looked for another “authority” and I found that only what resonated in my heart and that I could understand could be true.

Both my parents worked for the United Nations. My father lived a frugal life and had always a lot of money that allowed him to help us to face important moments of life (such as buying a house), my mother was always with no money or in need for money.

My father enrolled me to a private elementary catholic school, probably because it was just next door. I remember I could not accept the “dogmas” of God and of the creation of the Universe. I wanted to understand, and at the age of 7 I professed myself an atheist and I refused the First Communion.

“Why the creation?” I wondered. I imagined going back in time and did not understand why suddenly everything had to disappear because of a creation. Several times the nuns called my parents, but there was nothing to do, I continued to declare myself an atheist, regardless of how others were going to judge me.

I was fascinated by cosmology, the theory of the Big Bang, the formation of galaxies, planets. I found an article describing the universe that will collapse because of gravitational forces and then re-explode again. The math showed that the universe will collapse in a space smaller than the nucleus of a hydrogen atom. How can

all the galaxies and planets concentrate in such a small space? What is matter? Is it solid or empty? How can an object, millions of light years away from me, exert an attraction on me? How can my atoms exert an attraction (even if minimal) on all the other atoms in the universe? How can I attract something I do not even know it exists? The law of cause and effect was clear to me, but the force of gravity was a mystery.

I learned that among the many alternatives, it is possible to spot the true one paying attention to the feelings of the heart. I started using this strategy to quickly find the right solutions. This simple strategy made

me become a “genius” in mathematics. People were interested to know how I could instantly find the solutions and solve complex problems. I tried to explain the trick, the feelings of love and truth in the heart, but no one understood what I was telling them.

My father was proud of his mountains village and used to invite his colleagues from the United Nations who soon bought houses, turning the village into a multicultural place with different nationalities. The contact with these different cultures encouraged my independent way of thinking.

Saturday, February the 19th, 1972, I went skiing. During the lunch break I chose a dish with a meat sauce. I suddenly felt in my heart the order to stop eating meat, avoid coffee, alcohol, religious groups, smoke, or drugs ... My rational mind could not understand this order, but in the heart, I felt it was true. I now know that I have removed all that could interfere with the perception of the heart. Gandhi used to say that when we discover the voice of the heart, it is so powerful that it is impossible to disobey it. I was discovering this. When we are guided by the heart, it is impossible to betray it.

At the age of 16 I was chosen for an AFS year in the United States, hosted by an American family. I ended in the deep south. Cultural diversity was immense. From an exciting multicultural environment, I ended among religious extremists.

The first Sunday my American mother told me to go to church with them. I answered that I was an atheist and that I did not want to go to church. She answered: "It is not allowed." I therefore decided to organize myself. I asked the AFS organizer that each Sunday I wanted to visit a different church. I started going to White Baptist, Black Baptist, Jehovah's Witnesses, speaking in

tongue meetings, Catholics... Each Sunday I went to a different church. Everywhere people were happy to see me, and they were telling me that their path was the only true one.

After a couple of months my American mother told me: “We have talked about it, and since you are an atheist, you must be a communist, and communists are devils. We want you to go away.”

I found a temporary family, a very rich one with two private planes and Cadillacs. Then I ended in an extremely poor family. They had no money for food. We could only eat at school. Hygienic conditions were terrible, I had never seen such a

dreadful situation in Italy. When I asked the father why they decided to host me, he answered: “If you help someone Jesus Christ will save you.”

I could not understand why in the richest country of the world there such extreme poverty could be.

I was the only exchange student in Jefferson City (Missouri) and had to attended school clubs. I was always among people, but I was feeling lonely. Everyone was aiming to popularity: physical beauty, strength, and wealth. Everyone seemed happy, but they all abused of alcohol and drugs.

I fell in an existential crisis: What is the meaning of life? What is right and

wrong? What is friendship? What is love?

I started feeling anxiety and depression. I had difficulties telling people about my existential crisis, since everyone was expecting me to be happy.

I had to give public speeches in places like the Rotary Club, the Lions Club, which were financing AFS. I had to pretend to be happy and grateful, when instead I was suffering and had no one to talk with. I started counting the days that were left before going back to Italy, to my old certainties.

On April 2nd, 1976, I went to Joplin (Missouri) to meet other exchange

students. After lunch I spent the entire afternoon talking to an Iranian boy, Sinai. We sat on the banks of a small artificial lake. I needed to understand what anxiety and depression were. Everyone around me seemed happy and I wondered if I was the only one suffering. Sinai told me that according to Islamic science there is another level besides matter and energy. He told me that physical energy diverges, while this other level is made of converging energy, that goes towards unity, love, and cohesion. We started talking about this other level of reality, and our imagination began to fly. A cohesive energy that, when it is felt, causes

warmth and wellbeing in the solar plexus: love. When it is not felt, emptiness, pain, anxiety, and depression emerge. We started dreaming a future filled with this energy, where love and cohesion are the norm. A very different reality from what I was experiencing in that moment. Suddenly I began to feel happy, I began to feel love. I was feeling that life has a meaning and that the future of humanity is not wars and destruction, but love and unity.

That night I woke up at around 3.30. I was immersed in a luminescent orange haze that radiated warmth and love. In front of me there was a light so dense that it could be touched, that

radiated love, wellbeing, peace, and tranquility. I approached this light and suddenly saw the future of humanity flowing in front of me. A future filled with life, wellbeing, and love. I saw large transparent and luminescent structures, in which life flourished intensely. Then suddenly I was attracted into this dense orange light. I don't know how long it lasted. But when I came out of it, I felt I had received a message, a message of love of fundamental importance that my rational mind could not understand. The light faded. I tried to regain contact, but it dissolved. I felt the chill, darkness and solitude of the room, and a shiver down my back. I

woke the person next to me and asked if he had seen or heard anything, but he told me to stop making noises, he wanted to go on sleeping. I tried to reconnect with this light of love, but I didn't know how.

When I returned to Italy my parents had just separated, and instead of the old certainties I found many new uncertainties. In Ovindoli, the mountain village, my foreign friends had left. The exciting multicultural environment was gone. Anxiety and depression made me fall into a tunnel of desperation and I found comfort only in the memory of the orange light of love. It struck me that this was

incompatible with my atheist and materialistic view of the universe.

On April 19th, 1977, Alessandra, my girlfriend, called and told me she had a new boyfriend and that our story was over.

I felt my life crumble. I went to wash my face and while I saw the drops of water falling into the sink, I had the insight of syntropy. Converging energy must exist! I could see it in the force of gravity. In addition to the diverging energy that we all know, like light and heat, there must be a converging energy! Diverging energy must be governed by entropy that goes towards death and destruction, converging energy must be governed

by *Syntropy* that goes towards life and love.

I could see entropy and syntropy constantly playing, changing their proportions in the visible and invisible sides of reality. I could see the opposites that attract each other. A law well known in physics, but also true at the human level where opposite polarities attract, as is the case of males and females. An infinite game of polarities and attraction.

I could see all this in the synchronicities described by Carl Gustav Jung and Wolfgang Pauli. For Pauli causality acts from the past, while synchronicities act from the future. Synchronicities are meaningful

because they lead to a goal, providing direction and purpose.

I could see it in metabolism, where syntropy concentrates energy increasing order and organization. But since the concentration of energy cannot be infinite, at a certain point, the system reverses and releases energy and matter, activating the opposite process of entropy. This game of entropy and syntropy causes an exchange of energy and matter with the environment. Where *catabolic* processes are entropic and transform higher level structures into lower-level structures and *anabolic* processes are syntropic and transform simple structures into complex structures. A

game of construction and destruction that allows life to evolve.

Suddenly I understood the link between entropy and death and between syntropy and life.

Time seemed to have stopped, while all the tiles of the mosaic were coming together. In a fraction of a second my vision had changed.

I could see that matter, entropy and syntropy require specific conditions such as material needs for matter, needs for love and cohesion for syntropy and a need for meaning for entropy. When these needs are dissatisfied alarm bells inform us, such as hunger, thirst, cold, but also

depression and anxiety for the non-material needs.

I realized that by interacting with the physical world we discover that we are equal to zero. Syntropy concentrates our consciousness, our feeling of existing, towards the very small, while entropy expands physical reality towards the infinitely big. Consequently, when we are confronted with the external world, we realize that we are equal to zero, generating the conflict between *being and not-being*.

When I am equal to zero life has no value and there is no reason why to live. This was exactly what my existential crisis was telling me. I was

feeling meaningless, worthless, and depressed and I could not see a way out of this suffering.

But as soon as I saw my existential crisis in the form of an equation, I saw also the solution. I called this the *Theorem of Love* because union is love. The *Theorem of Love* says that love gives meaning to life.

I had found a way to understand my existential crisis. In an instant my suffering, my depression and anxiety dissolved.

The impact of this vision has been profound.

These considerations happened in an instant, which to me seemed like eternity!

I now understood the crisis of humanity. The need to apply the *Theorem of Love*.

Synchronicity # 1

I formulated the theory of syntropy in 1977 and presented it on the 30th of June 1981 in my dissertation in psychology. I then went for a month to England, in the small village of East Meon, where my mother had inherited an old, thatched roof cottage.

On Wednesday July 29th, 1981, Charles and Diana married. The village pub was crowded with people

and a local boy asked me to participate to the royal wedding celebrations.

«*I want to introduce you to an Italian girl,*» he told me.

It seemed strange to me that an Italian girl could be in the pub of such a small village, lost in the middle of the English countryside.

«*My name is Lucia!*» she said.

I was immediately struck by her beauty.

Given the strange coincidence I dared: «*Do you come from Rome?*».

«*How do you know?*»

I continued: «*Do you go to the Kennedy High School?*» (it had been my high school).

«*Yes!*» She answered with surprise.

«*Do you know Carla Ott ...*»

«*She is my classmate! She sits next to me!*»

Simply impossible coincidences! The strangest thing was that my mother and her mother had the same age and came from that same village, but they had never met. They married Italian men and lived in Rome, a few hundred meters away from each other, but they had never met. We had the same friends, but we had never met.

My girlfriend was very jealous and lived in front of Lucia's house. Back in Rome I lost contacts with her.

I enrolled in a PhD in statistics and after the dissertation I started

teaching in the Faculty of Statistics. One of my first students was Lucia. She had enrolled in statistics, without knowing about me being there.

An impressive series of coincidences started, which led me to believe that we were bound by a destiny. I began to feel love of an intensity that I had never experienced before. Words that once seemed abstract, like love and heart, suddenly became central, tangible, vital, the most important aspects of my life.

I went on teaching at statistics, probably because Lucia was there. Her presence motivated me, and I began to spend a lot of time at the University. The dean, Vittorio

Castellano, became interested in my work and read my dissertation on syntropy. He immediately showed great interest and told me: «*Your theory of syntropy matches the theory of syntropy of Luigi Fantappiè!*»

I had never heard of Luigi Fantappiè and his theory of syntropy was impossible to find. I later noticed that July 29th, 1981, the day when I met Lucia, was also the 25th anniversary of the death of Luigi Fantappiè.

I realized that this synchronicity had the purpose to guide me towards Vittorio Castellano and discover the works of Luigi Fantappiè.

Synchronicity # 2

Vittorio Castellano was enthusiastic about my work. He considered it the best dissertation he had ever seen in the Faculty of Statistics. But after his death, I found myself alone with syntropy. I started working as a free-lance for research institutes, focusing mainly on social topics and providing the methodological and statistical support to researchers. But no one seemed interested in syntropy.

In October 1996, while I was jogging in a park in Rome, the plot of the novel *Syntropy, the Theorem of Love* suddenly took shape in my mind. I wrote it in November 1996 and

decided to self-publish it in April 1997.

Few days later Nicola, a poet and friend from Padua, came to visit me in Rome. We went to dinner at the Jaya-Sai-Ma, a vegetarian restaurant near my home and chose a table. The restaurant owner, Menalda, invited us to change tables. I asked why, given that there were so many free tables and the one we chose did not seem to have been booked by anyone.

«We have just used this table for a presentation of Ayurvedic products,» she said, *«products charged with energy. We have to take this table away.»*

I asked her: *«Do you also organize book presentations?»*

Menalda: *«Of course! And if the book deals with vegetarianism, we provide everything for free, also refreshments.»*

I had become a vegetarian on February 19th, 1972. The first vegetarian in the family had been my English grandfather, John Hubert Brocklesby. He became a vegetarian in prison during the First World War. He declared himself a conscientious objector, was imprisoned in the Richmond Castle and had to face court martial. He knew that he would have been sentenced to death. Another conscientious objector told him: *«If you talk with your heart it is God who speaks through you.»* This gave him courage. Then: *«If you don't eat meat, the*

voice of the heart grows stronger.» My grandfather became a vegetarian in prison to serve the will of God and face court martial. A book was written using his diaries.⁶⁰

I replied to Menalda: «*Yes, Syntropy the Theorem of Love also deals with vegetarianism.»*

Menalda repeated that they were going to supply everything for free, including refreshments.

I wrote down her phone number and on the 19th of June the printer told me the date when the book would be ready. I called Menalda. «*Yes, I remember you, come for dinner tonight and we will talk about it.»*

⁶⁰ Jones WE, *We Will Not Fight: The Untold Story of World War Ones Conscientious Objectors*, www.amazon.com/dp/1845133005/

I had prepared myself too quickly. I opened randomly the newspaper and found myself in front of a page entirely dedicated to Sai Baba. I read it quickly and as I read the interest grew. I was struck by the similarities between the novel *Syntropy, the Theorem of Love* and the message of Sai Baba. The novel describes the beginning of the era of love and Sai Baba says that the message of love is at the core of all the religions.

When I arrived to the restaurant, I noticed a large poster of Sai Baba. Menalda made some observations on the cover of the book and confirmed her the availability of the restaurant. While I was describing the novel, one

of the waiters, Maurizio, saw the cover and exclaimed: «*Syntropy, what Fantappiè was talking about!*» I was stunned. Few, almost none, knew about Fantappiè's small book on syntropy. I spoke with Maurizio and discovered his profound knowledge of syntropy. I asked if he could introduce me on the day of the presentation, the 9th of July.

At the beginning of July I was talking with Alessandra, a friend: «*Don't you find the circumstances that led to the first presentation of the book at the Jaya-Sai-Ma strange? It is all because of Nicola!*» I said.

«*It would be really nice,*» Alessandra added, «*if Nicola could be with you at the presentation.*»

As soon as I hanged up the phone it rang again: *«Hi, I'm Nicola! I wanted to tell you that on Wednesday night I will be in Rome with my son, we are going on vacation to Sicily. Can you host us?»*

With Alessandra I had just talked about Nicola and now he was materializing on the day of the presentation of the book.

On Wednesday July the 9th, the day of the presentation, my car did not start (the tank was practically empty, and I had parked uphill). Despite this unexpected problem I managed to bring enough copies of the book to the restaurant thanks to Nicola's car. Maurizio arrived on time. There were

about sixty people. I thought of Nicola's strange coincidence.

Maurizio: «*I was struck by the fact that the message of the novel coincides with Sai Baba's message of love.*»

In those days I had read something about Sai Baba, and I had found a strong analogy with *Syntropy the Theorem Love*.

Maurizio continued: «... *the starting date of this novel, November 23, 2026, is the day of Sai Baba's one hundredth birthday.*»

I jolt. I had chosen the date to have ISTAT's centenary on the right date (November 26th) and from there I went down until November 23rd. I quickly opened some books on Sai

Baba and saw that Sai Baba was born on November 23rd, 1926.

Maurizio added: *«As you know, Sai Baba says that in his current life his mission is to remember the message of love and on November 23rd, 2026, the era of love will start.»*

These strange coincidences led the novel to become popular among Sai Baba's followers. Many came to me sure that I was the pen of Sai Baba. I avoided getting involved in Sai Baba's groups, despite numerous invitations. However, after this moment of popularity I again found myself alone with syntropy.

These strange coincidences made me feel that I was not alone, that I was

assisted by an invisible hand in the path towards syntropy.

Synchronicity # 3

In the summer of 1998 I was in Hungary, in the small village of Visegrád, for the 50th anniversary of Servas, an international hospitality club. The weather was fabulous, and we decided to take a hike in the mountains. The sky was clear, there was not a single cloud, but after only an hour climbing in the woods a torrential rain began. Our maps melted in the rain, we were completely soaked, desperate and with no umbrellas. The path was now a stream. Some abandoned the group and went downhill, others continued, since we had seen a campsite on the

maps. When we arrived at the camp, a girl in the first tent, who was breastfeeding her baby and spoke no English, pointed to a wooden structure at the end of the field. We went there, rushed in, stripped off the soaked clothes, dripping water everywhere. I stumbled on a statue that was in the center of the room and in that moment, I realized that around us, facing towards the walls, there were about twenty monks in meditation. They didn't react to the noise we were making.

A woman arrived with dry clothes and accompanied us to another room. When the monks finished their meditation, one asked if we wanted to

stay for lunch. They also invited us to try their meditation, which I immediately felt incredibly familiar.



The next day I returned the clothes they had given us, and I tried again their meditation. I felt it again familiar and beneficial.

The following week I went there for 3 days. This type of meditation calmed the chatter of my mind and brought my attention to the heart.

I returned to Rome and that same day a lady, who lives near my home, called asking information about Servas. She invited me to their yoga center, for a presentation that they were giving that evening. I was stunned when I found the same kind of meditation, I had discovered in Hungary that week.

For a couple of years, I followed this Zen center, until the chatter of my mind calmed down completely. I started experiencing silence in my mind and the attention in the heart. I found Zen meditation fascinating and magic, since it connects me to the invisible world of syntropy and synchronicities.

During Zen meditation we don't react to stimuli. When we feel an itch, the feeling starts, grows, and then fades away. We don't react, we just observe. When a thought comes it starts, grows, and then goes away. During Zen meditation a special posture is used. If we fall asleep, we bend forward and our fingers touch, if we focus on the chatter of our mind we bend backwards and our fingers separate. We must keep the fingers of our hands just slightly touching.

Zen meditation reduces the chatter of the mind, it connects us with the heart and the invisible power of syntropy and fosters our intuitions and creativity.

Synchronicity # 4

On January the 6th, 2001, I went to lunch at my father's house and on the way back I walked in front of Sai Baba's vegetarian restaurant and expressed, almost unconsciously, the desire of a partner with whom to continue the work on syntropy.

That same evening, I went out with an English girl. She told me that all the girls who have very short hair, like she had, are lesbians. The following evening, I went to a party and saw two girls come in the house, both with very short hair. My rational mind

immediately said that they were two lesbians, while my heart pointed at one of them and said: «*it is her.*» Two totally diverging messages. I took courage and started talking to Antonella, the girl my heart was pointing to. Antonella told me she had left university because she needed to work. The rational mind was screaming NO, since she had no knowledge of mathematics, she wasn't the partner I was looking for. However, the heart continued to focus on her. We exchanged telephone numbers. I wanted to go out with her the next evening, but I was without a car, someone had tried

to steal it by doing considerable damage to the steering wheel.

On January 9th, 2001, the mechanic gave me the car back. I called Antonella and invited her to dinner. An incredible Moon eclipse accompanied us throughout the evening.

The next day we went out again. It was 10.01.01 (10 January 2001), we engaged and nine months later we married. The same date but reversed: 10.10.01 (10 October 2001).

As a wedding present, I gave Antonella the possibility to return to university. I told her to follow her heart. She chose cognitive psychology. She was not interested in

syntropy, but she slipped on the equation from which the dual energy solution starts. The first thesis was entitled *Entropy and Syntropy, from mechanical to life sciences*.⁶¹ During this work the contact with Fantappiè's family was established and with the lawyer Elena Fantappiè who has supported us since.

Antonella's master thesis was an extension of the first thesis with a focus on the *Theory of Vital Needs* and the *Theorem of Love*.

The PhD dissertation was entitled *A syntropic model of consciousness*.⁶² Antonella conducted four experiments that gave scientific

⁶¹ <https://www.amazon.it/dp/1520772548>

⁶² <https://www.amazon.it/dp/1520892527>

validity to the theory of syntropy. At this point she became the target of violent attacks, not on a scientific level, but on a personal level. None of her tutors accompanied her to the national examining board. One asked to expel her from university. Everyone was terrified at the idea of being associated with the theory of syntropy. But she finally got her doctorate.

We met other groups working on similar theories. All of them were experiencing violent attacks on a personal level, censorship, lack of funding and expulsion from the academic world.

The dean of the faculty of engineering and applied sciences of the Princeton University, one of the most prestigious universities in the United States, was enthusiastic about Antonella's work⁶³, but he too was the object of violent attacks. A real game of massacre. After the doctorate, Antonella decided to protect herself and her health by dedicating time to something else.

Despite the replicable experiments that support this theory, the many conferences we have held and organized on the subject and the books we have published⁶⁴, the mainstream academic world rejects

⁶³ www.sintropia.it/Princeton.pdf

⁶⁴ www.sintropia.it/it - www.sintropia.it/en

the theory of syntropy and limits itself to entropy.

The synchronicities I experienced with Antonella provided a leap forward in the path towards syntropy.

I discovered that love is future oriented. We feel it when we are converging towards the attractor, our final aim. Love provides union, purpose and meaning. When I first saw Antonella, my heart started seeing the future. When we nurture our heart, we intuit and feel the future.

Synchronicity # 5

In March 2014, following an intense exchange of emails on retrocausality on the SSE forum (Society for Scientific Exploration), John Kinneman told me that a Turkish lady, Ayten Aydin, was writing about us and our publications. She had discovered our books and had found them enlightening with reference to the works of Robert Rosen on anticipatory systems. Kinneman sent me copies of her e-mails. I searched for information and found the Wikipedia page of Ayten. I was amazed to discover that she lives in Rome, near my home. We met her

and found out that she was a retiree from FAO (United Nations Food and Agriculture Organization) and that she had shared the same office with my father. She became a promoter of syntropy and since then we have been working together on many projects.⁶⁵

Synchronicity # 6

In 2015 I inherited my father's house in Ovindoli, which I finished renovating in 2017: www.ovindoli.cloud. The house can accommodate more than 30 people. It is located in a very convenient place,

⁶⁵ Aydin A., *Ascending to Truth by way of Converging Minds*,
www.amazon.com/dp/1731031734

close to the main square of the village, well connected, 2 kms away from the ski slopes of Monte Magnola, which is considered the best skiing resort next to Rome. A ski instructor had organized groups of students and the first group was due to arrive on January the 1st, 2018. Antonella could not help me since she was busy in other activities, and I had not found anyone.

On December 21, 2017, Gisele a Brazilian friend whom we had not seen for almost a year and a half, sent me a WhatsApp message from Russia saying that the work she was waiting for in Madrid had not been confirmed and asked us what we were going to

do on New Year's Eve and if she could join us. I asked Antonella and we invited her to stay with us. On December the 29th, she wrote again saying she was on a Norwegian flight from Helsinki to Rome. On board there was Wi-Fi and we started chatting via WhatsApp. The estimated arrival time was just before midnight. A friend had offered her hospitality for a couple of nights in Rome, but Gisele had no money for the taxi (and she had no money to go back to Brazil). She had the money for the bus ticket to Termini station, Rome's central station. But at that time of night the station is close, and the subway is no longer working.

After midnight the streets near the station fill with homeless, toxic and alcoholics, including criminals wandering like jackals looking for ways to take advantage of these fragile situations.

I was in Ovindoli, and I didn't like the idea of Gisele in a situation that could easily degenerate. I decided to go to Rome to pick her up at the airport. A difficult journey due to the heavy snowfalls and ice on the road. I arrived exactly when she was coming out of the airport, and I took her to her friend's house.

The first of January she arrived in Ovindoli with the first group of students who were going to spend a

week in my house. She had no money and I decided to take care of her and put her back on track. In March it was time to return to Brazil, her visa was expiring. She told me she had no job in Brazil and asked to help with the books.

Antonella, because of the personal attacks she had suffered during her doctorate, had moved away from syntropy. I knew I had a lot of work to do with the books and I knew that the novel I wrote in 1996 was incomplete and needed revisions and extensions, but I lacked inspiration. Gisele wanted to work on this book and as an economist and native speaker in Portuguese and Spanish,

and with perfect knowledge of English and Italian, she was the right person for the job. She provided inspiration and motivation and at the end *Syntropy the Theorem of Love* became part of a trilogy.

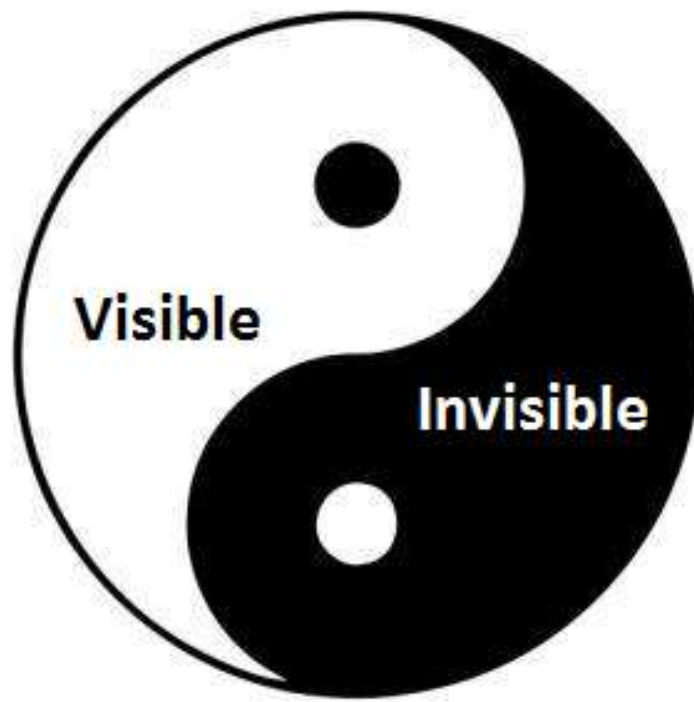
Gisele unexpectedly solved my problems in Ovindoli, just when I needed a person. She was with us for the first three months of 2018, then in Brazil for another three months and back to Italy, to Ovindoli, for the three summer months. When the project of the trilogy ended, in autumn 2018, our paths divided.

SCIENCE AND RELIGION

In Hinduism the Divine Energies of Shiva and Shakti perfectly match Entropy and Syntropy. Where Shakti is the personification of entropy and Shiva is the personification of syntropy, constantly united in an eternal cosmic dance. Shakti can never exist separately from Shiva, just as Shiva is nothing without Shakti. Shiva absorbs the energy of Shakti, transforming it into a body and pure consciousness, the light of

knowledge. Love and intelligence come from the future (Shiva), while fear, ferocity and aggression come from the past (Shakti). Shakti is the energy of the visible physical world, while Shiva is the consciousness that transcends the visible world. Every aspect of Shiva has a Shakti component, linked to the physical world.

The game between entropy and syntropy is well described in the Taoist philosophy, where all the aspects of the universe are the interaction of two fundamental forces: the diverging yang force and the converging yin force.



In the Taijitu symbol yang is represented by the white color and has entropic properties, while yin is represented by the black color and has syntropic properties. These two forces are part of the same energy, of the same unity, and their combined action moves the universe in all its aspects. Within the yin there is yang, and within the yang there is yin.

The main contribution of the Vital Needs Theory is the *Theorem of Love*, that shows that *Love* is the main attractor of life. We feel love in the autonomic nervous system in the form of warmth and wellbeing. When we diverge from the *Attractor of Love*, we feel void, anxiety and distress. These feelings work like the needle of a compass. We must learn to have faith in this compass since it guides us towards the right choices.

Among the many religions and spiritual leaders, Sathya Sai Baba reminded people that in all the religions the core message is love *love everyone and serve everyone*. He did not

start a new religion since this message was already present in all the religions.

Sai Baba was born on the 23rd of November 1926, in India near Puttaparthi. On the 8th of March 1940, at the age of 14, he was stung by a scorpion and lost consciousness for several hours. In the following days he underwent a noticeable change in behavior that doctors believed was hysteria. On the 23rd of May 1940 he started materializing flowers and candies and became soon famous for his miracles and healing powers. Millions of people started following him and going to Puttaparthi to get healed and an incredible amount of money started flowing to Sai Baba's

ashram. Sai Baba turned this money into modern hospitals, water projects, colleges, and universities at the highest level where the Indian ruling class is being formed and where everything is absolutely free.

Meanwhile a Marxist group of intellectuals, that was highly scientific and reliable, set up the “Miracle Commission” to unmask gurus and illusionists who swarmed India. Hundreds of yogis, masters and illusionists, some very loved in the West, were exposed but for the “wizard of magicians” no evidence was found, and the “Miracle Commission” concluded that Sri Sathya Sai Baba was the only

authentic magician. For others Sai Baba was a God.

Sai Baba professed that science and spirituality go hand in hand and that science and religion will converge in a new unitary vision based on love.

Syntropy originates from the *Attractor of Love* that Teilhard de Chardin named the *Omega Point*. Teilhard de Chardin was an evolutionary paleontologist and a Jesuit. He noticed that the incredible stability of species is given by the fact that they converge towards attractors, and he advocated the idea that life is guided by attractors, and evolves according to a hierarchy of attractors, till the ultimate unifying attractor, the

Omega Point, is reached.

He also noticed that since attractors reinforce the unity of the Self, attractors increase individualization, nonetheless they also lead towards unity. It seems a contradiction, but unity and diversity go together! The theme of attraction has been the focus of Teilhard's research: *“Reduced to its essence the problem of life can be expressed like this: accepting the two principles of conservation of energy and entropy, how can they assimilate without contradiction, a third universal law (which is expressed by biology), that of the organization of energy? ... the situation becomes clear when we consider, at the basis of cosmology, the existence of a sort of anti-entropy.”*

Teilhard formulated the hypothesis of a converging energy, like what Fantappiè did with syntropy. *“In other words, not just one kind of energy, but two different energies; two energies which cannot transform directly one into the other, because they operate at different levels ... The behavior of these two energies is so completely different and their manifestations so completely irreducible that we might believe they belong to two completely independent ways of explaining the world. And yet, as the one and the other, are in the same universe, and evolve at the same time, there must be a secret relationship.”*

According to Teilhard de Chardin the universe is gradually increasing its spirituality and eventually it will

become a single soul that will unite with the *Attractor of Love* in the *Omega Point*.

Luigi Fantappiè and Pierre Teilhard de Chardin described consciousness as a property of syntropy. Entropic energy can be perceived whereas syntropic energy can be felt: the head perceives, the heart feels. For this reason, we are constantly faced with what the head and the heart say, and we are forced to choose. The heart gives us direction and aim, whereas the head provides tools and experiences. Both are needed.

Teilhard de Chardin noted that: “*Right now, as in Galileo’s days, what is most essential (...) is a new way of thinking,*

...tied to a new way of acting.” The signs of extending science to spirituality can be seen a bit everywhere but are still not welcomed. Teilhard was exiled in China and the Vatican banned his works from all the libraries since they “*offend the Catholic doctrine.*” Fantappiè was censored.

The following words of Francesco Severi⁶⁶, founder of the National Institute of Higher Mathematics of Rome, well describe this situation:

“About the problem of finality, I am very embarrassed to express an opinion on what someone very close to me calls the discovery of scientific finalism. Science ceases to be

⁶⁶ Francesco Severi was the founder of the National Institute of Higher Mathematics in Rome.

science when its results do not express causal results. It is possible to speak of finality in science, but only in a metaphysical sense, having no claim to prove anything positive about it. This is because: 1) it is not possible to deduct hypotheses from the fact that life is subject to final causes, 2) pure logic cannot be used as a scientific demonstration, 3) finality cannot be demonstrated using the experimental method, because no experiment can be established, without acting on the causes prior to the effects. Finalism, in short, is in my opinion an act of faith, not an act of science.”

- Life and death

Raymond Moody, an American

psychologist and physician, became famous for his books on life after death and near-death experiences, a term he coined in 1975 in his best-seller book *Life after Life*. After a meeting with the psychiatrist George Ritchie, who told him of an incident in which he died and had traveled in the afterlife, he began documenting reports of people who had experienced death. Moody discovered that many elements are recurrent, such as the feeling of being out of one's body, the feeling of traveling through a tunnel, meeting dead relatives and of a bright light. After talking to over a thousand people who had this kind of experience, Moody

started to support the idea that there is a life after death.

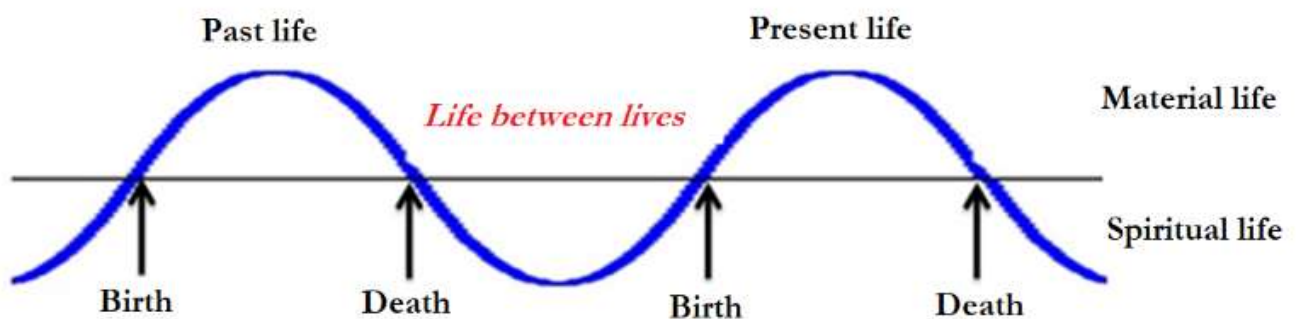
Moody noticed that people who die and are then resuscitated thanks to modern medical techniques, come back deeply transformed. They often abandon their work to venture into activities aimed at the well-being of others. Moody underlines that near-death experiences are deeply transformative, they allow people to discover the meaning of their life and to connect to the great energy of love, what we here call the *Attractor of Love*.

But do people have to experience death to begin this transformation process? The answer was provided by Brian Weiss and Michael Newton. As a

psychotherapist and psychiatrist Brian Weiss was skeptical about reincarnation, but when one of his patients began to remember the traumas of a past life where he found the key to his recurring panic attacks and began channeling messages about Weiss's family and his dead son, Weiss began to use hypnosis to induce past life regressions. Hypnotic trance is a state in which attention moves inward. We have continuous small hypnotic trances. Weiss found that a patient in a trance can easily live a previous life.

Michael Newton added hypnotic progression to hypnotic regression. After regressing his patients to a

previous life, he used hypnotic progression to make them move to the point of death. This technique allows to experience death without having to die.



The idea is that we vibrate between life and death. When we are born syntropy is high, but the material world increases entropy and leads us to death. Death is the transition from the material to the spiritual life. In spiritual life syntropy increases to the point of having to be reborn. Spiritual

life is syntropic and the connection with the Attractor is strong. Material life is entropic, and the connection is more difficult: we do not remember what our mission and purpose of life are and with great ease we fall into the fascination of entropy and materiality. The goal is to reconnect people to the *Attractor of Love*.

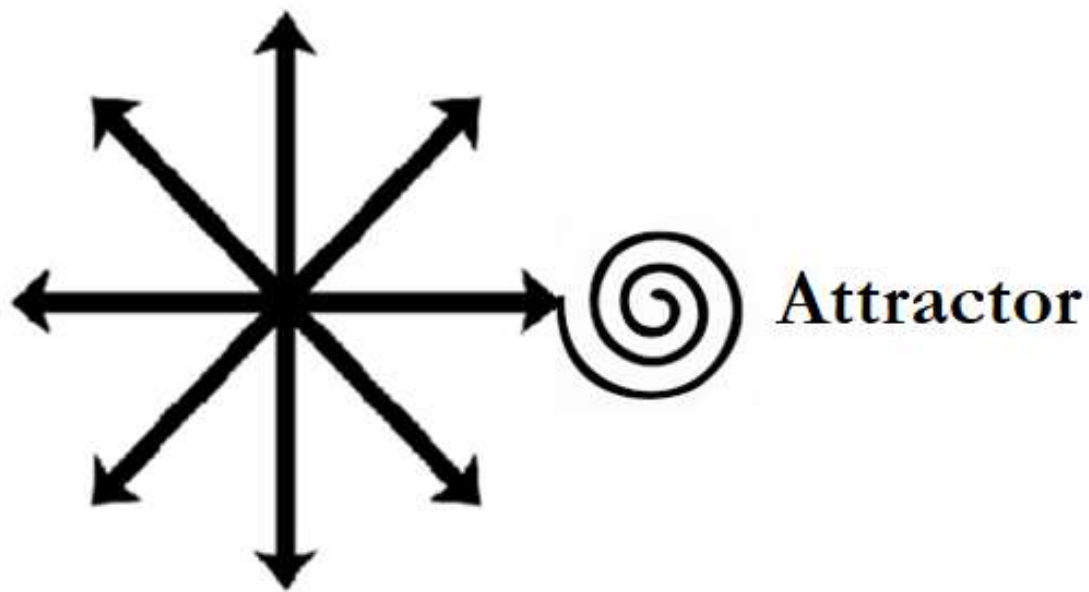
However, syntropy introduces a new concept of reincarnation that somehow contradicts or expands the model used by Weiss and Newton.

The unity of our soul is given by syntropy, by the fact that we converge towards the *Attractor of Love*. When we diverge the cohesive properties of syntropy diminish and our soul tends

to shatter. This may explain numerous psychological and psychiatric disorders, such as the multiple personality disorder also known as dissociative identity disorder. This disorder is characterized by at least two distinct and relatively enduring personalities. Often there are problems in remembering certain events, beyond what would be explained by ordinary forgetfulness and these states alternate in a person's behavior.

Syntropy suggests that we reincarnate only if the syntropic (cohesive) component is strong, otherwise when we die our soul dissipates and loses its identity.

We can represent this as follows:



We are free to go in all possible directions, but only one converges towards the attractor and leads our soul to be cohesive, allowing to maintain its identity.

On the contrary, the identity of those who move away from the *Attractor of Love* vanishes with death. The identities of people who move

partially towards the attractor will mix up leading to multiple experiences of past lives where we can be the reincarnation of a group of souls and not a single soul.

According to Teilhard de Chardin the universe is gradually increasing its spirituality and eventually it will become a single soul that will unite with the *Attractor of Love*, the *Omega Point*.

- The Heart in China

In Chinese ideograms consciousness is described using two ideograms: the ideogram of the heart 心 (xin) and the ideogram of the head 头 (tou):

心头

The heart is placed in the first position, thus telling that the essence of consciousness is the heart, whereas the head is placed in the second position, thus suggesting that it is a tool of consciousness.

It is also remarkable to note that in Chinese ideograms an “idea” is the combination of the heart on the left and the ideogram “to think” 想 on the right. The ideogram “think” contains the ideogram of the heart as a radical:

心想

When we communicate our thoughts

to someone we have at the left
“message” 信 and at the right the
heart. In other words, our thoughts
are “messages from the heart”:

信心

For insights and intuitions on the left
of the heart there is the ideogram
warmth. Intuitions are described as
feelings of “warmth in the heart”:

热心

Being diligent, attentive, devoted to a
project is described as “eye of the

heart’’:

目心

When during our business we are scrupulous we use the ideogram “a lot” associated with the heart:

多心

When we become actors of our choices, of our free will, we use the ideogram “force” associated to the heart, “a strong heart”:

心力

However, when we are depressed, we talk about “grey heart” a “heart with no color”:

心灰

Finally, when we can solve a problem, we talk about a “peaceful heart”:

心安

Ideograms suggest that when it comes to consciousness, attention should shift from the head to the heart. This same consideration can be found in many ancient civilizations. In

ancient Egypt the heart was the seat of consciousness, whereas the brain was considered unnecessary fat material. In ancient Greek, Roman, Indian, Arab, and Jewish civilizations, the scientific, medical, philosophical, and mystical systems considered the heart the seat of consciousness, whereas the brain was a tool, the servant of the heart.

- Heart or Brain?

The Vital Needs Theory is heart centered and sees the brain as a servant of the heart. On the contrary consciousness is usually associated to

the brain and it is widely believed that when the brain stops working consciousness ends and the person can be considered dead.

The concept of brain death has been officially formalized in 1968 at the time of the first transplant of organs, as the criteria of natural death (end of heart activity and blood circulation) does not allow organ transplants. The concept of brain death provides the legitimacy necessary to perform transplants and the first official definition of brain death was developed by an ad hoc committee set up at the Harvard Medical School. The 1968 Harvard criteria for brain death determination have now

become the bases for national laws. These criteria establish when it is permissible to “unplug” and consider the patient “legally” dead. The Harvard criteria are also the bases for the laws on organ transplantation since organs are removed when the heart is still beating.

Evidence that brain death is not a valid criterion are suggested by the fact that:

- when explanting organs from a person who is legally defined as dead (low EEG activity) the person starts defending and screams and must be tied to the operating table to allow to remove the organs.

- an awesome number of people, who had been diagnosed with brain death, awake in full consciousness.

In 1985 the Vatican accepted the Harvard Report and in 1989 Pope John Paul II talked on the topic on several occasions legitimating the removal of organs from warm bodies, even though they are still breathing and with their hearts beating.

On September 3, 2008, in the front page of the official Vatican newspaper, “*L’Osservatore Romano*”, Lucetta Scaraffia wrote an editorial dedicated to the forty years anniversary of the Harvard Report which introduced the definition of

brain death. In this editorial she declared that brain death cannot be used to assert the end of a life and the definition of death should be reviewed in the name of new scientific assumptions.

The reactions of the Western medical / scientific world were immediate: *“The criteria for brain death are the only scientifically valid criteria in order to sanction the death of an individual.”*

Moreover: *“The worldwide scientific community approves the criteria established by the Harvard report and the criticism that comes from fringe minorities, are based essentially on non-scientific considerations.”*

Finally: *“Scientifically advanced countries have accepted as the norm all the criteria of*

brain death.”

A book edited by Paolo Becchi: *“Brain death and organ transplantation. A question of legal ethics”* contains the statement of Hans Jonas who argues that the definition of death established by the Harvard report was motivated not by scientific discoveries, but by the need for organs for transplantation.

In 1989, the Pontifical Academy of Sciences had already addressed the question and Professor Josef Seifert, Dean of the International Philosophical Academy of Liechtenstein, was the only one to object to the definition of brain death.

But when the Pontifical Academy of

Sciences met again to discuss the issue, on 3-4 January 2005, the positions reversed. The participants, philosophers, jurists and neurologists from various countries, agreed that the criterion of brain death is not scientifically credible and should therefore be abandoned.

These results were unacceptable for Marcelo Sánchez Sorondo, chancellor of the Pontifical Academy of Sciences, and the proceedings of the meeting were not published. Several speakers gave their papers to an outside publisher, Rubbettino, and a book was published with the Latin title *Finis Vitae*, edited by Professor Roberto de Mattei, deputy director of

the Italian National Research Council.

Experiments focused on the autonomic nervous system, suggest that consciousness resides in the heart area and not in the brain. Rita Levi-Montalcini describes this contradiction with the following words: *“everyone says that the brain is the most complex organ of the body. As a doctor I might agree! But as a woman, I assure you that there is nothing more complex than the heart; its mechanisms are still unknown. In the brain there is logical reasoning, in the reasoning of the heart there are feelings.”*

Heart or Brain? This is one of the main differences between the West and the East. The West is brain-centered whereas Asia and especially

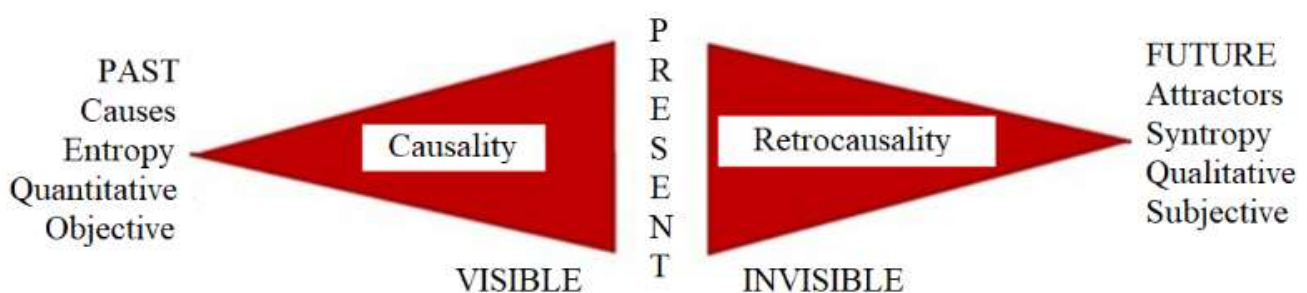
China are heart-centered. An example is provided by the term consciousness. If you copy the ideogram 心 in Google translator you obtain the following translations: bosom, center, core, feeling, thinking and intelligence. These are some of the main properties of what in the West we call consciousness. But the ideogram 心 indicates the heart! Chinese ideograms constantly associate consciousness to the heart!

Consequently, in China a person is considered alive and conscious until the heart beats and explanting organs from warm bodies is considered an execution. This is one of the reasons why in China organs for transplants

are only provided by prisoners who, before their execution to death, agree to donate organs.

HEALING

The energy-momentum-mass equation suggests that the present can be described as the meeting point of causes that act from the past (causality) and attractors that act from the future (retrocausality).



Causality requires a big cause for a great effect. This is since causality diverges and tends to disperse. On the contrary with attractors the effect is amplified. The smaller the cause, the more it can be amplified and the greater is the effect.

This strangeness of attractors was discovered in 1963 by the meteorologist Edward Lorenz. When dealing with water, as it happens in meteorology, a small variation can produce an amplifying effect. Lorenz described this situation with the famous phrase: “*The flap of a butterfly in the Amazon can cause a hurricane in the United States*”.

However, for this to happen it is necessary that the small flap (the active principle) is in line with the attractor. Otherwise, entropy prevails, and the small energy of the flap is lost. On the contrary when the variation is in line with the attractor it is amplified.

The hydrogen bond of water operates in both directions: from the micro to the macro, amplifying the effect, and from the macro to the micro informing the *Attractor*. This can help understand how homeopathic remedies work.

Homeopathy is based on water. When we insert into water the similar, the *simillimum*, of what we want to

cure, its information enters the quantum level and informs the *Attractor*. The greater the dilution, the greater the contribution of the *Attractor* in the amplification of the effect.

Experimental studies show the effectiveness of homeopathy, but conventional medicine continues to consider homeopathy non-scientific since the “active substance” (the solid substance) has been completely removed from water by dilution. It is considered impossible that water can be the cause of the effects observed in the experiments, since it is considered an inert substance.

Homeopathy was discovered in 1796

by the German doctor Samuel Hahnemann (1755-1843). This system is based on the so-called law of similes, according to which the remedies must use substances that cause similar symptoms in healthy individuals. These substances are then diluted in water. The strange fact is that the higher the dilution the more powerful is the effect. The most powerful remedies are those in which the substances have been diluted to the point that it is impossible for a single molecule to still be present in the remedy. For conventional medicine, after removing the active ingredient through dilution, effects can only be placebo effects, not

attributable to the remedy since no solid molecule of the active ingredient is present.

Syntropy claims that the active ingredient, when placed in water, creates links with attractors. So by removing the active ingredient through dilution, these retrocausal bonds remain and are no longer related to the substance but are free to act on any other structure.

Syntropy explains the effects of homeopathy because of the retrocausal properties of water.⁶⁷ The remedies act from the future and the effects are the result of the interaction between causality that is governed by

⁶⁷ Paolella M., *Homeopathic Medicine and Syntropy*:

www.sintropia.it/journal/english/2014-eng-2-01.pdf

entropy and retrocausality that is governed by syntropy.

When using a substance that induces in the future of a healthy person symptoms like those observed in a sick person and diluting this substance in water (beyond the value of Avogadro), the *Attractor* receives the information, and the future begins to retroact into the present.

With causality to increase the effect it is necessary to increase the cause (the active substance), while with retrocausality in order to increase the effect it is necessary to reduce the cause. Retrocausality works in the opposite way to causality. This explains why in homeopathy to

enhance the remedy instead of increasing the active substance this is diluted.

Homeopathy cannot be explained based on classical causality, since the active ingredient is completely removed from homeopathic preparations (which are water based). The therapeutic effects, however, are obvious and can be demonstrated experimentally. The results are strong even when no placebo effect is possible, as in the case of applications on plants in agriculture.

The retrocausal properties of water are due to the hydrogen bond. The hydrogen atoms are in an intermediate position between the

subatomic (quantum) and the molecular level and provide a bridge that allows syntropy to flow from the *Attractor* to the macroscopic level and from the macroscopic level to the *Attractor*.

- *Edward Bach flower remedies*

Like homeopathy we find Edward Bach flower remedies. Edward Bach (1886–1936) was an English doctor, bacteriologist, homeopath, and spiritual writer. In 1930, at the age of 43, he decided to search for a new healing technique, and he spent the

spring and summer discovering and preparing flower remedies.

Bach derived his remedies in an intuitive way. When he felt a negative emotion he would hold his hand over different plants, and if one alleviated the emotion, he would ascribe to that plant the power to heal that emotion.

He believed that early morning sunlight passing through dewdrops on flower petals transferred the healing power of the flower into the water. He used to collect the dewdrops from the plants and preserve them in a brandy mother tincture which would be further diluted before use. Since the amount of dew was not sufficient, he then

decided to use spring water. Bach's flower solutions contain a 50:50 mix of flower water and brandy and are called mother tincture.

Bach believed that illnesses were the result of a conflicts between the purposes of the soul and the personality. This conflict created negative emotions, energy blockages, which led to physical diseases. Bach's remedies focus on the patient's personality, which he believed to be the root of diseases.

The flower remedy is usually given in a 30ml bottle with a dropper. The bottle is filled with spring water and 2 drops of the mother tincture for each selected flower.

Bach suggested to get 4 drops of the remedy 4 times a day, diluted in water or any other drink. However, when the combination of the flowers is highly precise, even one drop per day can be effective.

The dilution process used for the mother tincture eliminates all the molecules of the active principle of the flower. For this reason, many claim that the remedies contain only the “vibrational” nature of the flowers and describe Bach’s flowers remedies as vibrational medicine.

Edward Bach identified 38 flowers that have the power to heal negative emotions and the essences of these flowers are combined in Bach flower

remedies. When identifying the exact combination, the power of Bach's remedies can be simply amazing. But the number of combinations is just impressive. Using two flowers the possible combinations are 1,406, using 7 flowers the possible combinations exceed 60 billion.

The key point for the effectiveness of Bach flowers remedies is the identification of the exact combination, specific to each person. Bach's remedies follow the logic of "*The flap of a butterfly in the Amazon can cause a hurricane in the United States*". This means that if the remedy is extremely precise it can generate consistent effects. When the

combination of the flowers is precise, the power of the remedy is amplified, and the effects are simply amazing. But when the combination is not precise Bach's remedies are just plain water.

A tool that allows to calculate the precise combination of the flowers is available at www.sintropia.it/flowers

- The importance of water

The syntropic properties of water suggest that water is constantly under the effect of retrocausal forces. This explains why it is so difficult to

predict the behavior of water molecules even in a small glass.

Based on these considerations, in February 2011 with Antonella Vannini I wrote a paper for the Journal of Cosmology commenting on an article by dr. Richard Hoover⁶⁸ of NASA Marshall Space Flight Center.

Dr. Hoover discovered microfossils, similar to cyanobacteria, in internal sections of comet meteorites and, using electron microscopy and a series of other measures, concluded that they originated from these meteors, ie comets. According to syntropy, life is

⁶⁸ Hoover R (2001), *Fossils of Cyanobacteria in CI1 Carbonaceous Meteorites*, *Journal of Cosmology*, 2011, journalofcosmology.com/Life100.html

a general law of the universe which requires the presence of water to manifest. A characteristic of comets is that they are rich in ice which, in the vicinity of the Sun, melts and becomes water; therefore, in our paper⁶⁹ we suggested that, according to syntropy, living organisms can originate in extreme conditions, such as those of comets, and that the discovery of Dr. Hoover of cyanobacteria microfossils in meteorites is consistent with the theory of syntropy.

The importance of water for life has always been known and it is not a

⁶⁹ Vannini A (2011) and Di Corpo U, *Extraterrestrial Life, Syntropy and Water*, Journal of Cosmology, journalofcosmology.com/Life101.html#18

coincidence that living organisms are made mainly of water.

In the book “*Your Body’s many Cries for Water*” the Iranian doctor Fereydoon Batmanghelidj (1931-2004) offers an important explanation of the role of water in life, and specifically in the human body.

Batmanghelidj completed his medical studies at St. Mary’s Hospital in London and opened several clinics when he returned to Iran. However, during the 1979 Iranian revolution he was arrested and spent almost three years in prison in Tehran. A prison that was designed for 600 people, but which housed more than 9 thousand prisoners.

Here is how Batmanghelidj describes his discovery: *“The nightmare of life and death in that hell hole threatened everyone and tested the courage and strength of the weak and the strong. It was then that the human body revealed to me some of its greatest secrets, secrets never understood by medical science. (...) One night, after about two months of imprisonment, that secret was revealed. It was about 11 pm. I woke up, one of my cell mates suffered from terrible stomach pains. He couldn’t walk alone. Others were helping him stand up. He suffered from peptic ulcer and needed medical attention. He was very ill, but I was not allowed to take any medicine with me. At this point the surprising event occurred! I gave him two glasses of water and the pain*

*disappeared within minutes and he could stand on his own again.”*⁷⁰

Due to extreme conditions in Tehran prison, Batmanghelidj was able to discover that many diseases can be healed simply with water. Batmanghelidj concluded that the lack of water is expressed not only by thirst and dry mouth, but also by a series of localized symptoms that serve to inform us about a local need for water. These local signs of dehydration take the form of pain and are usually interpreted as symptoms of illness and not the need for water. Batmanghelidj realized that we often

⁷⁰ Batmanghelidj F (1992), *Your Body's many Cries for Water*,
www.watercure.com

mistake pains caused by a local dehydration situation for diseases.

Conventional medicine concentrates on the solid 25% and does not consider the role of water (i.e., the other 75% of the body), since it assumes that the solid part is the active principle and that all the functions of the body depend on the solid while water works only as a solvent that fills the spaces. The human body is considered as a large “test tube” filled with different types of solids and water as a chemically inert and insignificant packaging material. Conventional medicine assumes that solutes (substances dissolved or transported in the blood)

regulate all the activities of the body, while it is assumed that the intake of water (the solvent) is generally well respected, since water is easily available.

Based on this hypothesis, medical research has been addressed to the study of solids that are considered responsible for the onset of diseases. To date, a dry mouth is the only recognized symptom of dehydration. However, according to Batmanghelidj, a dry mouth is only the ultimate symptom of extreme dehydration.

- *Liquidarims*

For unintentional and unplanned reasons, I had the joy to live 65 days without eating: the first 37 days with some fruit juice and water, and the following 28 days only with water.⁷¹

After a few days without eating, instead of feeling weak, I felt stronger and full of energy. I had the impression I was feeding from some other source.

I searched for other cases and found the books of Michael Werner, born in 1949 in northern Germany and CEO of a pharmaceutical research institute in Arlesheim. He became liquidarian in January 2001 and since then drinks only water and does not eat solid

⁷¹ Di Corpo U., *Liquidarism, Syntropy and Vital Needs*,
www.amazon.com/dp/B07QDGZWPS

food. In his book *Life from Life*⁷² Werner says that: “*I found that my conversion to living without food went extraordinarily well. I expected to feel weaker and weaker during the first few days. But then I began to realize that in my case this weakness did not exist. Instead, I experienced a growing feeling of lightness during the day and a decrease in the amount of sleep I needed during the night. Going through this process was probably the most intense experience of my adult life.*”

If it is true that one can live, be fit and healthy without eating, incredible scenarios open. Werner notes that being liquidarian is different from fasting: “*It is something completely*

⁷² Werner M., *Life from Light: Is it Possible to Live without Food? A Scientist Reports on His Experience*, www.amazon.com/dp/B07NB2Q68Y

different! With fasting the body mobilizes reserves of energy and matter and one cannot fast for an unlimited time, nor can one be without drinking. But the process I was undertaking was and remains a mental-spiritual phenomenon that requires a particular inner predisposition. There is a condition: opening to the idea of being able to be nourished by the etheric, by prana or by whatever it may be called. This is the necessary requirement. Then it will happen. I live liquidarism as a gift from the spiritual world.”

Rudolf Steiner (1861-1925), Austrian philosopher, social reformer, architect and esotericist, attempted to formulate a spiritual science, a synthesis between science and

spirituality that applied the clarity of scientific thought, of the Western world, to the spiritual world. Steiner believed that matter was condensed light (he used the word light in a way like syntropy). If matter is condensed syntropy, there must be many ways to transform the invisible (syntropy) into matter. Our visible environment is immersed in an invisible environment, a syntropic reality that offers incredible possibilities, including that of living from syntropy. Steiner believed that life is impossible without syntropy (i.e. without light), since syntropy is the vital energy that we continuously and directly absorb. To live only on water is possible when

we absorb the vital energy from our etheric environment and condense it into substances. In other words, our body acquires structure and substance absorbing syntropy.

Michael Werner emphasizes that the only prerequisite for feeding on light (i.e., syntropy) is to trust it. He uses the words of Steiner: *“There is a fundamental essence of our earthly material existence from which all matter is produced through a process of condensation. What is the fundamental substance of our terrestrial existence? Spiritual science gives this answer: every substance on earth is condensed light! There is nothing but condensed light ... Wherever you touch a substance, there you*

have condensed light. All matter is, in essence, light.”

Matter is nothing else than condensed syntropy! When we converge towards the *Attractor*, we experience this incredible fact.

- Can the Attractor act independently?

In the fall of 2012, I was with Antonella at the Science and Non-Duality (SAND) conference in San Francisco. In the same days the baseball final was taking place in San Francisco, and the San Francisco Giants were the worst team. A friend was trying to help the Giants, using

remote healing techniques, but with little or no results. We told him that when working with vital energies the results are enhanced by the butterfly effect, and this requires a retrocausal procedure. We suggested to record the games and at the end of each game, without knowing the results, to watch the recording and use the healing techniques. It might have been a coincidence, but each time our friend used this retrocausal procedure, the Giants scored astonishing results. A short video is available at the link: youtu.be/ubdNpH-zPwo.

In the evening of November 8, 2016, when the polls closed for the election

of the president of the USA, all the gamblers gave Trump's victory a possibility of less than five percent, while Hillary Clinton's victory was certain, with more than ninety-five percent of possibilities. However, the impossible turned out to be possible and Trump's election has since remained a mystery! Trump was indeed the most unlikely candidate. Clinton had helped him win the Republican Nomination, because she was sure that she could beat him easily. He was depicted as an irresponsible, an idiot, a danger to the United States and the world. He had the media and the FED against him. There was no way for him to win!

In the same period Putin had nationalized the Russian Central Bank and was successfully working to free other countries from the tyranny of the US dollar. For the Western block it was a priority to stop Putin. Before the elections took place NATO had surrounded Russia and was ready to start the war. Clinton was openly against Russia and considered a war against Putin inevitable. Trump was against the war and wanted to develop a positive cooperation with Russia. He openly respected Putin.

When the impossible happened, Russia was accused of having meddled in the elections and Trump to be a traitor working for Putin.

Humanity was at a bifurcation: on one side the Third World War and the death of most of the humanity, on the other side Trump, with all his faults, but who would never authorize the war. Infront of this scenario the *Attractor* could not remain neutral, but to act, it needed a healer working in a retrocausal way. After the ballots closed, this healer had to bridge the intention of the *Attractor* with the consciousness of the voters. This tiny ripple, like the flap of the wings of a butterfly, became a hurricane that retrocausally hit American citizens just before casting the vote, awakening their consciences. This minimal ripple turned the impossible

into possible. It allowed the victory of Trump, a candidate who had no chance of winning!

People voted for Trump according to their free will, as the Giants played and won with their own forces. Millions of Americans voted freely and consistently with their free will. It was a vote against the dictatorship of the FED. The elections were rigged from the beginning! They had been arranged in favor of Hillary, but Trump won thanks to the butterfly effect!

Trump was accused of being an agent of Putin, of sex abuses, of allowing the poisoning of a spy by the Russians in Britain, of letting Russia

use chemical weapons in Syria. He was impeached and finally the COVID outbreak was used to meddle the 2020 elections. His entourage was brought to resign, and he was surrounded by people working against him. An isolated president, who till the end prevented the Third World War.

- Healing by changing the past

A very small ripple in line with the *Attractor*, in a calm sea, has the power of the flap of a butterfly wings that can change the fate of humanity. It must operate in a retrocausal way,

mediated by the heart, the invisible force of love and supported by the *Attractor*. It acts on the past, where it favors the choice of a different alternative, with incredible and positive consequences in the present.

This might seem impossible, but it is a scientific property of retrocausality and life, a miracle that can be achieved only with retrocausality, love and the help of the *Attractor*.

The *Attractor* is love and it is also the most powerful force of life. It brings together opposing elements, apparently incompatible, like life and death.

To be effective the healer must first calm the chatter of the mind, have a

clear heart, use love to insert a ripple into the sea of life energy, and be in line with the *Attractor*. In this way the ripple will go into the past, where the problem originated, and help choose a different alternative, resulting in immediate changes in the present.

EPILOGUE

In China love 春心 is expressed by the combination of the ideogram 春 (life) and the ideogram 心 (heart), whereas in the West love is accounted to the action of neurotransmitters and as a manifestation of instinct.

In a paper by two British anthropologists, Robin Dunbar, and Anna Maschin⁷³, the need for friendship is explained as being caused by internal opioids (endorphins) that are produced

⁷³ Maschin A.J. e Dunbar R.I.M. (2011), *The brain opioid theory of social attachment: a review of the evidence*, Behavior, 148(10): 985-1025.

during friendship relations. Friendship has always put science in front of a paradox because, unlike love, it is not needed for the reproduction of the species and does not imply a convenience for survival. It has therefore always remained a mystery why we spend hours with people, from whom we will probably never receive any benefit for our survival.

According to Dunbar and Maschin the cause of friendship is a neurotransmitter that is part of the group of endogenous opioids. These are substances similar to opioids, which we are accustomed to considering as drugs, but which are

produced by our neurons.

Dunbar and Maschin conclude that since friendship is caused by an internal drug it has the same addictive effects of drugs, and we cannot do without it.

Endogenous opioids (or endorphins) are neurotransmitters that are associated with a state of wellness, which encourages us to see life optimistically and reduce stress hormones. According to mainstream science, endorphins are the cause of wellbeing, and Dunbar and Maschin state that they “*are the glue that makes us keep those neurochemical complex social relationships that go beyond mating and care of offspring.*”

Endogenous opioids were discovered in the '70s and are difficult to study as they cannot be administered for experimental purposes because they are drugs which cause addiction. Since their discovery the relationship between endorphins and love was clearly shown.

Science sees the causes of love and friendship in neurotransmitters and hormones. For example, oxytocin, vasopressin, dopamine, and serotonin are believed to be the cause of erotic attraction, jealousy, the sense of motherhood and fatherhood.

The Vital Needs Theory reverses this interpretation, arguing that love,

friendship and cohesion are vital, since they are properties of syntropy, and they allow to acquire syntropy. Syntropy is cohesive and converging and its manifestations are of union and closeness. When we acquire syntropy, feelings of warmth due to the concentration of energy are associated with feelings of wellbeing caused by the regenerative processes activated by life energy. Obviously, these processes produce chemical mediators and neurotransmitters, such as endorphins. The production of endorphins is here seen because of the acquisition of syntropy. Love, friendship, and cohesion are the ways by which we acquire syntropy and are

not caused by endorphins or neurotransmitters.

Luigi Fantappiè stated that in the law of syntropy he could see the law of love:

“Today we see printed in the great book of nature - that Galileo said, is written in mathematical characters - the same law of love that is found in the sacred texts of major religions.”

He described this finding in the following way:

“What makes life different is the presence of syntropic qualities: finalities, goals, and attractors. Now as we consider causality

the essence of the entropic world, it is natural to consider finality the essence of the syntropic world. It is therefore possible to say that the essence of life is the final causes, the attractors.

Living means tending to attractors ... the law of life is not the law of mechanical causes; this is the law of non-life, the law of death, the law of entropy; the law which dominates life is the law of finalities, the law of syntropy.

But how are these attractors experienced in human life? When a man is attracted by money, we say he loves money. The attraction towards a goal is felt as love. We now see that the fundamental law of life is this: the law of love. I am not trying to be sentimental; I am just describing results

which have been logically deducted from premises which are sure. It is incredible and touching that, having arrived at this point, mathematical theorems start speaking to our heart!”

“The law of life is not the law of hate, the law of force, or the law of mechanical causes; this is the law of non-life, the law of death, the law of entropy. The law which dominates life is the law of cooperation towards goals which are always higher, and this is true also for the lowest forms of life. In humans this law takes the form of love, since for humans living means loving, and it is important to note that these scientific results can have great consequences at all levels, particularly on the social level, which

is now so confused. (...) The law of syntropy is therefore the law of love and differentiation. It does not move towards leveling and conforming, but towards higher forms of differentiation. Each living being, whether modest or famous, has its mission, its finalities, which, in the general economy of the universe, are important, great and beautiful.”

ADDENDUM 1

SYNTROPY AND ENTROPY IN PHYSICS

At the end of the 19th century physicists were faced with a fundamental paradox. According to classical physics a black body (which in physics is the best possible emitter of thermal radiation) at thermal equilibrium will emit radiation with infinite power as it would all concentrate in the ultraviolet wavelength. This prediction was named the ultraviolet catastrophe, but

fortunately it was not observed in nature. This paradox was solved on 14 December 1900, when Max Planck presented a paper, at the German Physical Society, according to which energy is quantized. Planck assumed that energy does not grow or diminish in a continuous way, but according to multiples of a basic quantum, which Planck defined as the frequency of the body (ν) and a basic constant which is now known to be equal to $6,6262 \cdot 10^{-34}$ joule \cdot seconds and which is named Planck's constant.

Planck described thermal radiations as composed of packets (quantum), some small and others larger according to the frequency of the

body. Below the quantum level, thermal radiation disappeared, avoiding in this way the formation of infinite peaks of radiation at the ultraviolet wavelength and solving the paradox of the ultraviolet catastrophe. December 14, 1900, is now remembered as the starting date of quantum mechanics (QM). Quantum mechanics deals with the behavior of the microscopic world at the atomic level.

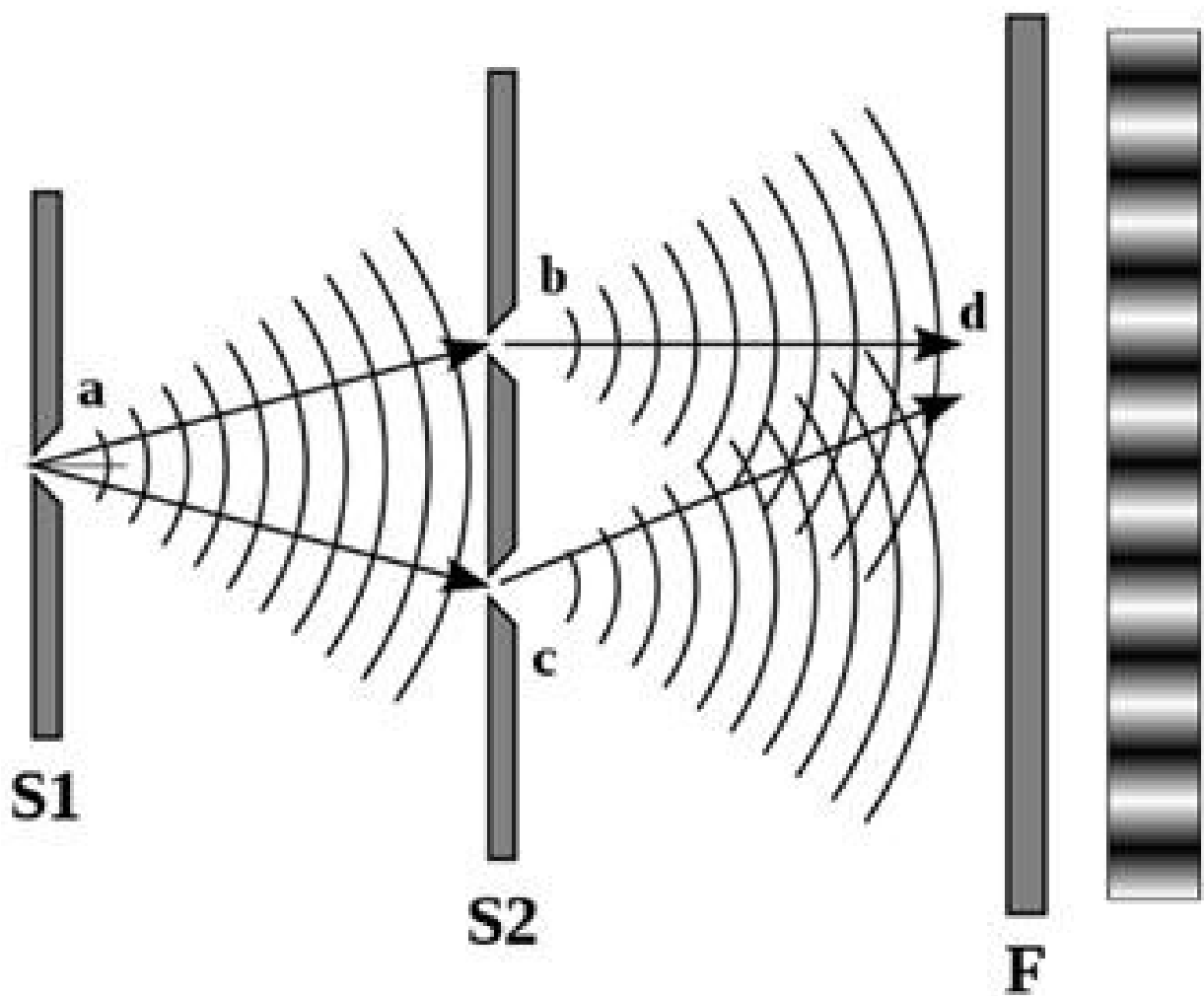
- *Wave/particle*

The double slit experiment was used by the physicist Thomas Young, in

the 18th century, to show that light propagates as a wave. In the presentation of his results at the Royal Society of London, on November 24, 1803, Young stated: “*The experiment I am about to relate (...) may be repeated with great ease, whenever the sun shines.*”

Young’s experiment was very simple in design: a narrow ray of sunlight shines through a pinhole in a cardboard (S1), the light then goes through two pinholes in a second cardboard (S2), and then ends on a white flat surface creating patterns of lines, light and dark, which Young explained because of the interference among light waves. White lines (constructive interference) are shown

when light waves add up, whereas dark lines (destructive interference) are shown when they do not add up.



Thomas Young's double slit experiment

Young's experiment was generally accepted as the demonstration of the fact that light propagates as waves. If

light would have been made of particles, the interference pattern would not have shown up, but only two well localized dots of light would have been observed in association with the pinholes in the cardboard. Instead, in the double slit experiment, the brightest line is located between the two pinholes, in what would have been expected to be a dark area. Young's experiment has been considered the fundamental demonstration of the wave properties of light until quantum mechanics started to disclose the dual nature of matter: waves and particles at the same time.

In 1905, Einstein solved the paradox

of the photoelectric effect, describing light as composed of particles, rather than waves. When light or electromagnetic radiation reach a metal, electrons are emitted, this is named the photoelectric effect. The electrons of the photoelectric effect can be measured, and these measurements show that: until a specific threshold is reached the metal does not emit any electrons; above the specific threshold electrons are emitted, and their energy remains constant; the energy of the electrons increases only if the frequency of light is raised. Classical light theory was not able to justify this behavior, for example: Why does the intensity of

light not increase the energy of the electron emitted by the metal? Why does the frequency affect the energy of the electrons? Why are electrons not emitted below a specific threshold? Einstein answered these questions using Planck's constant and suggesting that light, previously considered an electromagnetic wave, could be described as quantum packets of energy, particles which are now called photons. Einstein's interpretation of the photoelectric effect played a key role in the development of quantum mechanics, as it treated light as particles, instead of waves, opening the way to the duality wave/particles.

The experimental proof of Einstein's interpretation was given in 1915 by Robert Millikan who, ironically, had been trying, for 10 years, to prove that Einstein's interpretation was wrong. In his experiments Millikan discovered that all the alternative theories did not pass the experimental test, whereas only Einstein's interpretation was shown to be correct. Several years later Millikan commented:

“I spent ten years of my life testing that 1905 equation of Einstein and contrary to all my expectations I was compelled in 1915 to assert its unambiguous experimental verification in spite of its

unreasonableness since it seemed to violate everything that we knew about the interference of light.”

Young's experiment can now be performed using single electrons. Electrons used in a double slit experiment produce an interference pattern and therefore behave as waves, but at their arrival they give place to a point of light, behaving as particles.



Double slit experiment using electrons

*a) 10 electrons; b) 100 electrons; c) 3.000 electrons;
d) 20.000; e) 70.000 electrons.*

If electrons were particles, we could

conclude that they would go through one of the two slits, but the interference pattern shows that they behave as waves going through the two slits at the same time.

Quantum entities seem to be capable of going through the two slits at the same time and know how to contribute to the interference pattern.

If matter were only made of particles, quantum entities would go through one slit at a time, and no interference pattern would be visible. If matter were only made of waves no dots would be observed on the screen, but only interference lines would show.

Richard Feynman⁷⁴ known for his contributions to the development of quantum electrodynamics, considered the dual nature of matter (particle/wave) the core mystery of quantum mechanics:

*“The double slit experiment is a phenomenon which is impossible, absolutely impossible, to explain in any classical way, and which has in it the heart of quantum mechanics.”*⁷⁵

⁷⁴ www.feynman.com

⁷⁵ Feynman R. (1949) *The Theory of Positrons*, Physical Review 76: 749.

- *The dual solution of the fundamental equations*

In 1924 Wolfgang Pauli, one of the pioneers of quantum mechanics, discovered that electrons have a spin, a momentum which can never be equal to zero and which nears the speed of light. Therefore, when combining quantum mechanics and special relativity the full energy/momentum/mass equation needs to be considered.

In 1925 the physicists Oskar Klein and Walter Gordon formulated a probability equation which could be used in quantum mechanics and was relativistic. Klein-Gordon's equation

depends on a square root and yields two solutions. The positive solution describes waves which propagate from the past to the future (delayed waves), whereas the negative solution describes waves which propagate backward-in-time, from the future to the past (advanced waves).

Klein and Gordon explained the dual nature, wave/particles, of matter as the continuous interaction between delayed waves (forward-in-time solution, with particle properties) and advanced waves (backward-in-time solution, with wave properties).

This interpretation was rejected by Heisenberg, who in 1927 formulated, together with Niels Bohr the

Copenhagen interpretation of Quantum Mechanics.

The Copenhagen interpretation explains the results of the double slit experiment in the following way: electrons leave the electronic cannon as particles, they dissolve into waves of superposed probabilities, in a superposition of states, the waves go through both slits and interfere creating a new state of superposition. The observation screen, performing a measurement, forces the waves to collapse into particles, in a well-defined point of the screen. Electrons start again to dissolve into waves, just after the measurement.

Essential components of the

Copenhagen interpretation are:

- The *Uncertainty principle* formulated by Heisenberg, according to which a quantum entity cannot have a precisely defined moment and place at the same time.
- The *Complementarity principle* which states that a single quantum mechanical entity can either behave as a particle or as a wave, but never simultaneously as both; that a stronger manifestation of the particle nature leads to a weaker manifestation of the wave nature and vice versa.
- *Schrödinger's wave equation*, reinterpreted as the probability that

the electron (or any other quantum mechanical entity) is found in a specific place.

- The *superposition of states*, according to which all the waves are superposed together until a measurement is performed.
- The *collapse of the wave function* which is caused by the observation and the act of measuring.

According to this interpretation consciousness, through the exercise of observation, forces the wave to collapse into a particle, creating reality.

In this way Heisenberg introduced the notion that consciousness is a

prerequisite to reality. This interpretation states that the existence of the electron in one of the two slits, independently from observation, does not have any real meaning. Electrons seem to exist only when they are observed. Reality is therefore created by the observer.

In 1927 Klein and Gordon formulated again their equation as a combination of Ψ , Schrödinger's wave equation (quantum mechanics), and the energy/momentum/mass equation of special relativity:

$$E \Psi = \sqrt{p^2 + m^2} \Psi$$

This Klein-Gordon equation involves on a square root which yields two wave solutions: delayed and advanced waves.

In 1928 Paul Dirac, an English theoretical physicist who made fundamental contributions to the early development of quantum mechanics, tried to eliminate the advanced waves solution by applying the energy/momentum/mass equation to the study of relativistic electrons. He was faced again with a dual solution: electrons (e^-) and neg-electrons (e^+ , the anti-particle of the electron). Dirac's equation predicts a universe made of matter which propagates forward-in-time and

antimatter which propagates backward-in-time. Dirac stated: “*One gets over the difficulty by arbitrarily excluding those solutions that have a negative Energy. One cannot do this in the quantum theory.*”⁷⁶

Dirac named the anti-particle of the electron *neg-electron*, and in 1932 it was experimentally observed by Carl Anderson, who renamed it *positron*.⁷⁷ Positrons are produced naturally in certain types of radioactive decay and in 1934 the Swiss mathematician Ernst Stueckelberg and later Richard Feynman, provided a formalism

⁷⁶ Dirac P.A.M. (1928) *The Quantum Theory of the Electron*, Proc. Royal Society, London 117:610-624; 118:351-361.

⁷⁷ Anderson C.D. (1932), *The apparent existence of easily deflectable positives*, Science, 76:238 (1932).

where each line of a diagram represents a particle propagating either backward or forward-in-time. This formalism is now the most widespread method of computing quantum fields and, since this picture was first developed by Ernst Stueckelberg, and acquired its modern form in Feynman's work, it is called the Feynman-Stueckelberg interpretation of antiparticles.

- *Ether?*

Dirac's 1928 equation is consistent with special relativity, it is mathematically flawless, and it can

account for virtually everything, since it is the relativistic generalization of the Schrödinger wave equation, which was already generally applied.

But beside negative energy and retrocausality, it requires every charge to be surrounded by the opposite charged ends of electron-positron pairs (named “*epos*”). Experiments have always verified the presence of epos and the fact that the vacuum between interacting particles is not simply empty space.

Unfortunately, in 1928, this sea of epos recalled ether. For decades the ether war had raged in every faculty. And only in 1905 Einstein managed to put an end to it, declaring that the

“luminiferous ether,” the supposed carrier of light, is unobserved, hence nonexistent. For Heisenberg, any reference to a universal substance that undetectably filled space sounded too much like ether. He was therefore the most upset by Dirac’s equation and the requirements of unlimited negative energy states.⁷⁸

Dirac tried to solve the conflict with Heisenberg suggesting that if all the negative states and none of the positive states were filled, the two energies could have no effect on each other. This hypothesis was named the *“zeroth order subtraction,”* and was later used by Heisenberg to remove from

⁷⁸ Heisenberg W. (1934), Zeitschr. f. Phys., 90, 209.

the Dirac's equation those parts which refer to the negative-time energy.

Heisenberg found that he could go around the “sea” of negative-time energy states, just replacing the operator that requires unlimited numbers of epos with a creation operator which magically makes epos appear from nowhere. Because epos must be present, Heisenberg's operator creates them on the spot, and similarly, when they disappear, they are annihilated. Using the zeroth order subtraction, which forces all results to be positive, an ocean of negative energy no longer exists: there are no negative solutions. In this way

Heisenberg made the equation become blind to the negative-time energy solution.

Quantum vacuum zero-point energy is the lowest possible energy that a quantum mechanical physical system may have; it is the energy of its ground state. But experiments show fluctuations around these zero baselines, which are now called zero-point fluctuations. Dirac's equation explains these fluctuations as particles which jump out of the sea of negative-time energy.

According to Heisenberg every physical system has a zero-point energy greater than the minimum of its potential well, and this results in

the creation of particles even at absolute zero.

Heisenberg's creation operator requires the creation of unlimited numbers of epos without the contribution of energy photons, or, indeed, any measurable energy input at all. Furthermore, when particles are annihilated, the epos vanish without a trace, producing no high-energy photons or any other detectable energy. This massive violation of the principle of energy conservation (first law of thermodynamics) did not bother Heisenberg who used the uncertainty principle to state that epos are *virtual* rather than *actual*.

When epos are created they borrow

a virtual energy and when they annihilate, they give back this virtual energy to the uncertainty relation. For Heisenberg *virtual* meant *having whatever properties we need*. In this way the unlimited numbers of virtual epos could violate the energy conservation law and general relativity and offered an escape window that could save the ruling paradigm. In 1934 science took this escape window:

“Science frequently makes choices between alternatives. Once the choice is made, however, scientists tend to unify behind the accepted alternative to the extent of denying and eventually forgetting that there was any real choice made. Subsequent textbooks

gloss over any possible alternatives, depicting science as a straightforward march up the one correct path toward truth. Since it is forgotten and denied that such choices existed, the results of these choices are rarely reviewed. Not only is there no provision, or incentive, for such a review, there is positive, and powerful, peer pressure against any such questioning of basic premises.”⁷⁹

Now physicists ignore the negative-time energy solutions of the two most used and respected equations in modern physics: the energy/momentum/mass equation of special relativity and Dirac’s relativistic equation.

⁷⁹ Hotson D. (2002), *Dirac’s Equation and the Sea of Negative Energy – part 1*, Infinite Energy, 2002, 43: 1-20.

The energy equation calls for negative-time energy, and Dirac's equation calls for electrons and positrons in unlimited numbers.

Experiments confirm the validity of these two equations, but Heisenberg's final argument was always the same: “*Negative-time energy is impossible, with no imaginable physical meaning.*”

After nearly a century this statement is generally accepted among physicists even though the created electron has sixteen times more energy than the photon that creates it. Current theories state that this excess in energy (in the form of angular momentum) is an intrinsic attribute of particles. Calling it an *intrinsic attribute*

is supposed to close the discussion and provide a justification for a 1,600% violation of the conservation principle.

For Heisenberg to put physics into the creation business, violating the law of energy conservation, was more politically correct than accepting the negative-time energy solutions and retrocausality.

It seems that in particle physics energy conservation is something to respect when it agrees with the model, but to throw away when it proves inconvenient.

Ignoring these massive violations of conservation, the idea that complex entities, such as electrons and

positrons, could be created out of nothing has become generally accepted. But energy per se does not supply the information necessary to make the highly complex little entities that we call electron and positron.

Since 1934 physicists are asked to reject the negative-time solution of the fundamental equations, even though this puts science in the creation business, on a scale rivaling God and religions, and has given birth to the New Age interpretations which violate science's most basic laws of causality and conservation of mass/energy. Rejecting the negative-time solutions seems to negate science itself. One wonders to which

extent main-stream science will go to reject the negative-time solutions. When faced with a choice involving a paradigm shift main-stream scientists almost invariably, since Galileo's time, choose the solutions that save the paradigm, regardless of the evidence.

Einstein's energy/momentum/mass equation, Dirac's fabulously successful equation and Klein-Gordon's equations call for symmetry between positive-time and negative-time energy: forces that blast matter apart and forces that bind matter together.

Dirac's equation describes a field which contains unlimited symmetrical amounts of negative and positive

energy. When approaching the zero-point, everything is bound closer together and negative energy becomes predominant. At very low temperatures a Bose-Einstein Condensate (BEC) is formed. BEC act as single units rather than as a collection of molecules, permitting states in which negative-time (binding) energy overcomes positive-time (freeing) energy. A BEC results from the dominance of negative-time (binding) energy over positive-time energy. It is an energetic system, completely ordered, governed by a single wave function which is destroyed by positive energy.

Zero-point is reached not at 0°

Kelvin, but a few degrees higher. This value differs for different materials, and certain materials manifest BEC properties at much higher temperatures. At the zero-point, instead of no energy, there is suddenly a flood of it. This is real energy, with measurable effects. What BEC applications show is that the negative-time energy sea called for by Dirac's equation must exist and becomes available at zero-point. Dirac's equation suggests that we are surrounded by an immense, all pervasive Bose-Einstein Condensate, which allows for non-local effects, effects which propagate instantaneously, no matter how great

their spatial separation. If an electron is inserted into one end of a BEC, however large, an electron emerges from the other end instantaneously, travelling that distance faster than light, this is the phenomenon of superconductivity.

The theory of the electromagnetic ether was developed by Hendrik Lorentz (1853-1928) mainly between 1892 and 1906, with the cooperation of Poincaré, and was based on the theory of Augustin-Jean Fresnel, Maxwell's equations, and the electron theory of Rudolf Clausius. Lorentz introduced a strict separation between matter (electrons) and ether, where ether is completely motionless.

Lorentz died in 1928, when Dirac formulated his equation. If he would have survived longer, he would have surely recognized the electromagnetic ether theory in the negative-time energy sea. With his influence, he would have probably limited the devastating effects on science of Heisenberg's positions.

- Non-locality

In his second paper on “*Dirac's Equation and the Sea of Negative Energy*,” Don Hotson states that: “*Dirac's equation simply, intuitively, and clearly explains the size of the nucleon, the mass of*

the nucleon, the very peculiar shape of the strong nuclear force, the strength of the strong nuclear force, and the strange fact that the very different proton and electron have charges of the same strength. No other model explains any of these features.’⁸⁰

However, the rejection of the negative-time energy solution has made the two theories upon which all modern physics rests, relativity, and quantum mechanics, seem incompatible, since when they are combined an unacceptable universe of backward-in-time causality arises.

The Copenhagen interpretation posits that the collapse of the wave function (the collapse of the wave

⁸⁰ Hotson D. (2002), *Dirac's Equation and the Sea of Negative Energy – part 2*, Infinite Energy, 2002, 44: 1-24.

into a particle) happens at the same moment in all the points of the wave. This requires an instantaneous propagation of information which violates the boundary of the speed of light considered by Einstein the limit in the propagation of information and causality. Einstein considered causality always local, and information could only propagate at speeds lower or equal to the speed of light, never faster.

Starting from these assumptions Einstein refused the idea that information relative to the collapse of the wave could travel faster than light and, in 1934, he formulated these considerations in the EPR paradox.

The EPR paradox (named after the initials of Einstein-Podolsky-Rosen) remained unanswered for more than 50 years. EPR was presented as a conceptual experiment, to demonstrate the absurdity of the Copenhagen interpretation, raising a logical contradiction. According to Pauli's discovery that electrons have a spin, and that in a specific orbit only two electrons with opposite spins can find place (Pauli's exclusion principle), the Copenhagen interpretation concluded that couples of electrons, which shared the same orbit, remain entangled showing instantaneous opposite spins independently from their distance,

violating in this way the limit of the speed of light in the propagation of information.

No one expected that the EPR experiment could be really performed. In 1952 David Bohm suggested to replace electrons with photons and in 1964 John Bell showed that the change introduced by Bohm opened the way to the possibility of a real experiment. At that time even Bell did not believe that the experiment could be performed, but 20 years later several groups had developed the precision of measurements required, and in 1982 Alain Aspect published the results of an experiment which

showed that Einstein was wrong, and that non-locality was real.⁸¹

Aspect's experiment measured the polarization of photons. It is possible to force an atom to produce two entangled photons, which go in opposite directions. Each photon, of an entangled pair, has opposite polarization. The Copenhagen interpretation predicts that when the measurement is performed on one photon it instantaneously determines the state of the second photon. This is what Einstein named "*a spooky action at a distance.*" Aspect measured the polarization of photons according to

⁸¹ Aspect A. (1982) *Experimental Realization of Einstein-Podolsky-Rosen-Bohm Gedanken experiment*, Physical Review Letters, vol. 49, 91, 1982.

an angle which he could regulate. According to non-locality, changing the angle with which the polarization of a photon is measured would instantaneously change the measurement effected on the second entangled photon.

The experiment was conducted on series of entangled pairs of photons. Bell's theorem stated that if locality is true, the measurements of polarization performed on the photons moving through the first apparatus, which could be regulated changing the angle, should always be higher than the measurements performed on the second set of entangled photons (Bell's inequality

theorem). Aspect obtained opposite results violating Bell's theorem showing that non-locality is real. Einstein's good sense lost the competition. Aspect's experiment proved that in nature instantaneous correlations are real and possible.

In 1947 Oliver Costa de Beauregard, a French relativistic and quantum physicist and philosopher of science, proposed to Louis de Broglie his interpretation of the EPR paradox which questions the notion of time. He suggested that Alain Aspect's experiment could be explained by the theory of retrocausality.⁸² According to de Beauregard, when the negative-

⁸² De Beauregard O. (1953) *Comptes Rendus* 236, 1632-1634;

time energy is considered quantum mechanics and relativity become compatible.

- Retrocausality

In 1978 John Archibald Wheeler proposed a variation of the double-slit experiment in which the detectors could be activated after the passage of the photon through the slits.

When, in a double-slit experiment, a detector is used to measure which slit the photon goes through, the interference pattern disappears. In the delayed choice experiment the detector is located between the slits

and the screen on which the interference pattern is observed.

Quantum theory tells that when the detectors are turned on the interference pattern disappears, forcing the waves to collapse and the photons to go through the slits as particles. This should happen also if the detection is activated after the transition of the photons through the slits.

The delayed choice experiment became possible thanks to the speed of computers, which can choose randomly when to activate the detectors between the double slit and the screen. The result is that this choice effects the way in which the

photon has gone through the slit (wave/particle), and that this effect operates backward-in-time.

The first two experiments which verified this model were performed independently in the 1980s in the University of Maryland and Munich, Germany.

These experiments showed that the decision to activate the detectors affected the nature of photons backward-in-time.

Wheeler noted that it is possible to devise a double slit experiment at the cosmic level using light coming from quasars and a galaxy which operates as a gravitational lens on the way to Earth. This light would generate an

interference pattern showing that light has travelled as waves. But if a measurement would be performed before the screen on which the interference pattern takes form, the pattern would dissolve, and the photons would change from waves into particles.

In other words, our choice on how to measure the light coming from a quasar influences the nature of the light (particle/quasar) emitted 10 billion years ago. According to Wheeler this experiment would show that retrocausal effects operate at the quantum level.

In 1986 John Cramer⁸³, physicist of

⁸³ Cramer J.G. (1986) *The Transactional Interpretation of Quantum Mechanics*, *Reviews of Modern Physics*, Vol. 58: 647-688.

the Washington State University, published the Transactional interpretation of quantum mechanics. In this interpretation the formalism of quantum mechanics remains the same, but the difference is how this formalism is interpreted.

Cramer was inspired by the absorber-emitter model developed by Wheeler and Feynman⁸⁴ which used the dual solution of Maxwell's equation. As is well known, also the generalization of Schrödinger's wave equation into a relativistic invariant equation (Klein-Gordon's equation) has two solutions, one positive, which describes delayed waves which

⁸⁴ Wheeler J. e Feynman R. (1945) *Interaction with the Absorber as the Mechanism of Radiation*, Review of Modern Physics (17).

propagate forward-in-time, and one negative, which describes advanced waves which propagate backward-in-time. This dual solution allows to explain in a simple way the dual nature of matter (particles and waves), non-locality and all the other mysteries of quantum mechanics and permits to unite quantum mechanics with special relativity.

The transactional interpretation requires that waves can really travel backward-in-time. Cramer says that this assertion is counterintuitive, as we are accustomed to the fact that causes always precede their effects.

It is important to underline that the transactional interpretation considers

special relativity, which describes time as a dimension of space, in a way which is totally different from our intuitive logic. The interpretation of Copenhagen, instead, treats time in a classical Newtonian way, and therefore it requires the introduction of consciousness, in a mystical way, with powers of creation, to solve the dual nature (particle/wave) of matter.

Cramer states that the probabilistic equation developed by Max Born in 1926 contains an explicit reference to the nature of time and to the two possible solutions which describe advanced and delayed waves. Since 1926, every time physicists have used Schrödinger's equation to calculate

quantum probabilities, they have considered the advanced waves solution without even realizing it.

Cramer's mathematics is the same of the Copenhagen interpretation. The difference lies solely in the interpretation. The dual solutions interpretation solves all the mysteries and puzzles of quantum physics, making it also compatible with the requirements of special relativity. This miracle is achieved, however, at the price that the quantum wave can travel backward-in-time. This, at first glance, is in sharp contrast with common logic, which tells causes must always precede their effects.

In his book "*The Road to Reality*"

Roger Penrose underlines that usually physicists tend to reject as “*unphysical*” any solution which contradicts classical causality, according to which causes always precede their effects.⁸⁵ Any solution which makes it possible to send a signal backward-in-time is usually rejected. Even if Penrose chose to reject the negative solution of the energy equation, he states that this refusal is a consequence of a subjective choice, towards which other physicists have different opinions. Penrose dedicates nearly 200 pages of his book to the paradox of negative-time energy. According to Penrose it is important that the value

⁸⁵ Penrose R., *The Road to Reality: A Complete Guide to the Laws of the Universe*, Rizzoli, Vintage Books, 2005, ISBN 0-09-944068-7.

of E is always positive because negative values of E lead to catastrophic instabilities in the Standard Model of sub-atomic physics.

“Unfortunately, in relativistic particles both solutions of the equation need to be considered as a possibility, even a nonphysical negative energy has to be considered as a possibility. This does not happen in non-relativistic particles. In this last case, the quantity is always defined as positive, and the embarrassing negative solution does not appear.”

Penrose adds that the relativistic version of Schrödinger's equation

does not offer a procedure in order to exclude the negative-time solution. In the case of a single particle this does not lead to any real problem, however when particles interact, the wave function cannot yield only the positive-time solution. This creates a conflict with the law of classical causation.

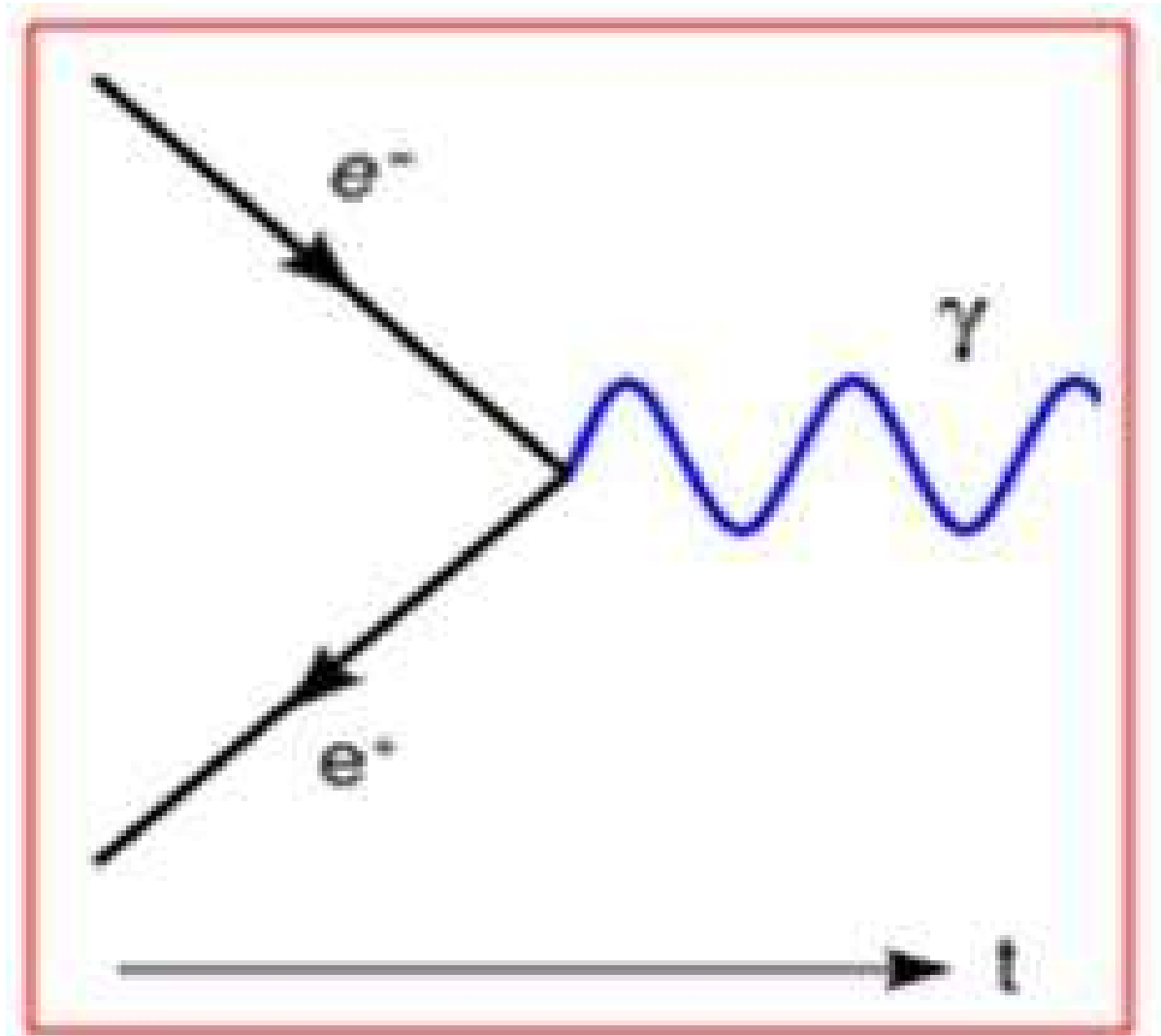
To remove the embarrassing negative solution, Dirac suggested a hypothesis which Penrose describes simply as crazy. Dirac used Pauli's principle, according to which two electrons cannot share the same state, to suggest that all states of negative energy are occupied, thereby forbidding any interaction between

positive and negative states of matter. This ocean of negative energy which occupies all positive states is called Dirac Sea. The Standard Model of physics is based on this assumption.

Even if classical physics rejects the negative-time solution of energy and the possibility of retrocausality, several respected scientists have worked and are working on this possibility.

An example is offered by Feynman's diagrams of electron-positron annihilation. According to which electrons are not destroyed by the contact with positrons, but the release of energy is caused by electrons changing direction in time and

becoming positrons.



*In the diagram arrows to the right represent electrons,
arrows to the left represent positrons, wavy lines photons*

When Feynman's diagrams are interpreted, they imply necessarily the existence of retrocausality.⁸⁶ Feynman

⁸⁶Feynman R. (1949) *The Theory of Positrons*, Physical Review 76: 749.

has used the concept of retrocausality to produce a model of positrons which reinterprets Dirac's hypothesis of the sea of negative energy occupying all possible states. In this model, backward-in-time electrons would acquire positive charges.⁸⁷

Yoichiro Nambu⁸⁸ has applied Feynman's model to the processes of annihilation of particle-antiparticle couples, arriving at the conclusion that it is not a process of annihilation or creation of couples of particles and antiparticles, but simply a change of the time direction of particles, from

⁸⁷ Wheeler J. e Feynman R. (1945) *Interaction with the Absorber as the Mechanism of Radiation*, Review of Modern Physics (17).

⁸⁸ Nambu Y. (1950) *The Use of the Proper Time in Quantum Electrodynamics*, Progress in Theoretical Physics (5).

the past to the future or from the future to the past.

Until the XIX century, time was irreversible, a sequence of absolute moments. In 1954 the philosopher Michael Dummett showed that there is no philosophical contradiction in the idea that effects can precede causes.⁸⁹

In 2006 AIP (American Institute of Physics) organized a conference in San Diego California titled “*Frontiers of Time: Retrocausation – Experiment and Theory.*” The proceedings contain more than 20 contributions on

⁸⁹ Dummett M. (1954) *Can an Effect Precede its Cause*, Proceedings of the Aristotelian Society (Supp. 28);

retrocausality.⁹⁰

In November 2010, President Barack Obama awarded the physicist Yakir Aharonov the National Medal of Science for the experimental studies which show that the present is a result of causes which flow from the past as well as from the future. These results suggest a radical reinterpretation of time and causality.⁹¹

⁹⁰ AIP, *American Institute of Physics*, *FRONTIERS OF TIME:*

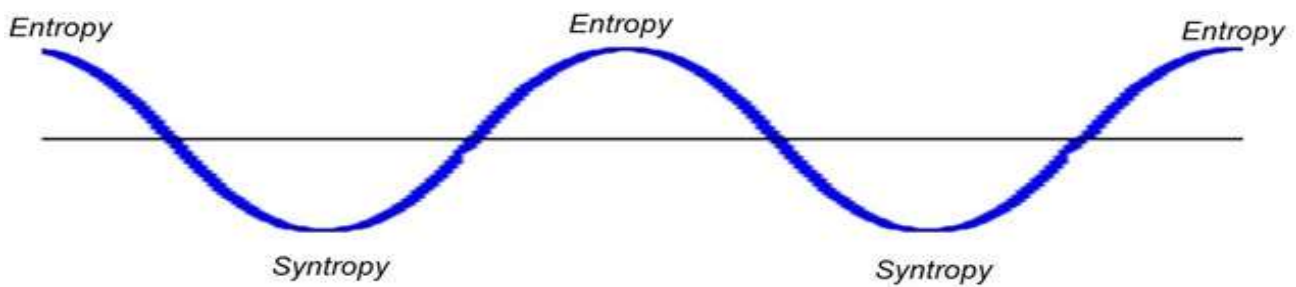
Retrocausation - Experiment and Theory, Proceedings:

<http://scitation.aip.org/content/aip/proceeding/aipcp/863/>

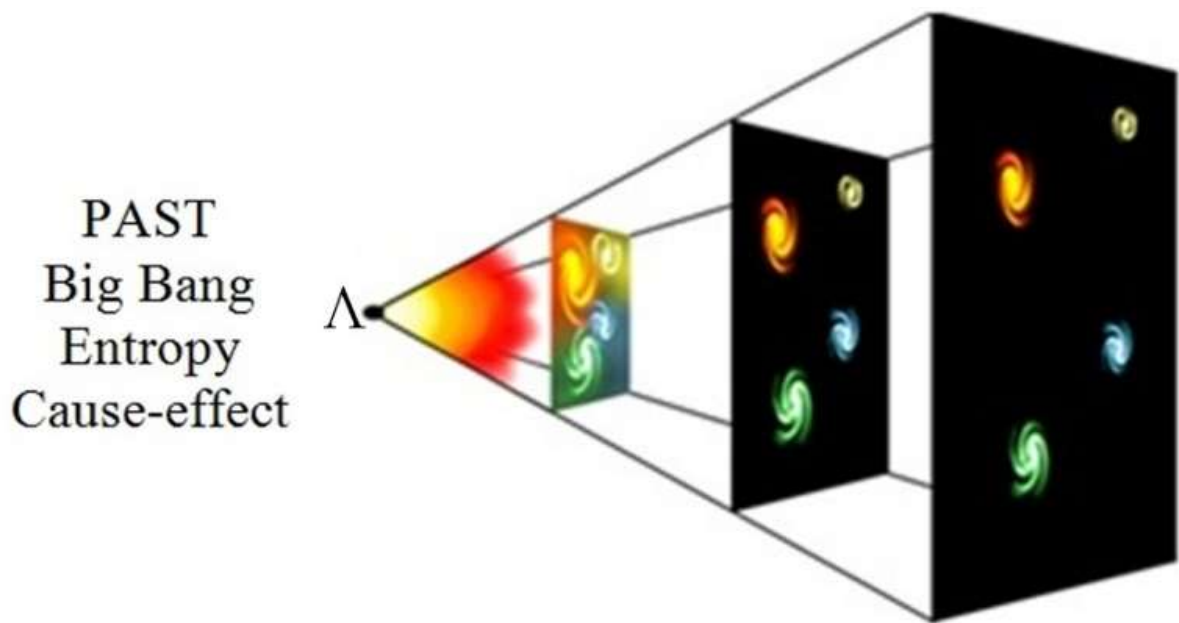
⁹¹ Aharonov Y. (2005), *Quantum Paradoxes*, Wiley-VCH, Berlin, 2005.

- Diverging and converging cycles

The entropy/syntropy model suggests that any system, organic or inorganic, vibrates between peaks of entropy and syntropy acquiring in time specific resonances.



Entropy/syntropy cycles can be observed in any system and at any level, from the quantum to the macro and the cosmological level, where it supports Einstein's cyclical model of endless Big Bangs and Big Crunches.



The first formulation of the theory of the Big Bang, by Lemaître, dates to 1927, but was generally accepted only in 1964, when most scientists were convinced that experimental data confirmed that an event like the Big Bang took place. Georges Lemaître, a Belgian Catholic priest and physicist, developed the equations of the Big Bang and suggested that the distancing of the nebulae was due to

the expansion of the cosmos. He observed a proportionality between distance and spectral shift (now known as Hubble's law).

In 1929 Edwin Hubble and Milton Humason noted that the distance of galaxies is proportional to their redshift, the shift towards lower frequencies of the light. This happens usually when the light source moves away from the observer or when the observer moves away from the source. More specifically, it is called red shift when, in observing the spectrum of light emitted from galaxies, quasars, or distant supernovae, it appears shifted to lower frequencies when compared

with the spectrum of closer corresponding objects. Since the red color is the lowest frequency in visible light, the phenomenon received the name redshift, even though it is used in connection with any frequency, including radio frequency radiations.

The red-shift phenomenon indicates that galaxies are moving away from each other, and more generally that the Universe is in a phase of expansion. Furthermore, red-shift measurements show that galaxies and star clusters move away from a common point in space: the more distant they are from this point, the higher is their speed.

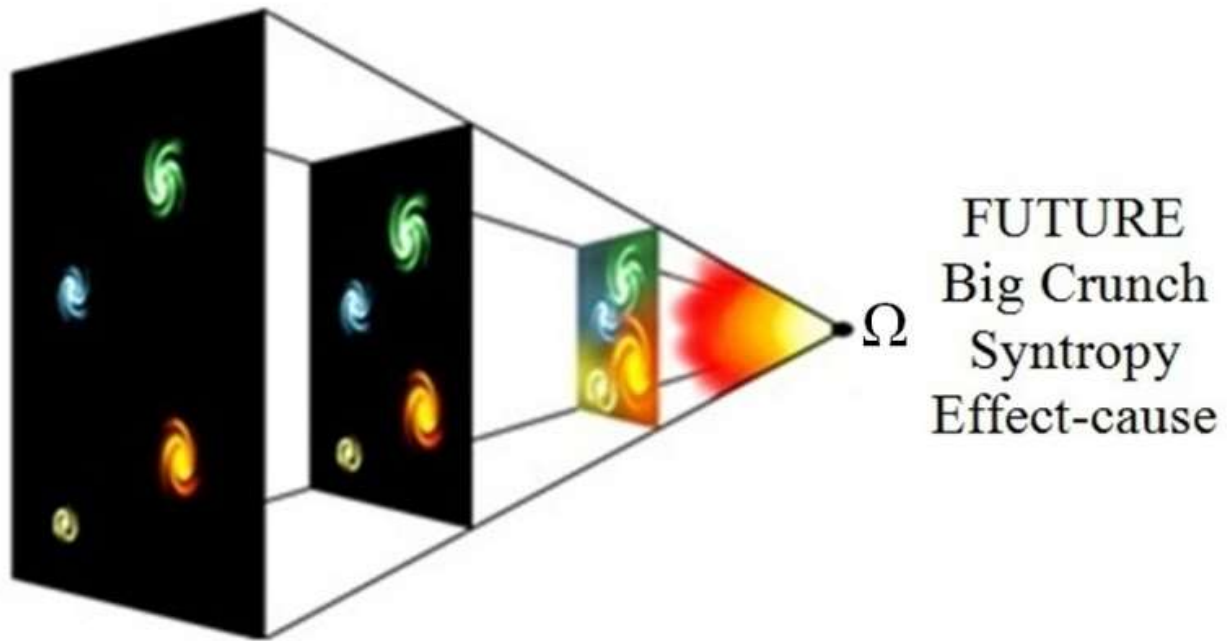
Since the distance between galaxy

clusters is increasing, it is possible to deduce, by going back in time, density, and temperature increasingly higher until a point is reached where maximum values of density and temperature tend towards infinite values and the physical laws of the forward-in-time equations are no longer valid.

In cosmology, the Big Crunch is a hypothesis on the fate of the universe. This hypothesis is exactly symmetrical to the Big Bang and maintains that the universe will stop expanding and begin collapsing on itself.

The strength of the gravitational forces will stop the universe from expanding and the universe will

collapse back on itself.



The contraction will appear very different from the time reversal of the expansion. While the early universe was highly uniform, a contracting universe will be increasingly diversified and complex. Eventually all matter will collapse into black holes, which will then coalesce producing a unified black hole or Big

Crunch singularity.

The theory of the Big Crunch proposes that the universe could collapse to the state where it began and then initiate another Big Bang. So, in this way the universe would last forever, but would go through phases of expansion (Big Bang) and contraction (Big Crunch).

Recent evidence, namely the observation of distant supernova, has led to the speculation that the expansion of the universe is not being slowed down by gravity but rather accelerating. In 1998 the measurement of the light from distant exploding stars lead to the conclusion that the universe is expanding at an

accelerating rate. The observation of the red-shift luminosity of supernovae suggests that supernovae are spreading apart faster as the universe ages. According to these observations the universe appears to be expanding at an increasing rate. These observations contradict the hypothesis of the Big Crunch.

In the attempt to explain these observations physicists have introduced the idea of dark energy, dark fluid, or phantom energy. The most important property of dark energy would be that it has a negative pressure which is distributed relatively homogeneously in space, a kind of anti-gravitational force which is

driving the galaxies apart. This mysterious anti-gravitational force is a cosmological constant, which will lead the universe to expand exponentially. However, to this day no one knows what dark energy is, or where it comes from.

On the contrary, the dual time solution of the energy equation suggests that the observed increase in the rate of expansion of the universe is not because of dark energy or to any other mysterious anti-gravitational force, but to the fact that time is slowing down.

In June 2012 Professor José Senovilla, Marc Mars and Raül Vera of the University of the Basque

Country, Bilbao, and the University of Salamanca, Spain, published a paper in the journal Physical Review D in which they dismiss dark energy as fiction. Senovilla says that the acceleration is an illusion which is caused by time itself gradually slowing down:

“We do not say that the expansion of the universe itself is an illusion, what we say is that the acceleration of this expansion - that is, the possibility that the expansion is, and has been, increasing its rate — is an illusion.[...] we naively kept using our equations to derive the changes of the expansion with respect of ‘a standard flow of time’, then the simple models that we have

constructed in our paper show that an effective accelerated rate of the expansion takes place.”

The corollary of Senovilla’s team is that dark energy does not exist.

The team proposes that there is no such thing as dark energy and that we have been fooled into thinking the expansion of the universe is accelerating, when, time itself is slowing down. At an everyday level, the change would not be perceptible. However, it would be obvious from cosmic scale measurements tracking the course of the universe over billions of years. The change would be infinitesimally slow from a human

perspective, but in terms of cosmology, the study of light from stars that exploded billions of years ago, it could easily be measured.

Currently, astronomers discern the expansion speed of the universe using the so-called “red shift” technique. This technique relies on the understanding that stars moving away appear redder in color than those moving towards us. Scientists look for supernovae of certain types that provide a sort of benchmark. However, the accuracy of these measurements depends on time remaining invariable throughout the history of the universe.

If time is slowing down it turns into

a space dimension. Therefore the far-distant, ancient stars seen by cosmologists would look as though they were accelerating. “*Our calculations show that we would think that the expansion of the universe is accelerating,*” says Prof Senovilla. Though radical and in many ways unprecedented, these ideas are not without support. Gary Gibbons, a cosmologist at Cambridge University, says the concept has merit: “*We believe that time emerged during the Big Bang, and if time can emerge, it can also disappear - that’s just the reverse effect.*”

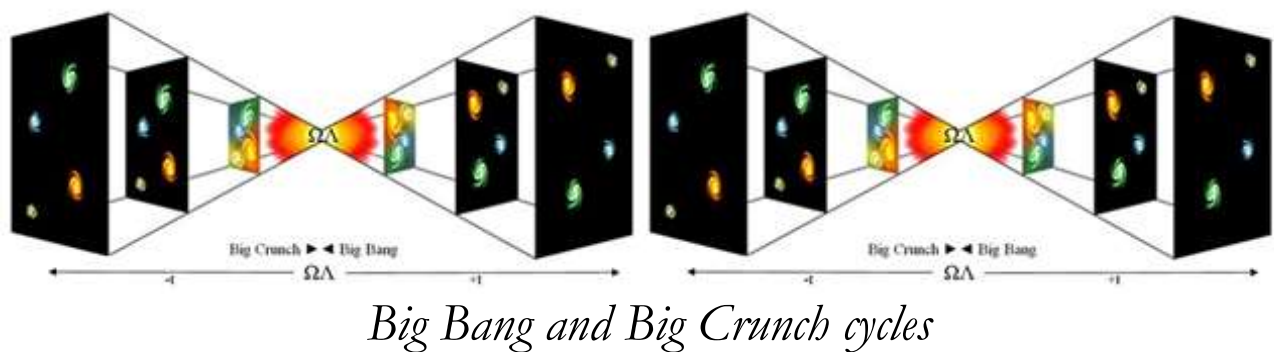
When the dual time solution of the energy/momentum/mass equation is interpreted a cosmological

representation of the universe vibrating between peaks of expansion and concentration, is obtained. During the diverging phase time flows forward, whereas during the converging phase time flows backward.

In this representation causality and retrocausality constantly interact and endless phases of expansion (Big Bang) and contraction (Big Crunch) characterize the universe.

The Big Bang is governed by the positive time, diverging solution of entropy, namely energy and matter that diverge from an initial point of origin, whereas the Big Crunch is governed by the negative time,

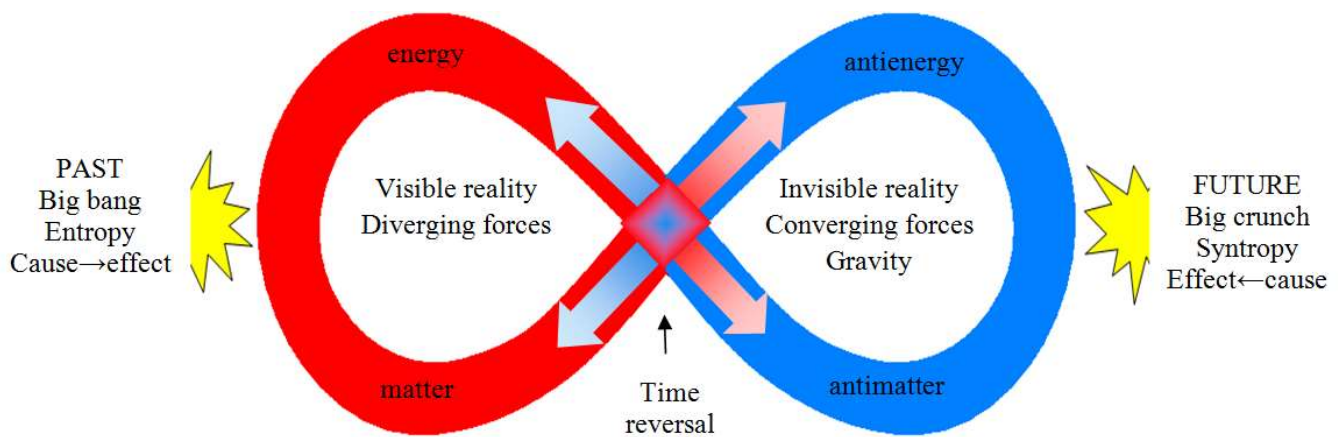
converging solution of syntropy, namely energy and matter that converge towards an end point of infinite density and temperature.



The Big Bang is indicated with the first letter of the Greek alphabet, Λ = Alpha (the Beginning), whereas with the letter Ω = Omega (the End) the Big Crunch is symbolized.

The question that is often heard among cosmologists “*why do we live in a world predominantly made of matter. What has happened to antimatter?*” can be

easily solved when we consider the negative-time solution of the fundamental equations. At the moment of the Big Bang the amount of matter and anti-matter was the same, but antimatter diverged backward-in-time, whereas matter diverged forward-in-time, distancing instantly, and preventing annihilation.



According to this interpretation, the universe is made of an equal amount of matter and antimatter, moving in

opposite time directions. These two-time symmetrical planes constantly interact in the form of a continuous interplay between diverging and converging forces, causality and retrocausality, entropy and syntropy.

All what is diverging is governed by the forward-in-time solution, whereas all what is converging is governed by the backward-in-time solution.

Therefore, the physical and material plane interact continuously with the nonphysical and intangible plane of antimatter which propagates backward-in-time.

The inherent complexity of the physical Universe is the consequence of the interaction of matter and

energy with the cohesive forces of anti-matter and anti-energy.

- *Gravity*

We constantly experience gravity, but even to the brightest minds in science it remains a mystery. Scientists don't know why there's gravity.

According to the entropy/syntropy model gravity is a backward-in-time diverging force. But since we move forward-in-time, this backward-in-time diverging force is for us a forward-in-time converging force.

Equations show that forward diverging forces cannot exceed the

speed of light, whereas backward-in-time diverging forces can never propagate at speeds lower than that of light.

Consequently, we should observe that gravity propagates at an instantaneous speed. This would contradict the Standard Model of particle physics that states that gravity is caused by massless particles called gravitons that emanate gravitational fields. Gravitons tug on every piece of matter in the universe and prevent gravity from propagating at speeds higher than that of light.

But can we perform experiments to measure the speed of propagation of gravity to test which of the two

hypotheses is true?

The answer has been provided by Tom van Flandern (1940-2009), an American astronomer specialized in celestial mechanics.

Van Flandern noted that no aberration is observed when measuring gravity and that this puts the propagation of gravity at a speed higher than 10^{10} the speed of light.⁹²

With light the aberration is due to its limited speed. For example, light from the Sun requires about 500 seconds to travel to Earth. So, when it arrives, we see the Sun in the sky in the position

⁹² Van Flandern T. (1998), *The Speed of Gravity What the Experiments Say*, Physics Letters A 250:1-11. Van Flandern T. (1996), *Possible New Properties of Gravity*, Astrophysics and Space Science 244:249-261. Van Flandern T. and Vigier J.P. (1999), *The Speed of Gravity – Repeal of the Speed Limit*, Foundations of Physics 32:1031-1068.

it occupied 500 seconds ago rather than in its present position. This difference amounts to about 20 seconds of arc, a large and noticeable amount to astronomers. From our perspective, the Earth is standing still, and the Sun is moving. So, it seems natural that we see the Sun where it was 500 seconds ago, when it emitted the light now arriving.

Consequently, the light from the Sun strikes the Earth from a slightly displaced angle and this displacement is called aberration. Light aberration is due entirely to the finite speed of light.

If gravity would propagate with a finite speed, we would expect gravity

aberration. The Sun's gravity should appear to emanate from the position the Sun occupied when the gravity now arriving left the Sun. The Earth should "run into" the gravitational force, making it appear to come from a slightly displaced angle, equal to the ratio of the Earth's orbital speed to the speed of gravity propagation.

But observations indicate that none of this happens in the case of gravity! There is no detectable delay for the propagation of gravity from the Sun to Earth. The direction of the Sun's gravitational force is toward its true, instantaneous position, not towards a delayed position, to the full accuracy of observations. Gravity has no

perceptible aberration, and this tells that it propagates with infinite speed. Van Flandern notes that gravity has some curious properties:

- One of them is that its effect on a body is apparently completely independent of the mass of the affected body. As a result, heavy and light bodies fall in a gravitational field with equal acceleration.
- Another is the seemingly infinite range of gravitational force. Truly infinite range is not possible when forces are conveyed forward-in-time.
- The other curious property of

gravity is its instantaneous action and propagation which can be explained only if we accept that gravity is a backward-in-time diverging force.

Van Flandern experiments discard the hypothesis of massless particles called gravitons and support the hypothesis formulated by the entropy/syntropy model.

- *Scientific Theories*

In the development of a scientific theory six criteria are fundamental:⁹³

⁹³ Hotson D.L. (2002), *Dirac's Equation and the Sea of Negative Energy*, Infinite Energy, 43: 2002.

- Simplicity: a theory should embody as few “entities” as possible (this criterion is known as “*Ockham’s Razor*”).
- Few or preferably no adjustable parameters.
- It should be mathematically consistent.
- It should satisfy all the known data, including unexplained or anomalous data, or data dismissed as a “coincidence” according to previous theories.
- It should obey causality: every effect should have a cause (forward or backward-in-time causality).

- It should be falsifiable, making testable predictions.

The *first criterion* known as Ockham's Razor was stated by Guglielmo of Ockham (1295-1349) and affirms (in Latin) that “*Entia non sunt multiplicanda praeter necessitatem*”: Elements are not multiplied if it is not necessary to do so.

This criterion means that the trend of universal laws is that of economy and simplicity: the lowest possible number of entities are used.

Science should therefore evolve from more complex models to simpler ones, and in any demonstration, it should always be

necessary to use the lowest number of entities, for example:

- before modern chemistry it was thought that the chemical elements were infinite.
- in 1890 it was shown that all chemical elements are derived from the combination of 92 atoms.
- in the 1920s the 92 atoms derived from the combination of the 3 basic particles (electrons, protons, neutrons) and 4 forces. In this way science moved from 92 atoms to 7 elements.
- The energy/momentum/mass equation reduced the entities to

two: the forward and backward-in-time forces.

Ockham's criterion is based on the fact that the universe always shows economy of means.

For example, DNA, which is at the basis of life, and which is now considered the most complex entity, codes information using 4 elements, the 4 azotize bases. Complexity theory shows that 3 elements would not have been sufficient, whereas 5 would have been redundant; DNA could have used an unlimited number of elements, but only 4 were necessary and only 4 have been used.

Similarly, to produce stable matter,

only 3 particles were necessary: electrons, protons, and neutrons, and again only 3 particles are used. Information science shows that it is possible to generate any sort of complexity simply starting from two elements: yes/no, false/true, 0/1, +/-. Only two elements are necessary and because the tendency towards economy is a basic law of the organization of the universe, it is plausible that only the interaction of forward and backward-in-time forces are sufficient to produce all the complexity of the universe.

The *second criterion* implies that a valid scientific theory should allow for few or preferably no adjustable

parameters. The Standard Model of particle physics requires at least nineteen parameters which must be entered by hand, among which the rest mass of the electron which results infinite. Most of the particles of the Standard Model are considered to have properties but no mass, as for example: leptons, quarks, bosons, and gluons. When masses are entered the values of the equations tend to infinite. A universe without masses is however very distant from our universe, where all particles pretend stubbornly to have masses! Adding particles “ad hoc” to explain what has been left out from the previous particles is also a violation of the

second criteria. A well-known case is the gluon which has been added to justify why the different parts of the atoms are glued together. The Standard Model considers only the forward-in-time solution of the fundamental equations and cohesive forces continue to be un-explained, this fact produces the need for specific particles.

Closely related to the second criterion, the *third criterion* requires that no equation should lead to impossible results, such as infinite values. In the Standard Model divisions that tend to infinite are common, and this impossible operation can be solved only entering the results manually.

When the results of the Standard Model tend to infinite, values need to be normalized, which means that they must be entered by hand. For example, the Standard Model calculation of many ordinary values, such as the rest mass of the electron, results infinite. However, from experiments we know the electron's rest mass to be 0.511 MeV. To get rid of this “impossible” result, “renormalization” is invoked: the desired value of 0.511 MeV is then simply entered by hand. This admitted fudge would not work if we did not already know the answer. Equations lose their predictive power and require the a-priori knowledge of

the results, violating in this way also the *fourth criterion* which requires that the results of the model and empirical data should agree.

The *fifth criterion* states that every effect should obey causality (forward or backward-in-time causality). The standard approach rejects the idea of retrocausality and therefore finds it impossible to explain the causal chains which produce the “anomalous” effects which are observed in quantum mechanics, such as non-locality, the unified field and entanglement. Accepting the negative-time solution, all the mysterious properties of quantum mechanics become clear

consequences of causes which act from the future. For example, backwards-in-time diverging energy must propagate at a speed which is always greater than the speed of light. The information carried by this energy can therefore travel infinite spaces instantly. The classical example is the EPR experiments which changes the spin of particles instantly whichever is the distance. The converging properties of the backward-in-time solution permit to explain in a logical and causal way (even though the cause is in the future) all the attractive forces (such as gravity) which in general remain mysterious in the Standard Model.

The *sixth criterion* requires that a scientific model should produce hypothesis which can be verified.

Heisenberg's refusal of the negative-time solution has led to develop a Standard Model which does not meet the basic criteria of a valid scientific theory. The immediate consequence is that this model is not able to correct itself and solve its contradictions. It adds ad hoc particles such as gluons and gravitons, which are nothing more than patches applied to save a failing model.

Heisenberg's refusal of the negative solution has led to the hardening of the mechanistic paradigm, and to the systematic violation of the basic

requirements of science.

- *Negentropy, syntropy and information*

In the same year in which Fantappiè discovered the law of syntropy the American physicist Robert Lindsay coined the term negentropy, a term which acquired a certain level of popularity in the 1950s, thanks to the work of Claude Shannon, Schrödinger, and the equation on the transmission of information that the French physicist Léon Brillouin formulated in 1956.

Brillouin produced a formula to quantify the propagation of electrical

signals in a telegraphic wire and found that the propagation of information is in close correlation with the inverse of entropy. Brillouin concluded that entropy measures the lack of information of a physical system and that the price which is paid with the increase of entropy is the reduction in the information, whereas the increase in information leads to the decrease of entropy.

Yet the word information can have profoundly different meanings

- Descartes believed that nature could be described using simple motion equations, in which only space, position, and moment were

relevant. “*Give me position and movement*”, he said, “*and I will build the universe.*” In his vision an entropic universe requires more information (space, position, and moment) to be described and predicted. On the contrary well-organized universes (syntropic) require less information. Crystals provide an example. They require less information to be described than what is needed to describe the same molecules when floating freely as water. This example shows that physical information increases when entropy increases.

- Norbert Wiener's⁹⁴ definition of information is instead linked to cybernetics, and it is based on choices and feedbacks. In Wiener's definition the quantity that is defined as the amount of information is the negative of the quantity usually defined as entropy in similar situations. Wiener's concept of information is, from its very conception attached to issues of control.
- In relational science information is provided by correlations. For example, a system gets its meaning by the correlations it has with the

⁹⁴ Wiener N. (1948), *Cybernetics or Control and Communication in the Animal and the Machine*.

context. Classical science considers only causal correlations. Relational science distinguishes between causality and retrocausality and between qualitative and quantitative and opens the door to the study of syntropy in the field of science.

- When information converges into core equations and principles which allow to describe, explain, and predict a large variety of situations, such as the Einstein's energy/momentum/mass equation, we can see an identity between information and syntropy.

Negentropy is often mistaken for

syntropy, and people arrive to the wrong conclusion that an increase in information corresponds to an increase in syntropy.

On the contrary, negentropy is strictly related to points 1. and 2 and considers time as only flowing forward. Syntropy is related to points 3. and 4. and considers time as flowing backward and forward.

Syntropic information is finalized and future oriented, whereas negentropic information is mainly physical and mechanical (past oriented). This makes syntropy and negentropy two totally different concepts.

- *From thermodynamics to biodynamics*

A law that governs all the natural phenomena is energy conservation. This law tells that the amount of energy does not change in the transformations it undergoes. We can calculate the amount of energy and after any processing if we calculate again the amount of energy it is always the same.⁹⁵ This is the first law of thermodynamics which states that: *“Energy cannot be created or destroyed, but only transformed.”*

Thermodynamics is the branch of physics that studies the behavior of

⁹⁵ Feynman R (1965), *The Feynman Lectures on Physics*, California Institute of Technology, 1965, 3.

energy, of which heat is a form.

Born from the works of Boyle, Boltzmann, Clausius and Carnot it identifies three principles, which we here reword according to the law of syntropy:

- *Principle of energy conservation*: energy can neither be created nor destroyed, but only transformed.
- *Principle of entropy*, in expanding systems entropy is the quantity of energy that is lost into the environment.
- *Principle of heat death*, in expanding systems entropy is irreversible, it cannot decrease and leads to a state of heat death.

Entropy identifies the tendency of physical systems to evolve towards “*heat death*” and the homogeneous distributions and destruction of all forms of organization. Nevertheless, living systems show the opposite tendency, they evolve towards more complex forms of organization. The iron law of entropy seems contradicted by life. Instead of tending towards homogeneity and disorder, life evolves towards ever more complex forms of organization capable of keeping away from heat death.

The paradox of how life can emerge in a universe governed by the law of

entropy, is continually debated by biologists and physicists.

Erwin Schrödinger (Nobel prize for physics), answering the question about what allows life to contrast entropy, replied that life feeds on negative entropy, thus affirming the need for a second type of energy with symmetrical properties to those of physical energy.⁹⁶

While negentropy is defined with no reference to the direction of time, syntropy is defined as an anticipatory force, complementary to entropy.

$$Entropy(^{+t}) = 1 - syntropy(^{-t})$$

⁹⁶ Schrödinger E. (1944), *What is life?*

http://whatislife.stanford.edu/LoCo_files/What-is-Life.pdf

This implies a profound shift of paradigm, from the mechanical to the supercausal paradigm.

The same conclusion was reached by Albert Szent-Gyorgyi, (Nobel Prize for physiology in 1937 and discoverer of vitamin C). He borrowed the term syntropy from Fantappiè and he postulated the existence of a complementary force to entropy, a force which causes living things to reach higher and higher levels of organization, order, and dynamic harmony:

“It is impossible to explain the qualities of organization and order of living systems starting from the entropic laws of the

macrocosm. This is one of the paradoxes of modern biology: the properties of living systems are opposed to the law of entropy that governs the macrocosm ... One of the main differences between the amoebas and humans is the increase in complexity which presupposes the existence of a mechanism that can counteract the law of entropy. In other words, there must be a force that is able to counteract the universal tendency of matter towards chaos and energy towards heat death. Life continuously shows a decrease in entropy and an increase in its internal complexity and often in the complexity of the environment, in direct opposition to the law of entropy ... We observe a profound difference between the organic and inorganic systems ... as a man

*of science I cannot believe that the laws of physics lose their validity as soon as we enter the living systems. The law of entropy does not govern living systems.”*⁹⁷

The discovery of syntropy requires that we expand thermodynamics to a new set of laws which we name biodynamics. What we need to add is the following:

- *Principle of syntropy*, in converging systems energy is absorbed increasing differentiation and complexity. Syntropy is the magnitude with which energy

⁹⁷ Szent-Gyorgyi A (1977), *Drive in Living Matter to Perfect Itself*, Synthesis 1977, 1(1): 14-26.

concentration, the increase in differentiation and complexity are measured.

- *Principle of life* in isolated systems placed in converging systems syntropy is irreversible, energy concentration cannot decrease.
- *Life as a general law of the universe.* Life manifests whenever the properties of the quantum world flow into the macro world thanks to the water molecule.

This last statement is now supported by the fact that the functioning of living systems is largely influenced by quantum events: the length and strength of hydrogen bonds, the

transmission of electrical signals in microtubules, the action of DNA, the folding of proteins. Water provides the mean for the syntropic properties of the quantum world to flow into the macro level and change inorganic into organic matter.

The importance of water for life has always been known and it is not a coincidence that living organisms are mainly made of water. The human body consists of 75% water and only 25% of solid matter.

ADDENDUM 2

MIND AND CONSCIOUSNESS

Starting from the dual solution of the energy/momentum/mass equation of special relativity, the mathematician Chris King⁹⁸ speculates that free will arises from the constant interaction between objective and quantitative information arriving from the past and subjective and qualitative feelings arriving from the future. King suggests that living systems are constantly faced with bifurcations,

⁹⁸ King C.C. (1989), *Dual-Time Supercausality*, Physics Essays, Vol. 2(2): 128-151.

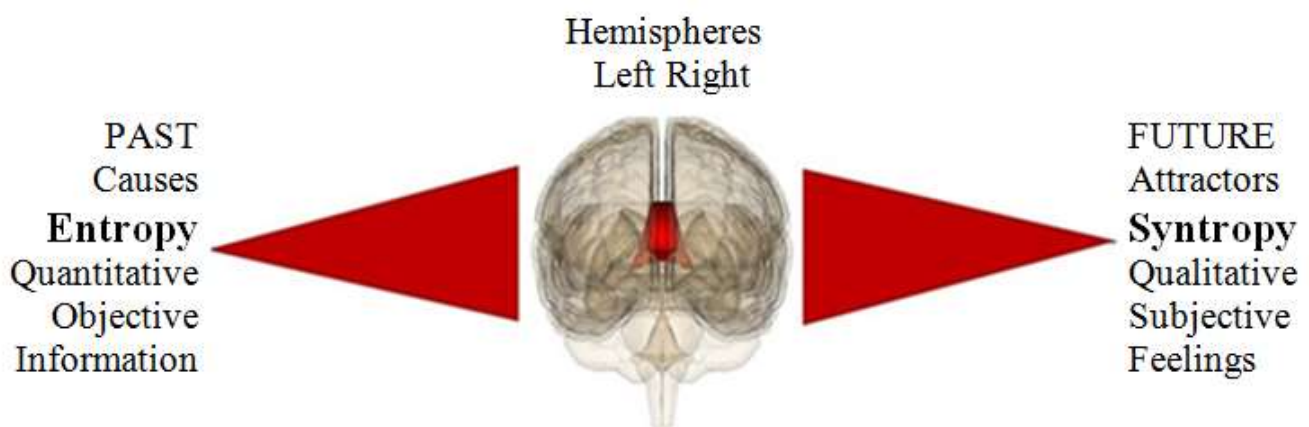
which force to make choices. From this constant process of choice arises free-will.



The forward-in-time flow of information follows linear time and is processed by rationality, whereas the backward-in-time flow takes the form of intuitions and guides towards the attractor.

Since the forward and the backward-in-time solutions are perfectly

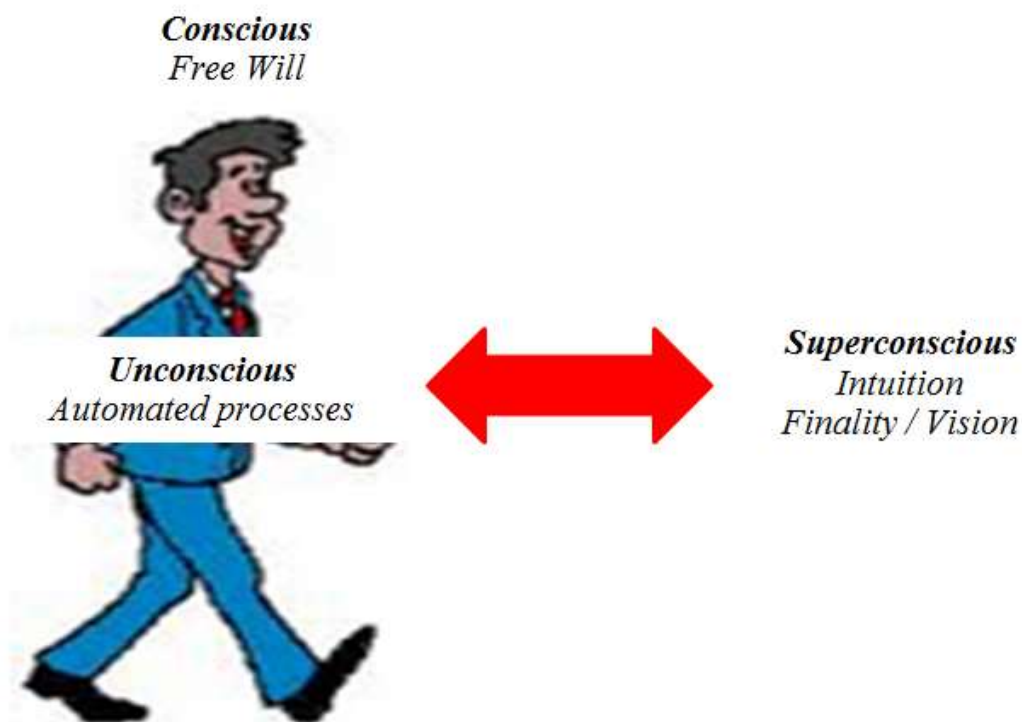
balanced, past, and future have similar weights. This is probably the reason of the perfect division of the brain into two hemispheres, where the left hemisphere is the seat of logical reasoning, rationality, linear time, and language (upward causation), and the right hemisphere processes intuitions and feelings (downward causation).



Since rational-logical thinking is characterized by objective and quantitative information which is

perceived as certain, whereas intuitive thinking is characterized by subjective and qualitative experiences which are perceived as uncertain, the tendency is to choose according to the logical-rational thinking penalizing intuitions and all what is related to syntropy.

The experiments on the anticipatory reactions suggest that the autonomic nervous system, must be included in the model of the Mind:



According to the Vital Needs Theory, the autonomic nervous system connects individuals to the attractor, the source of our vital energy (syntropy), and it is therefore the seat of the feeling of life.

The brain, on the other hand, is the seat of the conscious mind and of free will.

Consequently, the mind should be organized on three levels:

- the *conscious mind*, associated with the head and free will.
- the *unconscious mind*, associated with the autonomic nervous system and characterized by highly automated

processes.

- the *superconscious mind*, associated to the attractor, which provides the purpose, the mission, and the meaning to our existence.

More precisely:

- The *conscious mind* on which we are tuned during the time we are awake, connects us to the physical reality of existence. The conscious mind mediates feelings that come from the autonomic nervous system, i.e., the unconscious mind, with information that comes from the physical plane of reality. The conscious mind is characterized by

free will.

- The *unconscious mind* governs the vital functions of the body, therefore called involuntary, such as heartbeat, digestion, regenerative functions, growth, development, and reproduction. In addition, it implements highly automated programs, which allow us to perform many complex tasks, without having to think continuously about them, such as walking, riding a bicycle, driving, etc. The autonomic nervous system supplies the body with the properties of syntropy and it is therefore the seat of the Self that connects us to the attractor. The

unconscious mind can be accessed during dreams or using techniques of relaxation and altered states of consciousness such as hypnotic trance.

- The *superconscious mind* is that part of our being that is directly associated to the attractor. The attractor is the source of syntropy (life energy) and receives all the experiences of the individuals who are connected to it (for example the individuals of the same species), selects that information which are advantageous and relays them to all the individuals. The superconscious mind shows the way and provides solutions. It is

the source of inspiration and insight of knowledge and intelligence which allow to solve problems. It sends messages through dreams, or in the form of feelings of anticipation, presentiments, insights, and inspirations.

- The conscious mind

The conscious mind constantly chooses between past and future, and it is characterized by processes of evaluation, which are at the basis of free will and decision making. Feelings which attract towards future

aims act as pull factors, and provide motivations and direction, whereas information, typically based on experiences and knowledge (past), act as push factors.

Studying neurological patients affected by decision making deficits the neurologist Antonio Damasio⁹⁹ noted that the pull factor is not present in patients with specific lesions of the prefrontal cortex. The prefrontal cortex integrates signals arriving from the body. These patients show an absence or imperfect perception of feelings and a behavior which can be described as “*short-sighted toward the future.*” Damasio suggested

⁹⁹ Damasio AR (1994), *Descartes's Error. Emotion, Reason, and the Human Brain*, Putnam Publishing, 1994.

that feelings constitute an important part of the decision-making process, instead of opposing it, and help to operate advantageous choices, without having to produce advantageous assessments.

The duality between past and future, cohabits in our mind in the form of rational and intuitive thinking and it is seen in the specialization of the two cerebral hemispheres. The cortex is not a single block but is split in the left hemisphere which is the seat of logical reasoning and the right hemisphere which is associated with intuitions, global processing, analogies, symbols, and colors.

The left hemisphere deals with the

external and material world, it is objective and uses analytical reasoning; the right hemisphere deals with our inner world, it is intuitive and uses feelings, symbols, and images.

In the last century the attention has increasingly focused on objects. We can describe objects scientifically, use standardized symbols to represent them, attempt to reconstruct retrospectively the parts of a whole by the analytical process of rationality, however we are not able to look at objects and ourselves from the inside and reach the essence of reality.

We tend to overlook intuitions, since it is widely believed that life must be based on facts. This attitude has

gradually led to abandon insights, inspirations, and dreams, with the result that choices are now made only following push factors, which are governed by the law of entropy, and not pull factors, which are governed by the law of syntropy.

- *The unconscious mind and the autonomic nervous system*

The autonomic nervous system oversees acquiring syntropy and distribute it, in the form of life energy, nourishing regenerative and healing processes and connecting the individual with the attractor which

guides the shape, organization and structure of the physical body.

When we try to explain the complexity and order of genetic information solely because of past causes, we face logical contradictions and paradoxes such as the fact that random genetic mutation is governed by the law of entropy and can only lead to a gradual increase of the structural differences between individuals, thereby averting the formation of species.

However, in the real world we witness just the opposite, namely an incredible convergence of biological structures towards common designs, despite individual differences.

For example, we can indicate different races of human beings, such as Europeans, Asians, Africans, but there is something that unites all these individuals, and that makes them all part of humanity.

Considering only the past it is impossible to explain the convergence of different individuals towards the same species and the stability of species in time. The retrocausal hypothesis suggests that the design of species is held in specific attractors which retroact from the future.

Attractors unite individuals of the same species. When a common attractor is shared, the discoveries of one individual are disseminated to all

the other individuals. Members of the same attractor, such as individuals belonging to the same species, can share knowledge without any physical contact or any other way that may allow the transition of information. Attractors transforms information into in-formation which is relayed back to all the other individuals.

The verb to inform means to model according to a form. It derives from the Latin term in-formare, that means to give a form. Aristotle wrote: *“Information is a primitive fundamental activity of energy and matter.”* Information does not have an immediate meaning, such as the word knowledge, but rather it encompasses

a modality that develops forms and solutions. Once there is a form, the potential information can become manifest.

The autonomic nervous system connects the individual to the attractor and receives information and syntropy. This happens at the unconscious level, despite the incredible amount of intelligence that it implies.

The autonomic nervous system, i.e., the unconscious mind:

- Is guided by feelings of anticipation that lead towards specific forms

and solutions.

- It provides syntropic vital energy, to the various organs of the body and performs healing actions based on the designs received from the attractor.
- It behaves like a mechanic who consults the book of the manufacturer to perform repairs and maintain the system as close as possible to the project. The project is not mechanical, and instructions are written with the ink of love.
- It underlies all the involuntary functions of the body, and it is responsible for controlling the motion of muscles and limbs.

- It governs all the functions of the body that are not subject to choice and which do not require the conscious level. For example, it is responsible for digestion, heart rate, assimilation of food, cell regeneration. These are processes which are completely unknown to our conscious mind. We do not know how they are carried out and, often, we do not even know that they exist. It is not necessary to be a doctor or a biologist to digest food or regenerate a tissue. The body knows everything independently and shows an extraordinary level of intelligence.
- It directs and regulates these

processes, thereby expressing the capabilities and potentialities of an intelligence which is incredibly higher than our conscious mind.

- It memorizes patterns of behavior which it then executes autonomously and automatically, and which are maintained over time, giving rise to habits. This memory is then stored, at least in part, in the muscles of the body in the form of patterns of behavior.
- It repeats behavioral patterns, until they become habits that are activated automatically, regardless of our will. These patterns are then placed firmly in the memory of the unconscious mind. The conscious

mind often does not remember what was included in the memory of the unconscious mind. Consequently, the unconscious mind can open incredible sceneries in the processes of knowing ourselves.

- The unconscious mind also acts as a guardian of any information that the conscious mind cannot handle.

- The superconscious mind and the attractor

The superconscious mind is the attractor, the source of syntropy. It resides in the quantum level of reality and is connected to the body via the

solar plexus.

Since syntropy concentrates energy, the good functioning of the superconscious mind is felt as warmth and wellbeing located in the heart area. In contrast, a weak functioning of the superconscious mind is associated to feelings of void and pain usually named anxiety and anguish, accompanied by symptoms of the autonomic nervous system, such as nausea, dizziness, and feelings of suffocation.

The superconscious mind allows to experience visions of the future, intuitions, inspirations, and higher levels of awareness, which are inaccessible to the ordinary states of

the conscious mind.

We constantly interact with the superconscious mind which illuminates the direction and provides aims and mission of our life.¹⁰⁰

We enter in contact with the superconscious mind through our heart in moments of silence.

This contact requires that we abstain from alcohol, tobacco, drugs, and coffee, and avoid activities and habits which distract us from our feelings.

The superconscious mind is available to everyone, and acts as an inner teacher who guides towards the

¹⁰⁰ Aydin A., *Human Drama – Struggle for Finding the Lost Spirit*, 7th Symposium on Personal and Spiritual Development in the World of Cultural Diversity, 2010. The International Institute for Advanced Studies (IIAS).

solution of problems and towards wellbeing.

To better understand the role of attractors it is worth quoting Henri Poincaré's description of intuitions:¹⁰¹

“The genesis of mathematical creation is a problem which should intensely interest the psychologist. It is the activity in which the human mind seems to take least from the outside world, in which it acts or seems to act only of itself and on itself, so that in studying the procedure of mathematical creation we may hope to reach what is most essential in man's mind ... What is mathematical creation? It does not consist in making new combinations with

¹⁰¹ Poincaré H. (1908), *Mathematical Creation*, from Science et méthode.

mathematical entities already known. Anyone could do that, but the combinations so made would be infinite in number and most of them absolutely without interest.

To create consists precisely in not making useless combinations and in making those which are useful, and which are only a small minority.

Invention is discernment, choice ... To invent is to choose; but the word is perhaps not wholly exact. It makes one think of a purchaser before whom are displayed many samples, and who examines them, one after the other, to make a choice. Here the samples would be so numerous that a whole lifetime would not suffice to examine them. This is not the actual state of things.

The sterile combinations do not even

present themselves to the mind of the inventor. Never in the field of his consciousness do combinations appear that are not useful, except some that he rejects but which have to some extent the characteristics of useful combinations ...

It is time to penetrate deeper and to see what goes on in the very soul of the mathematician. For this, I believe, I can do best by recalling memories of my own. ...

For fifteen days I strove to prove that there could not be any functions like those I have since called Fuchsian functions. I was then very ignorant; every day I seated myself at my worktable, stayed an hour or two, tried a great number of combinations and reached no results. One evening, contrary to my custom, I drank black coffee and could not

sleep. Ideas rose in crowds; I felt them collide until pairs interlocked, so to speak, making a stable combination. But the next morning I had established the existence of a class of Fuchsian functions; I had only to write out the results, which took but a few hours. ... Just at this time I left Caen, where I was then living, to go on a geological excursion under the auspices of the school of mines. The changes of travel made me forget my mathematical work. Having reached Coutances, we entered an omnibus to go someplace or other. When I put my foot on the step the idea came to me, without anything in my former thoughts seeming to have paved the way for it, that the transformations I had used to define the Fuchsian functions were identical with those

of non-Euclidean geometry. I did not verify the idea; I should not have had time, as, upon taking my seat in the omnibus, I went on with a conversation already commenced, but I felt a perfect certainty. On my return to Caen, for conscience' sake I verified the result at my leisure. Then I turned my attention to the study of some arithmetic questions apparently without much success and without a suspicion of any connection with my preceding research. Disgusted with my failure, I went to spend a few days at the seaside, and thought of something else. One morning, walking on the bluff, the idea came to me, with just the same characteristics of brevity, suddenness, and immediate certainty ... There was one however that still held out, whose fall would

involve that of the whole place. But all my efforts only served at first the better to show me the difficulty. All this work was perfectly conscious. Thereupon I left for Mont-Valérien, where I was to go through my military service; so, I was very differently occupied. One day, going along the street, the solution of the difficulty which had stopped me suddenly appeared to me. I did not try to go deep into it immediately, and only after my service did, I again take up the question. I had all the elements and had only to arrange them and put them together. So, I wrote out my final memoir at a single stroke and without difficulty. ... Most striking at first is this appearance of sudden illumination, a manifest sign of long, unconscious prior work this

unconscious work is possible, and of a certainty it is only fruitful, if it is on the one hand preceded and on the other hand followed by a period of conscious work. These sudden inspirations never happen except after some days of voluntary effort which has appeared fruitless and whence nothing good seems to have come, where the way taken seems totally astray. These efforts then have not been as sterile as one thinks; they have set a going the unconscious machine and without them it would not have moved and would have produced nothing. The need for the second period of conscious work, after the inspiration, is still easier to understand. It is necessary to put in shape the results of this inspiration, to deduce from them the immediate

consequences, to arrange them, to word the demonstrations, but above all is verification necessary. I have spoken of the feeling of absolute certitude accompanying the inspiration; in the cases cited this feeling was no deceiver, nor is it usually. But do not think this a rule without exception; often this feeling deceives us without being any the less vivid, and we only find it out when we seek to put on foot the demonstration. I have especially noticed this fact about ideas coming to me in the morning or evening in bed while in a semi-hypnagogic state. ...

Now we have seen that mathematical work is not simply mechanical, that it could not be done by a machine, however perfect. It is not merely a question of applying rules, of making the most combinations possible

according to certain fixed laws. The combinations so obtained would be exceedingly numerous, useless, and cumbersome. The true work of the inventor consists in choosing among these combinations to eliminate the useless ones or rather to avoid the trouble of making them, and the rules which must guide this choice are extremely fine and delicate. It is almost impossible to state them precisely; they are felt rather than formulated.”

Poincaré noticed that when faced with a new mathematical problem he began using the rational approach of the mind that allows to become aware of the characteristics and elements of the problem.

But since the options tend to be infinite and it would take infinite time to evaluate them all, some other type of process starts operating leading to select the correct solution. Poincaré named this process intuition and considered it a process which is fundamental in the production of qualitatively new information. Poincaré concluded that the process of discovery can be divided into four phases similarly to Charles Sanders Peirce who proposed a schema that considerably influenced the development of science.

In “*How to Make Our Ideas Clear*”,¹⁰² Peirce placed induction and

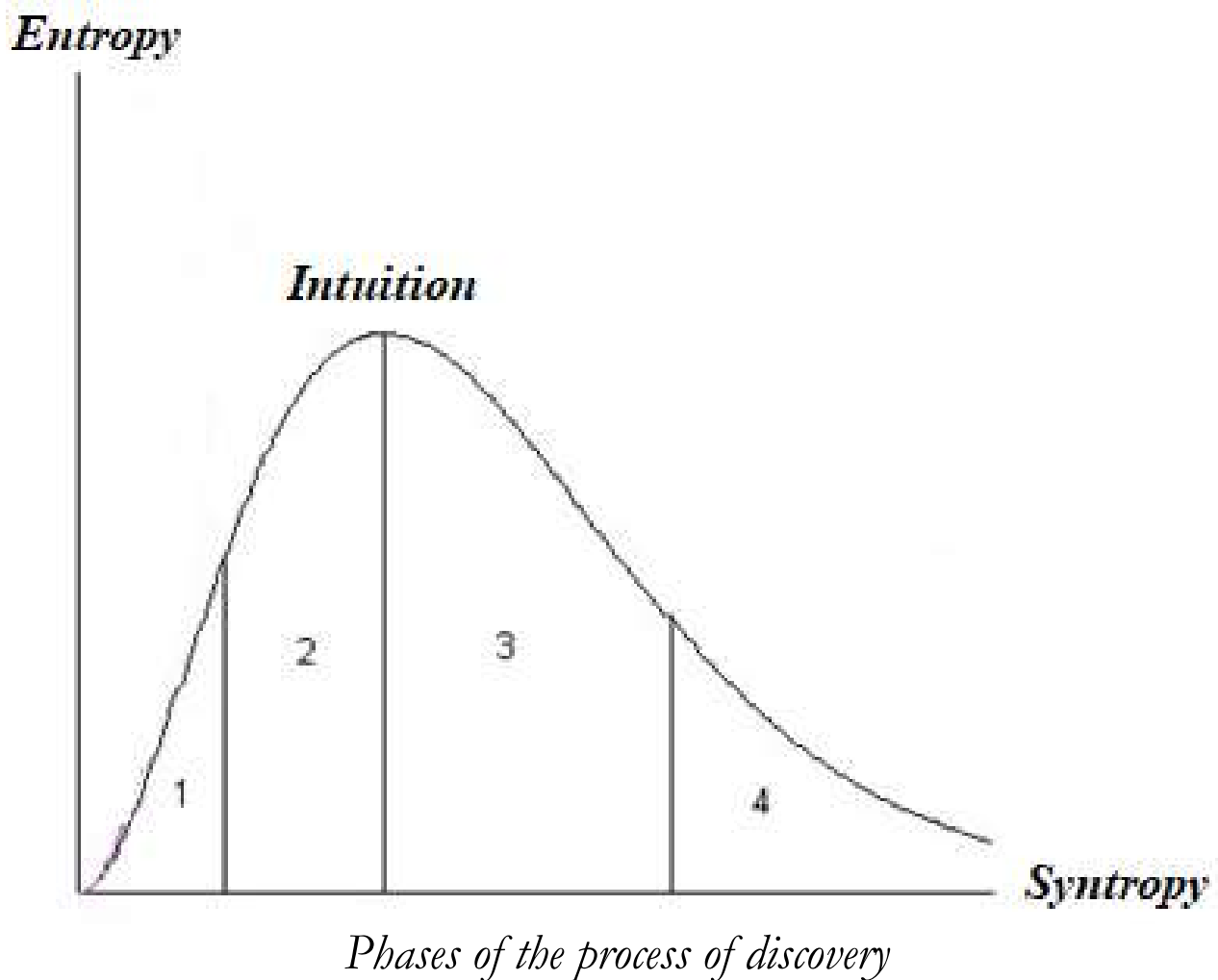
¹⁰² Peirce C.S. (1878), *How to Make Our Ideas Clear*, www.amazon.it/dp/B004S7A74K

deduction in a complementary rather than competitive context. Secondly, and of more direct importance to the scientific method, Peirce put forth the basic schema for hypothesis-testing that continues to prevail today. Peirce examined and articulated the fundamental modes of reasoning that play a role in scientific inquiry, the processes that are currently known as inductive, abductive, deductive and hypothesis testing:

- 1) During the *inductive* phase we consciously review the know-how and unsolved problems.
- 2) During the *abductive* phase unconscious processes take place

and lead to an *intuition* which highlights the correct hypothesis.

- 3) During the *deduction* phase the hypothesis is translated into items.
- 4) During the *hypothesis testing* phase data is gathered and hypotheses are tested.



Intuitions guide towards the right solutions and options reducing in this way entropy. On the contrary when we only use rational thinking neglecting the heart and intuitions, entropy increases. The superconscious mind constantly uses feelings as a compass that points towards the attractor.

Descartes famously distinguished between two types of substance: *res extensa*, the so-called objective reality, and *res cogitans*, our conscious experience.

In the introduction to *The Conscious Mind* David Chalmers states that: “*It still seems utterly mysterious*

that the causation of behavior should be accompanied by a subjective inner life.”¹⁰³

Chalmers divides the problems of consciousness into:

- The *easy problem*, which deals with the study of neurobiological models of consciousness and neural correlates of the conscious experiences.
- The *hard problem*, which deals with the subjective qualities of the conscious experience since these subjective aspects escape classical scientific analysis.

¹⁰³ Chalmers D. (1996), *The Conscious Mind: In Search of a Fundamental Theory*, www.amazon.com/The-Conscious-Mind-Fundamental-Philosophy/dp/0195117891

Chalmers affirms that easy problems are easy because all that is needed is to find the mechanisms which allow to explain them, making them compatible with the laws of classical physics. The hard problem of consciousness is difficult since, even when all the main functions are explained according to cause-effect processes, it is impossible to arrive at the explanation of consciousness, in the term of subjective experience and the laws of classical physics.

The Vital Needs Theory suggests that two forces apply to the conscious experience: one diverging (res extensa: entropy), which propagates forward-in-time, and one converging

(res cogitans: syntropy), which propagates backward-in-time.

This implies that in the explanation of mind processes, feelings and retrocausality should always be considered.

ADDENDUM 3

FANTAPPIE' AND THE UNITARY THEORY

Luigi Fantappiè was born in Viterbo, Italy, on September 15, 1901. He graduated from the most exclusive Italian university, the Scuola Normale Superiore di Pisa, at the age of 21. During the University years he became good friend with Enrico Fermi. and was very well known among physicists. After the dissertation Fantappiè moved to Paris and then to Germany where he gave

lectures. When he came back to Italy he was assigned at the University of Rome where he became full professor at the age of 27. In the years 1934-1939 he was sent to Brazil to start the faculty of mathematics in San Paolo. In April 1951 Oppenheimer invited him to become a member of the exclusive Institute for Advanced Study in Princeton and work directly with Einstein. Fantappiè died during the night between the 28th and 29th of July 1956.

This is a letter to a friend, where Fantappiè describes his Unitary Theory in:

“It was in the days just before Christmas 1941, because of conversations with two colleagues, a physicist and a biologist, that I was suddenly projected in a new panorama, which radically changed the vision of science and of the Universe which I had inherited from my teachers, and which I had always considered the strong and certain ground on which to base my scientific investigations.

Suddenly I saw the possibility of interpreting a wide range of solutions, the advanced potentials of the wave equation which can be considered the fundamental law of the Universe. These solutions had been always rejected as impossible, but suddenly they appeared possible, and they explained a new category of phenomena which I later named syntropic, totally

different from the mechanical, physical, and chemical laws, which obey only the principle of causation and the law of entropy.

Syntropic phenomena, which are represented by those strange solutions of the advanced potentials, obey two opposite principles of finality and differentiation and they are not causable in a laboratory.

Its finalistic properties justify the refusal among scientists, who accepted without any doubt the assumption that finalism is a metaphysical principle, outside Science and Nature. This assumption obstructed the way to a calm investigation of the real existence of this second type of phenomena; an investigation which I accepted to carry out, even though I felt as if I were falling in an abyss, with incredible consequences and

conclusions.

It suddenly seemed as if the sky were falling apart, or at least the certainties on which mechanical science had based its assumptions. It appeared clear to me that these “syntropic”, finalistic phenomena which lead to differentiation and could not be reproduced in a laboratory, were real, and existed in nature, as I could recognize them in the living systems.

The properties of syntropy opened consequences which were just incredible, and which could deeply change the biological, medical, psychological, and social sciences.”

This theory unifies the physical, chemical, biological and psychological phenomena, including those of

consciousness, in the same rational frame. It also provides interpretations of the fundamental phenomena of quantum mechanics.

It might seem strange that a mathematician adventured himself in such a wide exploration in the fields of other sciences, without having a specific knowledge of them. This consideration stopped Fantappiè in letting his theory become public. But when he outlined its content to the colleague and friend Professor Azzi of the University of Perugia and received a strong and positive support, he felt he had to formulate it in a more detailed way and discuss it with colleagues of other disciplines.

Fantappiè presented his *Unitary Theory* on November 3, 1942, in Spain, at a conference at the *Consejo Nacional de Investigaciones Cientificas*. He then was invited to Barcelona by the *Academy of Science*, where on December 1, 1942, he discussed the details of the Theory in a private meeting.

On the days that go from the 31st of May to the 2nd of June 1943 he was invited by Professor Carlini to the Science and Philosophy conference which was held at the *Scuola Normale Superiore di Pisa*. In this occasion he presented his Unitary Theory among scientists of the most diverse orientations and was able to discuss it with many prestigious colleagues,

among whom professors Severi, Rondoni, Carrelli, Puccianti, Persico, Guzzo, Abbagnano and Banfi and was given an entire afternoon for questions and answers. It was then that he decided to write *The Unitary Theory of the Physical and Biological World*.

In this chapter Luigi Fantappiè's Unitary Theory is presented using mainly an adaptation of his works which is available at:

www.sintropia.it/en/Unitary.pdf

Fantappiè shows that the Unitary Theory:

- confirms the law of causality and the second principle of

thermodynamics for all the phenomena which we call entropic. Causality, which was a conceptual category, becomes a law of the entropic phenomena, which has a precise and objective meaning.

- describes phenomena totally different from the entropic ones, which we can find in the mysterious properties of life. These phenomena are predicted and explained by the same equations which govern the entropic phenomena but are essentially different and allow to see an immense panorama, which might be more vast, diversified, and meaningful of the entropic

phenomena.

- shows that the same wave equation which combines special relativity with quantum mechanics predicts syntropic and entropic phenomena. Syntropic phenomena are moved by attractors, finalities, whereas entropic phenomena are moved by causes.

Scientists had postulated that using the principle of causality all the natural phenomena can be reproduced. The Unitary Theory shows that only the entropic phenomena can be caused and reproduced, whereas syntropic phenomena cannot be caused and

reproduced, they can only be observed.

All the knowledge that has been developed in the last centuries using the experimental method, on which science is based, is limited to the entropic side of nature, whereas for the syntropic phenomena we need a new scientific methodology.

Syntropic phenomena can be influenced indirectly from specific entropic phenomena, but overall, they constitute an extremely important part of the universe which is beyond our possibility of manipulation.

The entropic side of reality will inevitably fail to account for the totality, since the laws of nature are

symmetric in regard to time and can be diverging-entropic and converging-syntropic, and this last type of phenomena are those which are at the essence of Fantappiè's discovery.

If we look at the present knowledge of the intimate structure of the Universe, we see that it can be summarized in three basic points:

- Dalton's atomic theory established in the XVIII century and later improved by Stanislao Cannizzaro, with the distinction of molecules and atoms, and then by Lorentz who formulated the particle theory of electromagnetism and Planck and

Einstein with the quantum theory of energy. These results on the intimate atomic-particle nature of matter of the entire Universe is now considered acquired, since it has been tested and validated for more than two centuries.

- The wave nature of all the physical phenomena, when considered in their most profound essence, at the level of quantum mechanics. Studied by Heisenberg, Schrödinger, Dirac, and others has given birth to modern nuclear physics. The wave nature of the physical phenomena can now be considered acquired thanks to the experimental validation of Davison and Germer

with electron rays which show diffraction and interference properties in particles. These properties are typical of waves.

- The validity of the Theory of Special Relativity, which has received corroboration at the atomic level, such as the explanation of the increase in mass, the inertia of the electron, and the increase in speed. This theory leads to a description based on four dimensions which unites space with time, reaching in this way a perfect symmetry among the spatial and time dimension. This representation is named chronotype.

How can these three fundamental elements be harmonized?

First, the atomic-particle nature of matter and the wave manifestation seemed to conflict, since one is deterministic and the other probabilistic.

Now this conflict has been solved saying that it is impossible to predict in a deterministic way the behavior of particles since the prediction is attributed to waves which are probabilistic.

Waves offer a deterministic prediction only when we consider large numbers of particles.¹⁰⁴

¹⁰⁴ Wave phenomena are represented by differential equations with second order derivatives of the hyperbolic type, whereas in order to describe the phenomena studied by classical mechanics and by

In Boltzmann and Poincaré theory the Universe was described as governed by strictly deterministic laws, both at the macro and at the micro level. Probability was used in a way which was considered only to be temporary, with the belief that the evolution of science would have replaced the mean values of probability with the exact values of the rigorous deterministic laws, which were believed to be at the foundation also of the microcosm.

optics equations with first order derivatives are used (Jacobi equations) or the equivalent ordinary differential equations (canonical mechanical equations). This implies that whereas in classical mechanics we can distinguish trajectories of entities with their own individuality, in wave mechanics the presence of equations with partial derivatives of an hyperbolic order greater than one leads to phenomena which are not localized, with the change of time, in a limited area (just think of the space occupied by a particle).

Now, instead, the probabilistic laws of these phenomena are at the foundation of the Universe, whereas the deterministic laws, which are valid at the macro level, are considered to be only a consequence of the law of large numbers.

In 1927 Schrödinger renounced to special relativity in the formulation of his wave equation since in quantum mechanics waves should propagate at infinite speeds, and this conflicts with the theory of special relativity which prohibits speeds greater than the speed of light.¹⁰⁵ The conflict between

¹⁰⁵ Schrödinger's wave equation takes the Hamiltonian function H , which characterizes the system in classical mechanics and measures the total energy relative to its space coordinates and to the momentums, and writes that the wave equation (which describes with the square of its modulus the probabilistic density) has a

Schrödinger's non-relativistic wave equation and special relativity is obvious also at the general level, since time appears in a non-symmetric way, as a first derivative.

It is generally accepted that Schrödinger's wave equation is only a

variation in time (a first derivative relative to time, using the mathematical language) which is proportional, for a constant factor, to an expression which is obtained applying to the same function a linear differential operator, which is obtained from the Hamiltonian function replacing the momentums with the derivatives of the corresponding variables, changed using a constant factor. Since the Hamiltonian function is squared for the momentums, a linear expression of the second derivatives is obtained referring only to the spatial variables, and a term which contains the unknown function ψ (which is relative to the potential), and a last term in which the first derivative is relative to time. In the case of a single particle with the space coordinates x, y, z , Schrödinger's wave equation is a linear differential equation of the second order, which contains the first derivative relative to time, and the second derivatives of the space variables are always parabolic (since the particle is a H term which is expressed by a polynomial of the second order in the momentums), of the same kind of the equation that governs the conduction of heat in solid matter.

temporary description of the quantum phenomena, which is valid with good approximation only in those cases in which the speed of light can be considered infinite, but which will have to be replaced by a quantum-wave theory which is more exact and agrees with special relativity.

On the contrary relativistic wave equations are symmetrical for all four variables, the space variables x, y, z and the time variable t , in agreement with special relativity. In this way a second order equation is obtained not only for the space variable, but also for time, and the D'Alembert operator is used.

The study of such an equation was

brilliantly conducted by Dirac, considering all its implications, in the case of the electron, decomposing the equation of the second order in an equation of the first order, and showing that this wave-relativistic equation of the electron allows the full explanation of phenomena that until then were difficult to understand rationally, such as the magnetic momentum of the electron, which we now call the spin, which is due to the rotation of the electron on itself. Dirac found in his equation that beside the usual electron, also a symmetrical solution appeared, a neg-electron which is now named positron, which had not been

observed since then and which was impossible.

But after a short time, the positron was discovered by Blackett and Occhialini, and this validated the prediction that Dirac's equation made of this particle, showing at the same time the strong foundation of quantum mechanics when combined with special relativity.¹⁰⁶

¹⁰⁶ The most important properties of the second derivative equation which was initially formulated by Dirac are obtained from the characteristic cone, which is determined by the second order terms of the equation. These terms are found applying the D'Alembert operator to the unknown function, and consequently the characteristic cone is always real, matching the chronotype which, with the vertex in the assigned event, divides the events from the future to the past ones and from those which can be concomitant, according to Special Relativity. Consequently from this structure of the characteristic cone the value of the unknown function y of the assigned event (that is to say in the point of the chronotype with coordinates x,y,z,t), at least in the case of the events which we have previously determined, can depend only on the values of y and eventually on the terms of the equation (which

It is important to underline that although we don't yet have the details of the partial derivatives equations which describe in all their details the various quantum systems, we can determine some very important characteristics of these unknown differential equations, such as the fact

represents the density of the distribution of the sources of the wave propagation) known from the past events, whereas the value of the y point and of the known term can influence only the values that y acquires in the field of the future events. In other words, the field dependence of the solutions of the event which has been considered is attributed only to the past events, whereas the field influence to the future events, whereas events outside of the chronotype cannot influence or be influenced by the event. For those who are less familiar with the four dimensional representation of the chronotype, it is sufficient to say that the past events, that is events which fall within the boundaries of the cone, are given for each instant before the one we are considering t , by the points within a sphere with its center in the points x, y, z with a radius which decreases with the speed of light, till it reaches zero in the instant t , whereas the future events are given, for each instant following t by the points of a sphere, with the same center, with a radius which increases with the speed of light, starting from the zero value at the instant t .

that the properties of the characteristic cone will apply to all, and the fields of dependency and influence of the solutions, which are described by Dirac's equation.

These properties have been deduced from those of the D'Alembert operator, which is linked only to the geometrical nature of the chronotype and does not depend on the particular properties of the particle, which are instead described by the other terms of the equation which do not influence at all the geometrical nature of the chronotype. The chronotype does not vary when we consider a different type of particle, or particle systems, we will have that also for the

equations of unknown partial derivatives, which support these quantum systems, the characteristic cone and the fields of dependency and influence of the solutions will be the same of those that Dirac found in his equations.¹⁰⁷

The fundamental solutions of the D'Alembert operator have been

¹⁰⁷ This can be clearly stated following another path; if we just consider that in wave phenomena the partial derivatives equations which describe them need to be of the hyperbolic type, and need to satisfy special relativity, the values of the solutions of a point x,y,z at an instant t , for any phenomena which we have caused, must be the consequence of values within the converging sphere towards the point at the speed of light (past events according to special relativity) and can effect only those points within the sphere which diverges from the same point, with the same speed (future events according to special relativity), otherwise if an element outside these two regions could affect or be affected from the event, the action between the two events should propagate at speeds which are greater than the speed of light, which according to special relativity is impossible.

provided by Poincaré¹⁰⁸, Ritz¹⁰⁹ and Giorgi¹¹⁰. A first solution describes waves diverging from the source and are named *delayed potentials*.¹¹¹ A second solution describes waves converging to the source and are named *advanced potentials*.

The criticisms to the possibility of advanced waves were made mainly by

¹⁰⁸ H. Poincaré, *Electricité et optique*, 2.e éd., Paris, 1901

¹⁰⁹ W. Ritz, *Recherches critiques sur l'électrodynamique générale*, *Ann de physique*, 8 s., t. 13, 1908, p. 145

¹¹⁰ G. Giorgi, *Sulla sufficienza delle equazioni differenziali della fisica matematica*, *Rend. Lincei*, s. 6a, vol. VIII, 1928. Per un'ampia bibliografia sull'argomento, cfr. A. Cabras, *Sulla teoria balistica della luce*, *Mem. Lincei*, s. 6a, vol. III, f. 6°, 1929.

¹¹¹ Starting from the hypothesis that the wave always starts from a source, with a density measured by the second known member of the equation; this solution is obtained in each point as the sum (integral) of the infinitesimal contributes (potentials) due to the sources, distributed in the single elements of the volume, in previous instants (to that which is being considered) at a certain time, that is needed for the wave to diverge at the speed of light c , from the volume element where the source is situated at the point considered;

Wiechert, Lorenz, Poincaré, Ritz and Giorgi, who considered that if converging waves existed it would be possible to concentrate energy and, in this way, to devise a perpetual motion machine. And this was impossible.

Now, let us see how the notion of cause and causality, as they are understood by physicists and modern scientists, differ from the more general “deterministic principle”, considered as the possibility of making a prediction.

When we say that the event A causes B, we believe that once we have observed A we can certainly predict that B will become true. But we can also predict that after the event of

night the Sun will rise, however no one can say that the rise of the Sun is caused by the night. In the notion of causality there is something more.

When can we say that A causes B?

The answer to this question must be searched in the experimental method, which Galileo put at the foundation of all the modern sciences.¹¹²

A is the cause of B when we insert experimentally A and we observe B.

But to have a convincing experiment we need to be free, at least within certain boundaries to cause A, where and when we wish. As a matter of fact, if someone would want to

¹¹² The definition of cause which we give here coincides with the definition that Galileo gave: “*A cause is that which when present is followed by an effect and when removed the effect disappears.*”

convince that A is the cause of B producing A in order to assess B, only in a specific place and time, we would remain skeptic.

The experimental method provides an exhaustive answer to the question if A is the cause of B, only when we have the total freedom to produce A and see if B follows. Only in this condition we can be sure that A is the cause of B. This leads to the important conclusion that we can recognize the events which are the cause of others only thanks to the free will of the experimenter.

Causality gives way to the more general and objective “determinism” which tries to determine past and

future events analyzing present events. But also, determinism has shown to be insufficient in the study of particles, leaving the field to a wider perspective in the microcosm, which is based on probability.

We can state that widening our knowledge the categories which we were trying to apply have widened, moving from the law of causality to determinism, to the modern probabilistic theories of quantum mechanics.

This does not mean that causality and determinism should be abandoned, but they cannot be used to explain all the reality.

Causality and determinism are

certainly useful and fundamental in the study of a well-defined parts of reality. When we move from wave mechanics to the more limited deterministic field of the macrocosm, where the law of large numbers applies, probabilities change into frequencies which can be handled in a deterministic way.

If we isolate the system in such a way that nothing happens beside what the experimenter wants with his free-will and B is different from zero only from the moment when A is produced, we can state that A causes B . The cause becomes the source which causes B and, therefore, each event B which is caused by A , is always affected by

diverging waves from the point A. The solution that governs B will therefore be of the type of the *delayed potentials*.

This implies that causable phenomena are always entropic. Each entropic phenomenon, each phenomenon based on diverging waves has its cause in the source from which the diverging waves originate.

In this way we get to the fundamental theorem: *A necessary and sufficient condition for B to be entropic, is that it can be caused using another phenomenon A, which is the source from which the diverging waves that constitute B are emitted.*

Most of the physical and chemical

phenomena, which we can study in our laboratories, are entropic.

Causality applies to entropic phenomena, such as those studied in mechanics, acoustics, optics, electromagnetism, and chemistry. This does not exclude that in nature we can have other phenomena, beside the entropic ones, such as the syntropic phenomena, which cannot be caused using our free-will, since they would then fall within the entropic phenomena.

Diverging waves imply necessarily the second law of thermodynamics, which states that entropy does not diminish, but increases during time.

From an intuitive point of view we

can consider entropy as a state of leveling of a large number of particles. Diverging waves dilute in spaces which are always bigger, and if the space is limited, as it happens in a container, their intensity tends to level.

The wave equation extends this law to all the phenomena which are governed by diverging waves and in this way the second law of thermodynamics is no longer obtained from a probabilistic postulate, such as Clausius' principle of the elementary disorder, but it is a logical and necessary consequence of the law of causality. When the law of causality applies to a phenomenon,

we can say that this phenomenon is entropic.

This is the reason why it is impossible to obtain a perpetual motion machine. The degradation of energy is a necessary and logical consequence of the law of entropy which applies to all the machines. The main argumentation which is used to exclude advanced potentials is that they would allow to devise perpetual motion machines, converging the energy that was first dispersed towards a point and then diverging it, then again converging it, and so on forever.

The main characteristics and properties of those phenomena which

are constituted by advanced waves, which Fantappiè named syntropic, are profoundly different from the entropic phenomena previously described:

- They *cannot be caused* by our free will, at least in their essential components constituted by the converging waves, since on the contrary they would fall in the category of the entropic phenomena, which are governed by the law of causality, and characterized by diverging waves. For the same reason, syntropic phenomena can be influenced, in their evolution, only indirectly by specific entropic phenomena, the

only which we can use, which can interfere with, for example by modifying the environment in which they take place, since it is plausible that if the two phenomena exist, they are not separated in nature, but intertwined.

- They *concentrate energy* within always smaller spaces. Also, the particles represented by these waves progressively concentrate in the center of the waves. Whereas the entropic systems go from concentrated to dispersed, in the syntropic phenomena exactly the opposite happens. We first have dispersed phenomena which concentrate in always smaller

spaces. The entropic phenomena manifest with dissipative characteristics. An example is when we light a match. We have a cause which is concentrated in a small space, from which the light irradiates, with an intensity that diminishes with the distance, diluting the effect. Syntropic phenomena manifest with an anti-dispersive character, a converging manifestation, which goes from diluted to concentrated in specific points. Whereas the entropic phenomena radiate from specific points, syntropic phenomena concentrate towards specific points.

—The *concentration of energy cannot be*

endless. Since it cannot continue indefinitely, after a period of syntropic concentration entropic dissipation takes over. This means that we witness a process of exchange of matter and energy. Incoming energy and matter indicate syntropic processes, outgoing energy and matter indicate compensatory entropic processes.

- *Entropy diminishes*, since with time differentiation increases. From a rigorous formal point of view syntropy has the same value of the second law of thermodynamics.
- We see a *tendency towards differentiation and complexity*. Syntropic phenomena show in complex forms, as it

happens with biological systems which cannot be explained in a satisfactory way by using only their physical and chemical properties.

- They are *in a continuous state of energy dissipation* (warm bodies), and this is a consequence of the fact that syntropic systems absorb energy, but they don't evolve towards heat death.

It is possible to scientifically study syntropic phenomena considering that the D'Alembert equation is time reversal. This equation is symmetrical in respect to time.

Reversing the time variable all the solutions of the delayed potentials

become solutions of the advanced potential, and vice versa. Consequently, a very simple way to obtain the syntropic properties of a system from the entropic ones is just to invert the time direction.

Nearly all the phenomena are dual phenomena. In our language this is usually expressed by adding the prefix “anti”: combustion becomes anti-combustion, filtration anti-filtration, matter anti-matter, energy anti-energy, etc. Applying this principle of duality, we can obtain the characteristics of the syntropic phenomena from its dual entropic phenomena.

According to the D’Alembert

equation, entropic phenomena are activated when waves start diverging from the source. For example, when we light a match electromagnetic waves start diverging at the speed of light in all the directions in a uniform way.

When we reverse the flow of time the dual syntropic phenomena shows. Waves concentrate towards the center of the sphere, increasing their intensity. These waves would be uniformly distributed in all the directions, independently from where they seem to come.

Let us consider the waves which propagate on a pond. We can cause this phenomenon, which is therefore

entropic, by throwing a stone in the pond and observe how the waves propagate and diverge. The dual syntropic phenomenon would show these waves perturbations concentrate in a point from which the stone would then emerge, leaving behind the water at rest. If we could observe such a phenomenon, we would think that some sort of intelligent being had organized it.

Now, let us imagine a brand-new telescope that we have forgotten in our garden. At first rust forms, then it falls and breaks into pieces. Pieces of metal and glass gradually deteriorate and mix with the ground. Changing the time flow we would see that from

the ground different pieces of metal and glass separate, then they find their place in a design of lenses and tubes which form the telescope until a brand new and perfectly functioning telescope is reached.

What puzzles us is the finalistic aim, which we usually attribute to the action of an intelligent being. Syntropic processes express finality, a purpose, intelligence as if a will is acting on them.

Finality is the characteristic of the syntropic phenomenon.

The law of causality and the law of finality are logical consequences of the intimate duality of the fundamental laws of physics. It is

possible to state that without causes entropic phenomena cannot exist and without finalities syntropic phenomena cannot exist. Without causes and finalities the wave equations would be null. Consequently, finality is not an accidental manifestation in a syntropic phenomenon, but a necessary condition of the syntropic phenomenon, without which it could not exist.

Science has investigated the entropic physical and chemical characteristics of life, without grabbing the essence of life. It is now well acquired in biology, thanks to the experiments devised by Pasteur, that there is no

possibility of spontaneously producing life without starting from a minimum amount of life. This is referred to using the Latin words «*vivum nisi ex vivo*». Life stems from life. It is impossible to create life at our will. The non-causability of life tells that it is a syntropic phenomenon. It is also well known that vital phenomena cannot be influenced directly, but only indirectly. For example, we cannot directly produce a plant or an animal with our hands, but we can only grow or raise them.

All living organisms concentrate in their body matter and energy. This tendency is visible especially in plants

and it is due to the chlorophyllian process.

We can therefore assume that in plants there is a quantitative prevalence of the converging syntropic phenomenon, which is also present in animals in their growth stage and then it is balanced with entropic processes at the adult stage, which start becoming gradually more relevant with aging and then totally prevailing with death.

It is interesting to note that in metabolism the syntropic processes of absorption of matter and energy and construction of structures are named *anabolic*, whereas the entropic processes of dissipation, destruction

of structure and release of energy and matter are named *catabolic*.

The syntropic process of energy absorption is always coupled with its dual phenomenon of energy dissipation. One of the major properties of life is that it is constantly releasing energy. This constant release of energy and by-products is coupled with the assimilation of matter and energy. A process of exchange of matter and energy which is named metabolism.

During the growth period, anabolic processes are prevalent and an increase in differentiation is observed.

It is interesting to note that the probability that the smallest protein

molecule arises by chance is less than 10^{-600} . This is an incredibly small number, represented by a 0 followed by 600 zeros and at the end, on the right, the number 1. In other words, the spontaneous formation of the smallest life molecule results to be impossible. The incredible number of proteins that life shows conflicts with the second law of thermodynamics. This means that the law of entropy does not apply to life and that life is not an entropic phenomenon.

Finality is the fundamental characteristic of any syntropic phenomena, similarly to the principle of causality which is the fundamental characteristic of any entropic

phenomena.

Only thanks to the principle of finality we can logically understand the smallest and most complex architecture of the living systems. Organisms differentiate in organs which are harmonically coordinated and arranged to reach a purpose. For example, the development of the eye starts from cells which are very similar, which then differentiate and take place in such ways that they build the elements of a perfect eye, such as lenses, vitreous body, which are by far more complex of a single protein.

The principle of finality shows that pretending to understand life through its physical and chemical elements,

which are governed by causality, is just an illusion. Finality on which life is founded is similar and dual to the principle of causality which governs the entropic systems. Causality is the essence of the physical world; finality is the essence of life. Living systems tend towards aims and purposes. Life systems have a mission, and the greater the mission is, the more complex is the living system, with complex organs meant to reach its purpose.

The difficulty with the principle of finality is commonly found in the various theories of evolution. If we examine the most popular one, Darwin's theory of evolution, we see

that it is based on three facts: the variability of life forms, the fight for survival, and the long permanence of life on Earth. These facts cannot be denied but are not sufficient to explain life and all the various species of organisms.

In 1865 Mendel's experiments on plant hybridization seemed to prove the theory of evolution which Charles Darwin had published in 1859. But with Mendel we are not witnessing the formation of new species, we are witnessing the separation of genetic information into different characters and forms.

According to Darwin at the beginning on Earth only few simple

unicellular life systems could exist.

Darwin introduces the concept of random variability as the cause of new species. About randomness, the probability of the random formation of any living system can be calculated using the kinetic theory of gasses which considers all the possible combinations with the same probability. Using this assumption, the probability of the formation of the smallest protein is less than 10^{-600} . It is therefore easy to imagine how smaller the probability of the formation of an organ is, such as the eye, the ear, or any of the apparatuses that we commonly use. The probability of the formation of a whole animal is even

smaller. The random permutations which are required for the formation of just one protein are greater than all the possible permutations in the history of the entire Universe. Consequently, the long permanence of life on Earth is insufficient to account for the formation of the smallest forms of life and of any living being. The probability of life happening by chance are by far smaller than the probability of witnessing water freezing when put in a pot placed on the flame of a cooker.

And, if life is caused it should obey the law of entropy and go towards the dissolution of any form of organization and complexity. With

time we would see the increase of entropy and it is illogical to pretend that complexity can be achieved at the expenses of other beings or using the light of the Sun since in the first stages of the evolution of life on Earth, there weren't other beings, and the atmosphere did not allow Sun rays to reach the land.

When on the contrary we consider life as a syntropic phenomenon, the principle of finality applies and leads to increase differentiation, complexity, and harmony.

The planet Earth can be considered as an immense living organism. The fact that species are interdependent, that they cannot live without others,

for example fruits need insects for the pollination, we need vegetables ... all these species can be considered as parts of a more complex organism orchestrated by a finality, which can be reached only through differentiation.

In human beings' cells cooperate towards greater ends and only in pathological situations, when they lose their end, they develop in an excessive way, suffocating other cells, as it happens with cancer.

At the beginning of evolution simple forms of life are the aim, then they become the foundation blocks for always higher forms of life. Species are not caused by previous species,

but they are attracted towards future designs and forms.

Syntropy solves the profound dissymmetry that the second law of thermodynamics has introduced in the universe, by considering all the solutions of the fundamental equations. The theory of syntropy shows that the solutions that physicists wanted to exclude represent exactly the essence of life phenomena, that seemed impossible to be explained.

Syntropy is capable of unifying different scientific disciplines in a harmonic way, opening in this way the road to a unified theory, a theory of everything that encompasses in a

coherent theoretical framework all the manifestation of the universe.

With the formulation of the experimental method the problem of science was considered solved. This method considers causality at the foundation of all the natural phenomena.

The experimental method is used to test cause and effect relations. In the case of positive results, the hypothesis is accepted, otherwise it is rejected. Experiments provide the verdict which allows to separate what is true from what is false.

The experimental method is profoundly different from the method which Aristotle suggested,

which was useful in the formulation of theories but did not provide a way to choose among the various hypotheses.

The experimental method implies the law of causality and has limited scientific investigation to entropic phenomena. We can therefore call the Galilean science an entropic science.

The experimental method is divided in three steps: observation, formulation of a theory, experimental validations of its hypotheses.

As we have previously seen each entropic phenomenon has a dual syntropic phenomenon and vice versa. Consequently, although it is impossible to use the experimental

method to test directly a syntropic hypothesis, we can set up an experiment to test the dual entropic hypothesis. In this way the study of the syntropic phenomena can be done indirectly studying the dual entropic phenomena.

Syntropic scientists would therefore have to search for the dual entropic phenomena, since when they manage to do this, it is possible to progress using the experimental method.

Let us apply this dual method to a phenomenon which has yet to be explained, such as the absorption of water and nutrients from the land and their rise in the higher parts of the plant.

The hypothesis of osmosis does not stand since plants also acquire salts from the land. The idea that capillary conducts are responsible for the rise of water also does not stand when we consider that some trees can reach the height of 150 meters. These phenomena of absorption of water and rise of water seem to contradict the entropic laws of physics and this suggests that we are in front of syntropic phenomena which cannot be caused artificially. We can therefore apply to them the method of “dual experimentation”.

In order to obtain the dual entropic phenomenon, let us imagine that time flows in the opposite direction. We

would see the lymph flow down until it reaches the roots and then water and salts disperse in the land. This dual image can be reproduced, for example, putting a non-living pole in the land and observing how water and salts filtrate from the top to the bottom and through the land. This entropic process of filtration, which can be easily caused in any moment proves that the process which we are witnessing in plants is the dual process of filtration. We can therefore name it anti-filtration.

One may object that in filtration gravity helps the process. Well, when we change the direction of time also gravity changes and from an attractive

force it becomes a diverging repulsive force which helps water rise in the anti-filtration process which we observe in plants.

Now, let us take the combustion of vegetal tissues. This is a phenomenon which we can cause at our will, and which is therefore certainly entropic. We see at the beginning a highly differentiated body, which is made of complicated carbon structures which absorbs oxygen from the air and when burned emits carbon dioxide, water, heat and produces a red light.

When the time process is reversed shifting from entropic to syntropic we would expect carbon dioxide, water, heat and red-light frequencies to be

absorbed. This would leave the complementary radiation to red which is green. If we look around, we will notice that this syntropic process of green color really exists. This is the chlorophyll process, in the green leaves of plants which absorb carbon dioxide, water and heat. The chlorophyll process is therefore the dual process to the entropic one of combustion.

Studying and determining the laws of combustion in our laboratories can therefore allow us to account for the dual property of chlorophyll.

It is interesting to note that consciousness, the will and human personality, are processes which are

oriented towards the future, moved by finalities and not causes. We can therefore state that psychical phenomena, our will, and personality can generally be considered syntropic phenomena. For this reason, they cannot be studied exhaustively using the experimental approach. It is also interesting to note that actions such as impulsive and emotional reactions which are caused by something that happened in the past are also those in which the activity of consciousness is reduced.

What makes life different is the presence of syntropic qualities: finalities, goals, and attractors. Now as we consider causality the essence of

the entropic world, it is natural to consider finality the essence of the syntropic world. It is therefore possible to say that the essence of life is the final causes, the attractors. Living means tending to attractors.

The law of life is not the law of mechanical causes; this is the law of non-life, the law of death, the law of entropy; the law which dominates life is the law of finalities, the law of syntropy. But how are these attractors experienced in human life? When a man is attracted by money, we say he loves money. The attraction towards a goal is felt as love.

This suggests that the fundamental essence of life is love: “*I am not trying*

to be sentimental; I am just describing results which have been logically deducted from premises which are sure. The law of life is not the law of hate, the law of force, or the law of mechanical causes; this is the law of non-life, the law of death, the law of entropy.”

The law which dominates life is the law of cooperation towards goals which are always higher, and this is true also for the lowest forms of life.

In humans this law takes the form of love, since for humans living means loving, and it is important to note that these scientific results can have great consequences at all levels, particularly on the social level, which is now so confused. *“The law of life is therefore the law of love and differentiation. It does not*

move towards leveling and conforming, but towards higher forms of differentiation. Each living being, whether modest or famous, has its mission, its finalities, which, in the general economy of the universe, are important, great, and beautiful... Today we see printed in the great book of nature - that Galileo said, is written in mathematical characters - the same law of love that is found in the sacred texts of the major religions.”

ADDENDUM 4

SYNTROPIC METHODOLOGY

Science (from Latin *scientia*, meaning knowledge) is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions. An explanation is a set of statements which clarify the relations among causes, context, and consequences of facts. Explanations may establish rules or laws which allow to formulate predictions. Consequently, relations (among causes, context and consequences) are

at the basis of explanations and predictions and, when relations are studied in a replicable and objective way, it is possible to talk about science.

In the last four centuries science has used the experimental method, however syntropy requires a different methodology which is well depicted by the methodology of concomitant variations.

To understand the concomitant variations methodology, let's start now from the experimental method.

The experimental method is based on the *methodology of differences*, which John Stuart Mill described in the following way: “*If an instance in which*

*the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance in common save one, that one occurring only in the former; the circumstance in which alone the two instances differ, is the effect, or the cause, or an indispensable part of the cause, of the phenomenon.”*¹¹³

The methodology of differences works as follows:

- two similar groups are formed (they are named the experimental and the control group).
- Treatment (the cause) is given only

¹¹³ Mill J.S. (1843), *A System of Logic*, University of Toronto Press, 1843.

to the experimental group and all the other conditions are kept equal, so that the control group differs from the experimental group only for the treatment.

—Consequently, any difference observed between the experimental group and the control group can be attributed solely to the treatment, because only this condition changes between the two groups.

To have similar groups, randomization is used in the belief that it should evenly distribute all the intervening variables, between the experimental and the control group. But no controls are performed in

order to verify if the condition of similarity is met and often the experimental and control groups are different from the beginning of the experiment. A single subject with extreme values can produce differences which are not due to the cause (i.e., treatment), but are due to the initial dissimilarity of the control and experimental groups.

To test the effect of a drug the experimental procedure is the following:

- two similar groups are formed, assigning subjects randomly to the experimental and to the control group.

- The drug is given only to the experimental group, while all the other circumstances are left similar. The control group is therefore given a placebo, a similar substance which has no effect.
- The differences observed between the two groups can be attributed solely to the effect of the drug.

Differences are the effect, and the drug (also called treatment) is the cause. The following conditions are required:

- To study differences between groups it is necessary that the effect can be added among the

experimental subjects. For example, if a drug increases in some subjects the reaction times, whereas in others subjects it reduces the reaction times, when adding these opposite effects, a null effect is obtained. The effect exists, but it is invisible to the experimental methodology based on the study of differences.

- Differences can be calculated only when using quantitative data (ie data which can be added together). On the contrary, qualitative data cannot be added and it is unsuitable when using the experimental method.
- All possible sources of variability must be controlled. It is important that nothing, besides the treatment (ie

the cause), can influence the variability of groups. For this reason, a controlled environment, which allows to keep alike all the possible sources of variability and in which each subject is treated exactly in the same way, is needed. Controlled environments require laboratory settings, which are very different from the natural context. The need for controlled settings limits the experimental method to analytical knowledge, detached from the context and from complexity.

- It is possible to study differences considering only one cause at a time or at the fewest causes when studying their interaction.

- When samples are small (less than 300 subjects), randomization does not guarantee the similarity of groups, and differences between groups may not depend on the treatment, but on the initial diversity of groups.

Common mistakes:

- Differences can be caused by single extreme values. Just one single outlier¹¹⁴ can cause statistically significant results and lead to assert effects that do not exist. Outliers are often kept or removed to

¹¹⁴ In statistics, an outlier is an observation that is distant from other observations.

manipulate results.

- In statistics, data transformation refers to the application of a deterministic mathematical function to each point in a data set which is replaced with the transformed value. A common example are logarithmic transformations. In theory, any mathematical function can be used to transform the data set. Operating in this way, it is often possible to obtain differences between the two data sets, when there are no effects.
- When the effect shows in opposite directions, differences cannot be assessed, and the effect becomes invisible.

From a statistical point of view the methodology of differences uses parametric statistical techniques which compare mean and variance values, such as Student's t and the analysis of variance (ANOVA). These techniques require that effects can be added that data is quantitative and normally distributed (according to a Gaussian distribution), and groups are initially similar and are from the same population. But these requirements cannot be met in life sciences and parametric techniques end producing results that are inconsistent. It is therefore of no surprise that a study published on JAMA (Journal of the American Medical Association),

which revisited the results produced using the experimental method (ANOVA) and published in the period from 1990 to 2003 in 3 major scientific journals and cited at least 1,000 times, found that a study out of three was refuted by other experimental works. This finding raises serious doubts about the experimental method, when used in life sciences.¹¹⁵

In May 2011 Arrosmith published in the Journal Nature a study which shows that the ability to reproduce the results from phase 1 to phase 2 decreased in the period 2008-2010 from 28% to 18%, despite results

¹¹⁵ Ioannidis J.P.A. (2005), *Contradicted and Initially Stronger Effects in Highly Cited Clinical Research*, JAMA 2005; 294: 218-228.

were statistically robust in phase 1 (phase 1 indicates studies conducted on small groups, generally not exceeding 100 subjects, whereas phase 2 indicates studies conducted on larger groups, usually not exceeding 300 subjects).¹¹⁶ Gautam Naik in the article “*Scientists’ Elusive Goal: Reproducing Study Results*” published on the Wall Street Journal on December 2, 2011 points out that one of the secrets of medical research is that the majority of results, including those published in major scientific journals, cannot be reproduced.

Reproducibility is at the foundations

¹¹⁶ Arrosmith J. (2011), *Trial watch: Phase II failures: 2008-2010*, Nature, May 2011, 328-329.

of making science and when results are not reproduced the consequences can be devastating.¹¹⁷ Naik notes that researchers, particularly in universities, need to find positive results to publish and receive funding.

In the December 23, 2010, article entitled “*The Truth Wears Off*,” published in The New Yorker, Jonah Lehrer quotes a passage of a letter from a university professor, now an employee of a biotechnology industry: “*When I worked in a university lab, we’d find all sorts of ways to get a significant result. We’d adjust the sample size after the fact, perhaps because some of the mice were outliers or maybe they were*

¹¹⁷ Only in the US the biomedical industry invests each year more than 100 billion dollars in research

handled incorrectly, etc. This wasn't considered misconduct. It was just the way things were done. Of course, once these animals were thrown out [of the data] the effect of the intervention was publishable."

There is plenty of evidence that the massive financial incentives lead to the suppression of negative results and the misinterpretation of positive ones. This helps explain, at least in part, why such a large percentage of randomized clinical trials cannot be replicated."

- The methodology of concomitant variations

In 1992 physicists at LEP (Large

Electron-Positron Collider in operation at CERN in Geneva) could not explain some annoying fluctuations in the beams of electrons and positrons. Although very small, these fluctuations created serious problems when the energy of the rays must be measured with great precision. The experimental method did not provide any clue and to solve the dilemma the methodology of concomitant variations was used to test different hypotheses. Results showed the concomitant fluctuation in the energy of the particle beams of LEP and the tidal force exerted by the Moon. A more detailed analysis showed that the gravitational

attraction of the Moon distorts very slightly the vast stretch of land where the circular tunnel of LEP is recessed. This tiny change in the size of the accelerator caused fluctuations of about 10 million electron volts in the energy rays. The methodology of concomitant variations uses double entry tables of dichotomous variables.

	Males	Females	Total
No accidents	50	105	155
Accidents	200	45	245
Total	250	150	400

Concomitances between sex and car accidents
(Data invented for this example)

In this table the concomitance of the variable sex and car accidents is

difficult to assess since the total value of each column differs. When the absolute frequency values are converted into column percentage values it becomes easy to compare the columns “Males” and “Females”:

	Males	Females	Total
No accident	50	105	155
	20%	70%	39%
Accidents	200	45	245
	80%	30%	61%
Total	250	150	400
	100%	100%	100%

*Concomitances between sex and car accidents
(columns percentages)*

We now see a strong concomitance between “*Males*” and “*Accidents*”

(80%) and between “*Females*” and “*No accidents*” (70%). Concomitances are assessed according to the differences between observed frequencies (column percentage) and expected frequencies (percentages in the total column). For example, the expected percentage for “*no accidents*” is 39%, whereas in the “*females*” column we have 70%.

Since being male is determined before accidents take place, we can fall in the error of stating that being male is the cause of car accidents. However, this methodology allows to study intervening variables by splitting the table in two. For example, we can split the previous

table in two groups: those who drive little and those who drive a lot:

	<i>Drive little</i>		<i>Drive a lot</i>	
	Males	Females	Males	Females
No accidents	70%	70%	20%	20%
Accidents	30%	30%	80%	80%
Total	100%	100%	100%	100%

Concomitances between sex, km driven and car accidents

In this table the concomitances between sex and accidents disappears. The correlation “*males-accidents*” is therefore mediated by the variable “*number of kilometers driven*”, which is therefore an intervening variable. Consequently, the relation becomes “*males drive a lot and consequently are involved in more accidents.*” Crossing three variables at a time allows to

identify intervening variables and to study the context within which relations are valid. For example, when a concomitance is found between a drug and healing it is possible to study if it is true always, or only at certain conditions, such as specific age groups, sex, habits, and other conditions.

The advantages of the methodology of concomitant variations are:

- It uses dichotomous variables. Any information, quantitative or qualitative, objective, or subjective can be transformed into one or

more dichotomous variables. As a result, it permits to keep track of all the elements of the phenomena.

- It allows the study of many variables at the same time, thereby it can consider the complexity of the phenomena. In contrast the experimental method can study only one or a limited number of variables at a time, thereby it produces knowledge which is detached from the context and the complexity of natural phenomena.
- It allows to control for intervening and spurious variables, and this is done after and not before. Therefore, it does not always need controlled environments such as a

laboratory and it is possible to use natural contexts.

- With subjective answers people often respond using masks. For example, even when we feel unhappy, lonely, depressed, usually we try to give an image of ourselves (a mask) which is positive. With the experimental method masks constitute a problem which is insurmountable, and which is solved only by removing qualitative and subjective information from the analyses. On the contrary, the methodology of concomitant variations can correctly handle responses which are masked.

This happens because a property of masks is that they affect not only one variable, but all those which are correlated. For example, if a person responds by saying no to “*I feel depressed,*” when he is depressed, he will also say no to “*I feel unhappy,*” when he is unhappy. The concomitance between depression and unhappiness remains unchanged because both responses have moved in the same direction and continue to remain correlated.

	Depressed	Not Depressed	Total
Unhappy	15	3	18
Happy	2	180	182
Total	17	183	200

Concomitances between masked answers

This table shows that the two modalities, “*I feel happy*” and “*I do not feel depressed*”, are concomitant.

When using psychological tests, which produce “objective” measurements of depression and happiness which are not distorted by the effect of masks, answers shift from the positive to the negative side. But the result remains unchanged:

	Depressed	Not Depressed	Total
Unhappy	158	10	168
Happy	2	30	32
Total	160	40	200

Concomitances obtained when using “objective” information

Results continue to show the

concomitance between the variables depression and unhappiness.

This means that if a concomitance exists it will show also when responses are masked, since masks are applied in a coherent way to all those variables which are correlated. This is a fundamental point, as the problem of masks is ubiquitous in psychological, social, and economic sciences. The methodology of concomitant variations solves this problem and allows in this way to widen science to subjective and qualitative data and allows the methodology of concomitant variations to use direct questions, such as: “*do you feel depressed?*”

- *Statistics*

When using the methodology of concomitant variations, the first thing we must do is to define which is the “statistical unit.” Statistical units allow the study of concomitances among variables and the choice of the statistical unit is strictly related to the aim of the research. Units can be persons, animals, plants, manufactured items, organizations.

With the methodology of differences units are in a one-to-one correspondence with the data values, whereas with the methodology of concomitant variations there is a one-to-many correspondence since

unlimited data values can be collected for each unit.

Sample requirements differ according to the methodology and aim:

- When the aim is to make inferences about the population from the sample, the sample must be representative of the population. This is usually achieved by random sampling.
- When the aim is to study differences among the experimental and the control group the sample must be homogeneous. This is usually achieved by randomly distributing

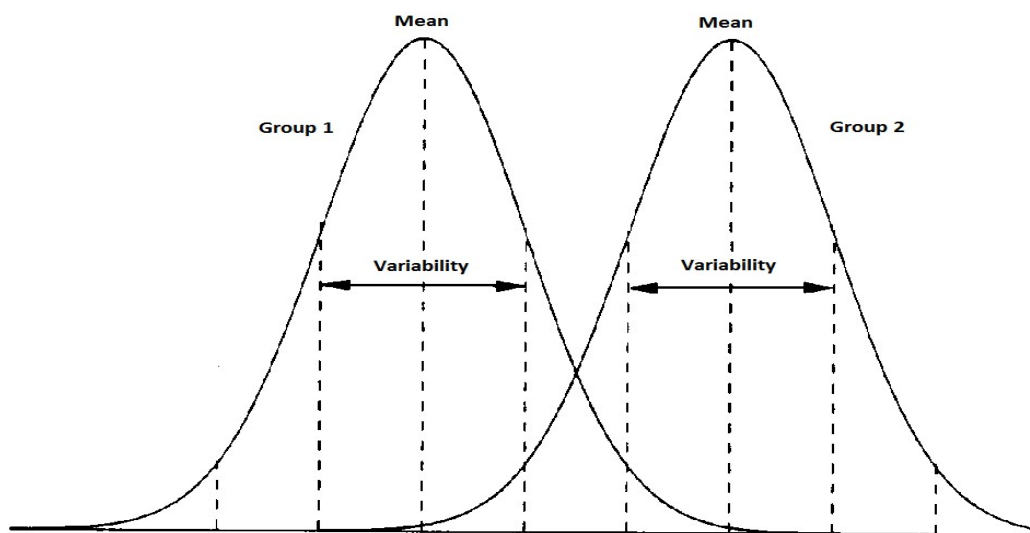
the units across the experimental and control group. If the aim is to assess the effect of a new drug against a placebo drug, then the patients should be allocated to either the drug group (experimental) or to the placebo group (control) using randomization. Randomization reduces biases by equally distributing factors that have not been explicitly accounted for. When randomization does not allow for the formation of homogeneous groups, the alternative is to use laboratory animals, purposely bred to guarantee homogeneity. Laboratory animals are euthanized after being used once, since their use

in one experiment makes them different and unsuitable for other experiments.

- When the aim is to study concomitant variations among variables, the sample must be heterogeneous. If the aim is to study which factors cause drug addiction, we will include in the sample subjects with different levels of drug addiction. The definition of the sample is therefore strictly related to the aim. With the methodology of concomitant variations, it is important to keep track of all the possible intervening variables and check later for intervening and spurious relations.

The methodology of differences assesses effects by:

- comparing the difference between mean values of the experimental and control groups with the variability of the values in the sample.
- or by comparing the variance between groups with the variance within groups.



Comparison of mean and variability of two groups

Initial similarity between groups is a fundamental requirement, without which it is impossible to state that the difference observed between the experimental and the control group is a consequence of the cause/treatment. But, in clinical trials the variability of subjects can be so great that even increasing the sample size does not lead to statistically significant results.

When this is the case laboratory animals are used. Laboratory animals are all very similar and decrease the variability of the sample, allowing in this way small differences to become statistically significant.

There is now mounting evidence that animal experimentation constitutes an artifact.¹¹⁸ The reason is very simple. Statistical significance is stronger when the variability is smaller. Consequently, when the effect size is small, the only way to obtain statistically significant results is to reduce the variability of the sample. When using animals, which are all very similar, the variability of the sample tends to be null, and consequently also insignificant differences become statistically significant. In other words, animals

¹¹⁸ In experimental science, the expression ‘artifact’ is used to refer to experimental results which are not manifestations of the natural phenomena under investigation, but are due to the particular experimental arrangement, and hence indirectly to human agency.

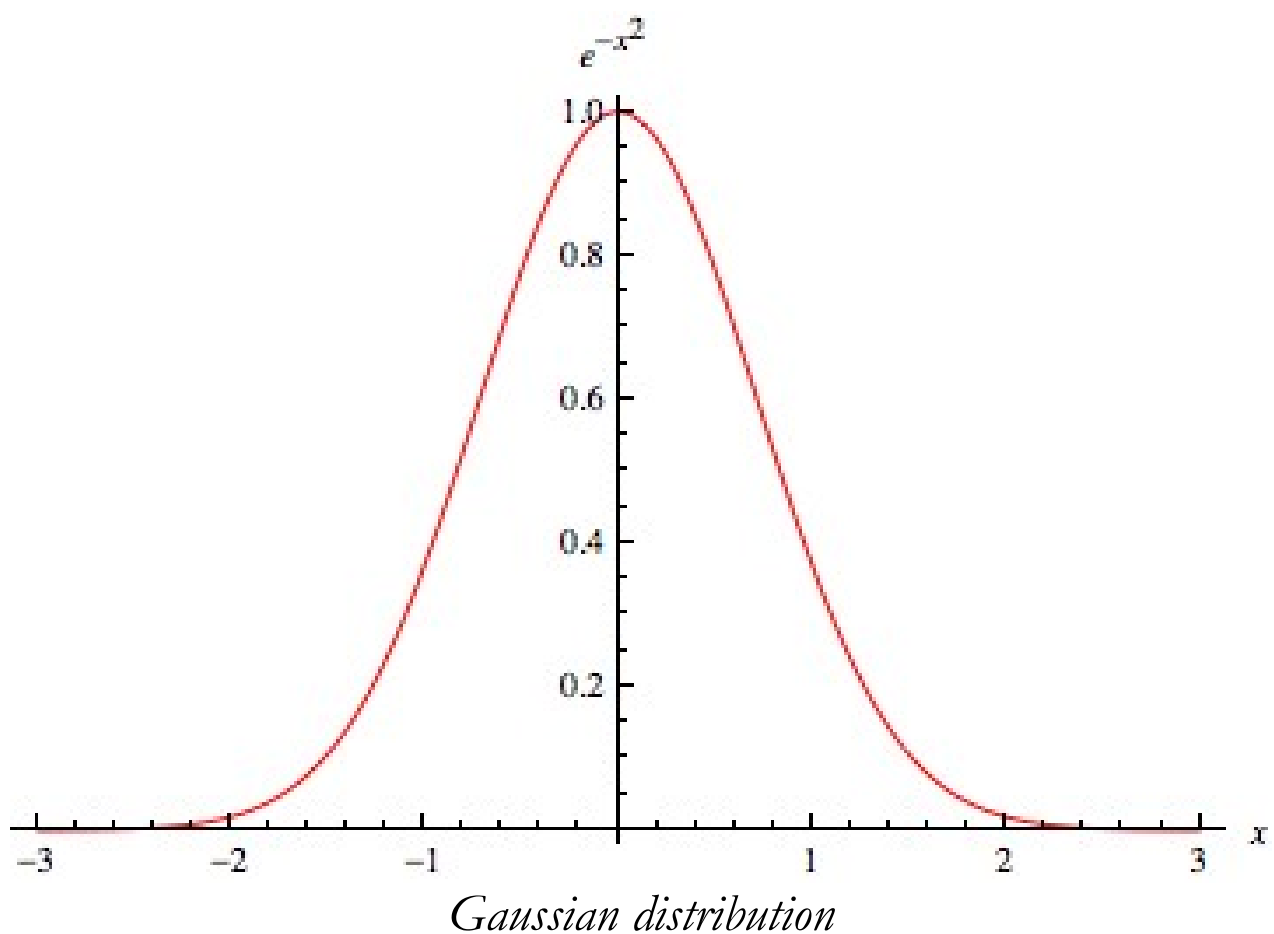
are too similar and differences that have no actual value become significant. Furthermore, one of the fundamental rules in science is to use samples that are representative of the population to which results will be generalized. It is obvious that laboratory animals are not representative of humans and that the effects observed using laboratory animals are difficult to generalize to humans.

Finally, the methodology of differences uses parametric statistical techniques, which require data distributed according to the Gaussian curve. This condition is usually not met. Nevertheless, researchers go on

and interpret results. In the 1960s Simon Shnoll and co-workers were probably the first scientists to show that the assumption of the normal distribution is only mathematical, and that in life sciences and in physics it is false. In a review of studies performed over more than forty years, Shnoll¹¹⁹ shows the non-randomness of the fine structure of the distributions of measurements, starting from biological objects and moving into the purely physical domain. The implication is huge: tests based on the assumption of normal random

¹¹⁹ Shnoll SE, Kolombet VA, Pozharskii EV, Zenchenko TA, Zvereva IM and AA Konradov, Realization of discrete states during fluctuations in macroscopic processes, *Physics – Uspekhi* 162(10), 1998, pp.1129–1140.

distributions, such as those in the field of parametric statistics, are fundamentally biased and leads to results which are often unstable and difficult to reproduce.



The methodology of differences requires homogeneous samples, whereas the methodology of

concomitant variations requires heterogeneous samples, where variability is maximized.

For example, with the methodology of concomitant variations, in a study that aims to compare the growth of 5 different types of crops in 5 different types of field, all the combinations will be considered ($5! = 120$ possible combinations) and at least 30 measurements will be taken for each combination. Since the aim is to compare growth rates, the statistical unit will be the height of the crop after a fixed interval of days (or a similar type of measurement). For each measurement an array of information will be traced, such as the type of field

and the type of crop, secondly information that we think can be related to the growth of crop. At the end we will have 3600 records (30 measurement x 120 combinations), each with data on the growth rate and an array of other information.

When answers tend to concentrate in one modality, wider measuring scales are needed. For example, when we ask, “*Do you feel depressed?*” yes/no, most people answer no and this little variability limits the possibility of studying concomitances. In order to restore variability it is necessary to use wider scales, such as “*How much do you feel depressed?*” 0,1,2,3,4,5,6,7,8,9,10. Most answers will concentrate in the

low values, 0 to 3, and the median cut-off point will probably be between the values 1 and 2. The aim of the methodology of concomitant variations is to study relations maximizing the variability.

Usually at least 100 units (ie subject/records) are required. But, in many clinical studies only one subject is available. When this is the case, measurements can be repeated in different moments, trying to maximize the variability. For example, if we want to study what is concomitant to our headaches, we keep track at regular intervals of all what we think might be related to this situation. For example, each evening

we fill a form in which we provide a subjective measurement of the headache, plus what we ate, what we watched on TV, our feelings, etc. When enough forms (possibly more than 100) is filled we can process them.

Data can be collected in various ways: nominal, ordinal, interval, and ratio.

- *Nominal* or categorical data are made of mutually exclusive modalities. For example: marital status, nationality.
- *Ordinal* data are variables where the order matters but not the difference

between values. For example, if we ask patients to express the amount of pain, they are feeling on a scale of 0 to 10. A score of 7 means more pain than a score of 5, and 5 is more than a score of 3. But the difference between 7 and 5 may not be the same as that between 5 and 3. The values simply express an order, a progression.

- *Interval* data are variables where the difference between two values is meaningful. For example, the difference between 1 meter and 2 meters is the same difference as between 3 and 4 meters. That is, numbers are spaced always by the same measuring unit.

–*Ratio* data have all the properties of interval variables but have also a clear definition of the zero value. Variables like height, weight, enzyme activity are ratio variables. Temperature, expressed in Fahrenheit or Celsius, is not a ratio variable. A temperature of zero degrees on either of those scales does not mean no temperature. Kelvin degrees correspond instead to a ratio variable since zero degrees Kelvin really correspond to no temperature. When working with ratio variables, but not interval variables, it is possible to use divisions. A weight of 4 grams is twice a weight of 2 grams, because

weight is a ratio variable. A temperature of 100 degrees Celsius is not twice as hot as 50 degrees Celsius, because temperatures in Celsius are not a ratio variable. The Celsius scale is an interval variable, whereas the Kelvin scale starts from absolute zero and allows for ratios.

In the field of statistics nominal and ordinal data are usually referred to as qualitative information, whereas interval and ratio data as quantitative information.

The mathematical operations which can be performed are:

- in the case of nominal/categorical

variables the value is a modality of a list, for example Italy France, Germany. With these variables it is possible only to count the occurrences of the modalities.

- In ordinal variables the value is a sequence: First, Second, Third; Elementary education, High School, University. It is possible to divide the sequence into high and low, for example high education, low education, or treat each value as a modality (nominal variable). For example, it is possible to count how many people have reached secondary or higher education. It is possible to find which is the level of education attained at least, for

example, by 50% of the population. There is an order, a progression, which can be used to create new categories (i.e., low education and high education) or to order the population. Ordinal variables allow for counting and sorting.

- Interval variables allow to calculate average values and variabilities since they permit the use of additions and subtractions.
- Ratio variables use the absolute zero value and allow to use divisions and multiplications.

Data can be transformed in one or more dichotomous variables.

- In the case of nominal variables, the single modality (i.e., single province, nationality, color) can be translated into a dichotomous variable. For example, Italy becomes the Italy dichotomous variable for which the answers can only be yes or no.
- Ordinal variables follow a progression. These variables can be treated in the same way as the nominal variables by translating each modality in a dichotomous variable, but it is also possible to translate the information in the form high/low. It is important to note that there is no objective criterion for defining when modalities are considered high or low. For

example, in a study concerning university professors the lowest degree of education might correspond to the highest degree in another study which considers the poor population of developing countries. The division of an ordinal variable into a dichotomous variable, must always consider the context and purpose of the study. If no criterion suggests how to divide between high and low the cut-off point is chosen by balancing the two groups. This is done using the median value.

- When dealing with interval or ratio variables cut-off values, that mark the transition from low to high

values, are generally used. The aim of the researcher and the purpose of data analysis is usually to identify these cut-off values. It happens frequently that the same variable can be translated into multiple dichotomous variables to test which cut-off value best allows to identify a critical value, i.e., a value that indicates the transition from one state to another.

Data is the raw material, but not all data is suitable for concomitant variations analyses; only data which can be transformed in the dichotomous form and is gathered in a systematic way can be used.

Information which cannot be coded or transformed in the dichotomous form is of little use.

One of the most delicate phases of any research work is when we translate hypotheses into items.

Hypotheses always state a concomitance between two or more variables. To test these concomitances, it is required to gather data separately. For example, if the hypothesis is that loneliness causes anxiety it is wrong to ask: *Loneliness causes anxiety?* because the concomitance between loneliness and anxiety is already given in the item and data analysis will not be able to tell if this concomitance exists.

In order to study the concomitance between loneliness and anxiety it is necessary to formulate two different items: *Do you feel lonely? Do you experience anxiety?*

Data analysis will tell if these two items (loneliness and anxiety) vary in a concomitant way and are correlated. It is also important to ask information in a clear and direct way, avoiding negative forms. Each item should contain only one information.

For example, the following item is not correct, since it combines State Aid (Yes/No) with Family type (one parent family, two parents family):

Did the family receive State Aid?

- ☐ Yes, No,
- ☐ It is a one parent family,
- ☐ It is a two parents family

The correct formulation is:

Did the family receive State Aid? Yes, No

Family type: One parent, Two parents

Each item (i.e., each variable) must be relative only to one type of information. During data analysis information will be combined and concomitances will be studied.

Items can be divided into key items, explicative and structure items:

- *key items* are all those variables which describe the topic under investigation, for example if the study is relative to cancer, key variables will be relative to cancer.
- *explicative items* are all those variables which might be correlated (linked) to the key variables, for example in the case of cancer it could be the environment, stress, food, and so on.
- *structure items* are variables such as age, sex, education, profession; variables which are usually used to describe the sample of the study and the context.

To choose relevant explicative

variables, it can be useful to ask the help of experts who have a good knowledge of the subject. It is also useful to compare different hypotheses. Scientific research is a process of continuous evolution of knowledge which requires the disposition to revisit, change and eventually abandon our beliefs.

Designing a form can be divided in the following steps:

- declare which is the aim of the study (*key variables*).
- list all those variables (*explicative variables*) which might be correlated

(concomitant) to the key variables. It is very important to keep track of the hypotheses, in this way the interpretation of the results will be straightforward, otherwise it is easy to fall in the trap of paying too much attention to secondary information and produce interpretations which are totally irrelevant and of little scientific value. It is always a good habit to use more items for the same information (redundancy).

- prepare the form (questionnaire, observation grid, ...) and test it to assess if it works well or if it can be improved and optimized. It is necessary to continue testing the form until it reaches a standard

which we consider acceptable.

Parametric statistical tests assume that the variables data in the population are distributed according to the normal (Gaussian) distribution, which in probability theory is a continuous distribution, a function, which allows to calculate the probability that any real observation will fall between any two limits.

On the contrary, nonparametric methods make no assumptions about the distribution of data. Their applicability is much wider than the corresponding parametric methods and, due to the reliance on fewer assumptions, are more robust and

simpler. Even when the use of parametric methods is justified, nonparametric methods are easier to use and more reliable. Their simplicity leaves little space for improper use and misunderstanding.

The methodology of concomitant variations uses nonparametric statistics, among which the Chi Square (χ^2) is today one of the most widely used statistical indexes. χ^2 calculates the differences between observed frequencies and expected frequencies. In the absence of concomitances χ^2 is equal to 0, whereas in the case of maximum concomitance it is equal to the size of the sample.

The comparison with the χ^2 probability distributions allows to know the statistical significance of the concomitance. Statistical significance indicates the risk which is accepted when we state the existence of the relation. Concomitances are usually taken in consideration when the risk is below 1%.

With dichotomous variables concomitances can be accepted with a risk lower than 1%, with χ^2 values greater or equal to 6.635.

When using the methodology of concomitant variations all variables are translated into the dichotomous form. Crossing two dichotomous variables produces a 2x2 table. If we

take, for example, the following variables **A** and **B**:

		A		
B	Yes	No	Total	
Yes	18,340	3,241	21,581	
No	5,118	29,336	34,454	
Total:	23,458	32,577	56,035	

the χ^2 value is obtained by comparing the observed frequencies and the expected frequencies.

Expected frequencies are calculated by dividing the product of the total values of row and column by the general total. For the expected frequency of the first cell (Yes / Yes) is:

$$21,581 \times 23,458 / 56,035 = 9,034$$

Following this procedure for all the cells of the table we have the following expected frequencies table:

A			
B	Yes	No	Total
Yes	9,034	12,547	21,581
No	14,424	20,030	34,454
Total:	23,458	32,577	56,035

The Chi Square formula is the following:

$$\text{Chi Square} = \sum \frac{(f_o - f_e)^2}{f_e}$$

where f_o indicates observed frequencies and f_e expected frequencies

For each cell we calculate the square of the difference between observed frequencies and expected frequencies divided by expected frequencies and we sum the results together.

In this example we obtain a Chi Square value of 26,813, well above the value 6.635 from which the statistical significance of 1% starts.

Since the maximum value of χ^2 varies depending on the number of cases, it is useful to standardize it between 0 and 1. This transformation is known as the *rPhi* and is obtained as the square root of the value of χ^2 divided by the sample size and behaves similarly to Pearson's

correlation index.

- *Software*

The Sintropia-DS software was developed to make the methodology of concomitant variations available. A complete description is available in the help sections of the software, or in the dedicated 2005 issue of the Syntropy Journal.¹²⁰

The first version of Sintropia-DS dates to 1982, it was distributed with the name DataStat, and extensively used in the Department of Statistics of the University of Rome. Sintropia-

¹²⁰ www.sintropia.it/journal

DS merges database and statistical analyses (this is the reason of the extension DS: database and statistics).

To install Sintropia-DS in your computer: download the zip file from www.sintropia.it/sintropia.ds.zip, copy the folder “Sintropia.DS” from the zip file in the root disk “C:”, and find the Sintropia application in the folder Sintropia.DS.

Since this version of the software dates to 2005 and was developed for Windows-XP, recent version of Windows require that you allow the use of the program.

- Testing the Vital Needs Theory

One of the first research works conducted with the concomitant variation methodology used a sample of 974 teenagers. The aim was to study the reasons of their dissatisfaction and to test the hypotheses of the Vital Needs Theory.

Among the various theories and models on youth dissatisfaction, the Vital Needs Theory suggests that unhappiness is caused by depression and anxiety, where depression informs about the dissatisfaction of the need for meaning and anxiety informs about the dissatisfaction of

the need for cohesion and love. Depression and anxiety, although different in their aetiologies, are always perfectly correlated, since when loneliness increases also depression increases, and when depression also increases loneliness increases (*Theorem of Love*). The Vital Needs Theory can be studied using qualitative and subjective information unsuitable for the experimental method, which requires quantitative information.

Hypothesis of the Vital Needs Theory are:

- *Hypothesis number 1.* Among all the items suggested by the different theories, it is expected that those which describe the need for cohesion and love and the need for meaning (*I feel depressed, I feel anxiety, I feel useless, and I feel lonely*) will obtain the highest concomitance values with the variables of dissatisfaction and unhappiness.
- *Hypothesis number 2.* The *Theorem of Love* suggests that depression and anxiety should correlate in a nearly perfect mathematical way. Consequently, the concomitance between *I feel depressed*, and *I feel anxiety* should be the highest

observed among all the items of the questionnaire.

To test these hypotheses a questionnaire was devised with direct questions such as *I feel depressed*, *I feel anxiety*, *I feel dissatisfied*, *I feel satisfied*, *I feel happy*, *I feel unhappy*, *I feel content*, *I feel discontented*, and variables suggested by experts in different fields of psychology, psychiatry, and social sciences.

The questionnaire was divided into:

- *Key questions*, which deal with the purpose of this study which was to investigate what is related to the wellbeing and to the dissatisfaction

of young people. The key questions were *I feel satisfied, I feel unsatisfied, I feel happy and I feel unhappy*.

- *Explanatory questions*, which were formulated by various experts. For example, Melanie Klein theory suggests that suffering is linked to traumas experienced in childhood; these traumas cause a failure to remember childhood (this hypothesis was translated in the items *I remember very little of my childhood* and *I have beautiful memories of my childhood*). The family-relational theory suggests that suffering is linked to the difficult relations among teenagers and their families. The psychoanalytical approach

suggests items relative to attachment relationship with parents. The psychiatric approach suggests items relative to contagious behavior among unhappy teenagers.

The questionnaire had 195 questions (items) and was answered using votes from 0 to 10, where 10 equaled *Yes*, 0 *No*, 1 very little, 5/6 average and 7/8 a lot. The process of answering the questionnaire required, in general, less than 40 minutes and the context was within high-school classes. The supervisors received the following instructions: no explanations about the meaning of items should be given;

the questionnaire had to be completed in the same context, it was not permitted to take it home and hand it back the day after. These instructions were designed to ensure that the mask remained constant throughout the questionnaire.

Answers were translated in the dichotomous form (Yes/No), using the median value which tends to divide equally, maximizing in this way the possibility that concomitances show up. The methodology of concomitant variations requires dichotomous variables and studies concomitances using 2x2 tables in which the column and the row variable have 2 modalities (Yes/No).

	Anxiety	No Anxiety	Total
Depressed	463	79	542
No Depressed	56	376	432
Total	519	455	974

Absolute values

These tables are called 2x2 since the variable in column (in the example *I feel anxiety*) has two modalities (Yes/No) and the variable in line (in the example *I feel depressed*) has two modalities (Yes / No).

Concomitances are assessed when observed values differ from expected values. That is when column percentages differ, in the Yes/No columns, from the percentages in the

total column. Transforming absolute values in column percentages (where each column adds up to 100%) we obtain the following table.

	Anxiety	No Anxiety	Total
Depressed	89.21%	17.36%	55.65%
No Depressed	10.79%	82.64%	44.35%
Total	100,00%	100,00%	100,00%
	(519)	(455)	(974)

Columns percentage values

This table shows that 89.21% of the subjects who answered Yes to *I feel anxiety* answered Yes to *I feel depressed*, and 17,36% of those who have said No to *I feel anxiety* said Yes to *I feel depressed*. If no relation exists between, *I feel depressed* and *I feel anxiety* the same

values should have been observed between Yes and No columns and the column of totals. In other words, percentages in the column of totals are the *expected* percentages, whereas the percentages in the Yes and No column are the *observed* percentages. The difference between observed and expected percentages is assessed using the Chi Square (χ^2) test and tells if a concomitance exists and how strong the concomitance is.

To test the hypotheses of this study each item was crossed with all the other items, obtaining a total of 18,915 tables. It is clearly impossible to examine all these tables. For this reason, concomitances were

expressed into numbers, using the Chi Square (χ^2) test. Many statistical tests allow to study concomitances and the χ^2 test is one of the most widely used: the higher the value of χ^2 the stronger is the relation. When no relation exists the χ^2 value is equal to 0. With 2x2 tables the highest χ^2 value coincides with the sample number, in this case 974. The χ^2 value is compared with probabilistic tables which allow to assess the equivalent statistical significance value (p). Statistical significance tells which is the risk that we accept when we state that the relation exists. As a convention, all those relations with a risk probability inferior to 1% are significant. In 2x2

tables the 1% significance is reached with a χ^2 value of 6.635. The higher the value of χ^2 the more significant the relation is among the two variables.

Relations can be of two types: direct or inverse. If the relation is direct the two dichotomous variables are concomitantly true or false, whereas if the relation is inverse one variable is true when the other is false. Inverse relations have negative sign (-) whereas direct relations are shown without sign (positive sign). Since the maximum value of χ^2 varies depending on the size of the sample, it is useful to standardize it, making it vary between 0 and 1. This

transformation is known as rPhi and is obtained as the square root of the value of χ^2 divided by the sample size. RPhi values obtained from quantitative variables behave similarly to the classical correlation index (Pearson's r).

RPhi values from 0.35 typically identify trivial relations that are known without resorting to statistical analyses. Values below 0.35 identify relations which are not trivial. In order to study non-trivial relations, it is necessary a sample size that exceeds 100 cases.

In the study of concomitances data is translated in the dichotomous form (High/Low, Yes/No; +/-; 0/1,

True/False), using thresholds. Dichotomous data allow great flexibility and richness of results, similarly to what happens with digital computers based on binary information compared to analog computers. The advantages of dichotomous statistics are countless: it does not require the normal (Gaussian) distribution of data, it can handle any type of data (quantitative and qualitative), it allows the study of any kind of relation, whereas parametric statistical indexes can be used only when relations are linear or logarithmic.

- *Hypothesis number 1.*

Among all the items suggested by the different theories, the Vital Needs Theory expects that those items which describe the need for cohesion and love and the need for meaning (*I feel depressed, I feel anxiety, I feel useless, and I feel lonely*) will obtain the highest concomitances (relations) with the variables of dissatisfaction and unhappiness.

To answer the first hypothesis, each key variable of wellbeing and unhappiness, was crossed with all the other dichotomous variables of the questionnaire. The following table shows the highest values of χ^2

obtained by the key variables of dissatisfaction.

I feel unhappy	I feel discontent	I feel dissatisfied
χ^2	χ^2	χ^2
193 I feel depressed	200 I feel depressed	181 I feel anxiety
182 I feel lonely	172 I feel anxiety	179 I feel depressed
166 I feel useless	133 I feel useless	139 I feel useless
165 I feel anxiety	126 I feel lonely	99 I feel lonely
76 I am often refused by friends	75 When in a group I feel lonely	54 I am often refused by friends
46 I am often emarginated at school	66 I am often refused by friends	52 When in a group I feel lonely
39 I am often criticized	50 I am often criticized	35 I am often emarginated at school
35 Family economical problems	43 I am afraid of judgments	33 I am afraid of judgments
23 I am afraid of judgments	21 Family economical problems	18 Family economical problems
		15 I don't remember my childhood
Inverse correlations:		
-55 My family is very united	-40 My family is very united	-38 My family is very united
-39 My father is very affectionate	-37 My father is very affectionate	-34 My father is very affectionate

Strongest Chi Square (χ^2) values obtained by the key variables

As it was expected by the Vital Needs Theory the 3 key variables which describe dissatisfaction show the strongest relations with, *I feel depressed, I feel anxiety, I feel useless and I feel lonely*, followed by *I am often refused by friends*, and *I am afraid of judgment*

(which supports the idea that others people's judgment is a key strategy used in order to give a meaning to life). The first direct relation with an item different from those suggested by the Vital Needs Theory is with the item *I don't remember my childhood*, suggested by Melanie Klein's hypothesis that distress is linked to traumas experienced in the early stages of life. Two items suggested by the systemic-relational approach: *My family is very united*, and *My father is very affectionate* obtain inverse relations. The relations with the items which support the Vital Needs Theory obtained χ^2 values between 100 and 200, whereas the highest χ^2 value

obtained by a different theory (systemic-relational) was 50 and Melanie Klein's hypothesis obtained a value of χ^2 of 15.49.

In the questionnaire 4 items were intended to study the risk of drug abuse. These items show the highest concomitances with the items of anxiety, depression, feeling useless and loneliness, suggesting that drug abuse is a strategy used to respond to the unsatisfied needs for love and meaning.

χ^2

78.15	I feel depressed
64.83	I feel anxiety
63.76	I feel useless
55.53	I feel lonely
34.48	Even when in a group I feel lonely
34.23	I am often refused by friends
19.75	I am often criticized
15.81	My family has big economical problems

Highest χ^2 values obtained by the items of risk of drug abuse

All the other items proposed by different theories did not reach statistically significant values.

- *Hypothesis number 2*

The *Theorem of Love* suggests that depression and anxiety should be correlated in a nearly perfect mathematical way. Consequently, the concomitance between *I feel depressed*, and *I feel anxiety* should be the highest observed among all the items of the questionnaire.

The highest relation obtained by items different from the Vital Needs

Theory was χ^2 55.32. The hypothesis that *I feel depressed*, and *I feel anxiety* will show a nearly perfect relation is well known among psychiatrists, however no theory or model, beside the Vital Needs Theory, explains why this relation should exist. On the contrary the different aetiology of depression and anxiety is often underlined. For example, depression would originate from loss, whereas anxiety from fear, suggesting a low relation in consideration of the fact that the origins of these two forms of suffering are different. On the contrary the Vital Needs Theory expects that the relation between

depression and anxiety and anguish should be nearly perfect.

The following table shows the highest relations obtained by the item *I feel anxiety*. The first relation is with *I feel depressed*, with a χ^2 value of 507.08.

"I feel anxiety" correlates with:

507.08 I feel depressed

231.06 I feel useless

204.17 I have little self-esteem

197.24 I feel lonely

188.33 I have little hope in life

Highest χ^2 values of I feel anxiety with the items of the questionnaire

Considering all the possible relations among the 195 items of the questionnaire ($195 \times 194/2 = 18,915$ possible relations) and putting them in order, the relation between *I feel*

depressed and I feel anxiety (χ^2 507.08) is by far the highest one, with χ^2 values considerably higher than the next relation in the list, which still supports the Vital Needs Theory, such as the relation with *I feel useless, I feel lonely, I feel depressed and I feel anxiety*.

In this study the highest possible χ^2 value is 974 (the sample size), but in any social research a noise factor always reduces the strength of relations. In order to assess how strong, the noise factor is, and how much it could reduce relation values, identical items were introduced in the questionnaire. The highest χ^2 value obtained by identical forms of the same item was χ^2 293.86.

Consequently, values greater than χ^2 300 can be considered perfect relations. The value 507.08, obtained by *I feel anxiety* and *I feel depressed*, is therefore a perfect relation. The reason why these two items show relations higher than those shown by identical forms of the same item can be explained by the fact that, on these items, masks tend to be extremely coherent. According to the Vital Needs Theory, people tend to mask specifically the fact that they feel depressed and that they feel anxiety. In those items in which the mask is less coherent, the statistical error increases, lowering in concomitance

values between identical forms of the same item.

It is therefore possible to conclude that, considering the noise factor, the relation between depression and anxiety can be considered perfect, supporting in this way the hypothesis that these two different forms of suffering are linked together in a nearly perfect mathematical way. The χ^2 value of 507.08 observed between *I feel depressed*, and *I feel anxiety* is the strongest relation among the 18,915 possible relations.

The Vital Needs Theory considers *loneliness* the highest empirical expression of the dissatisfaction of the need for love and cohesion, and

uselessness as the highest “empirical” expression of the dissatisfaction of the need for meaning. Consequently, the nearly perfect relation which has been observed between *I feel depressed*, and *I feel anxiety* should be observable between *I feel useless* and *I feel lonely*. The next table lists the first three relations of *I feel useless*. The highest relation is with *I feel lonely* with a χ^2 value of 317.04, which is higher than that obtained by identical forms of the same item, and which can therefore be considered perfect.

“I feel useless” correlates with:

317.04 I feel lonely
231.06 I feel anxiety
229.19 I feel depressed

χ^2 values obtained by the item *I feel useless*

It is therefore possible to state that *I feel useless*, and *I feel lonely* correlate in a perfect, nearly mathematical way. *I feel useless*, coherently with what the Vital Needs Theory says, correlates with *I feel anxiety* and *I feel depressed*.

ADDENDUM 5

ORGANIZATIONS

In 1665, the Dutch mathematician and physicist Christian Huygens, among the first to postulate the wave theory of light, observed that, by placing side by side two pendulums, they tended to tune their swing, as if “*they wanted to assume the same pace*”. With these studies Huygens discovered the phenomenon we now call resonance. In the case of two pendulums, it is said that one makes

the other resonate at its own frequency.

All organic and non-organic processes are a continuous oscillation between polarities: the yin and yang, converging and diverging forces, syntropy and entropy. In life, this takes the form of waves, pulsations, and rhythms: the pulsations of the heart, the phases of the breath, the perception of light and sound waves, etc. All the aspects of reality vibrate, and these vibrations create resonances. An example is provided by tuning forks, a structure which vibrates at a fixed frequency of 440 Hz. When a vibrating tuning fork is placed close to a “silent” tuning fork,

this second tuning fork also begins to vibrate. Tuning forks vibrate only when exposed to a sound that has their same frequency. Resonance is the principle used by radio receivers to tune the receiver to a specific radio station. Tuning on a specific frequency allows to receive only the information sent using that frequency, all other information is not accessible. The same happens with life. For example, we perceive only what vibrates similarly to us. This process of resonance allows information to flow. Every person, every event, and every situation are associated with a particular resonance. For this reason, we feel that we communicate well and

easily with some people whereas communication is more difficult with others. Similar individuals can easily establish strong ties and friendships based on resonance. For example, young people who have experienced problems of neglect, violence and abuse in the family tend to get together without knowing the history of the other. The principle of resonance leads similar people to recognize each other and to share feelings and information. This empathic process of communication often takes place at an unconscious level, without people being aware of it.

We constantly experience resonance. For example, we can speak with different people about the same topic, using the same words, the same gestures, and the same emphasis, and with some we feel the communication is fully satisfactory, whereas with others we feel the communication is empty and unsatisfactory. The success of communication depends on resonance, which allows us to communicate at a deeper level with some people but not with others. Every time we communicate, we resonate and when there is resonance, we feel the communication to be positive. Ironically, it is not so much what we say that allows information

to flow, but our resonance with the emotions of the person with whom we are communicating.

- Resonance as an organizational process

In living systems resonance occurs with a significant involvement of emotions, precisely because what vibrates are emotions. This process of emotional resonance is called empathy. Empathy is the ability of an individual to understand in an immediate way the thoughts and the feelings of another person. Because of this affective and emotional connotation resonance acquires

syntropic properties of cohesion, organization and unity and becomes a fundamental element in all processes of spontaneous organization.

With the development of the cognitive abilities of human beings, the spontaneous processes of resonance and organization have been coupled with intentional and rational processes.

When studying organizations created by men, we are always faced with two levels of organization: the formal level of organizations which is the product of the human mind, and the informal level of organization which is the result of the cohesive and organizational properties of

resonance and emotions. These two types of organization, formal and informal, co-exist together and it is virtually impossible to eliminate the informal level of organization, since it is based on natural syntropic processes of cohesion and order. The informal level of organization is often stronger than the formal level and must therefore be taken into due consideration in the study and design of organizations.

Organizations bind and stay together largely because of resonance and emotional communications based on the unconscious level. This fact has always created great difficulties among managers and decision

makers. There is always a difference between the formal organizations, rationally designed, and the real organization which is based on resonance. Formal structures are a set of rules and regulations that establish the relationships between people, tasks, and roles, and determine the distribution of power. These rules are codified in contractual agreements that outline the functions of the members of the organization in official documents, organization charts, statutes, manuals, and budgets, and describe the strategies and procedures of the organization. The real organization, however, is based on informal relations which are fluid

and fluctuate according to resonance, emotions and alliances that are established spontaneously among people. Resonance allows people who share similar goals to identify each other and start informal networks. Resonance attracts some elements and rejects others and leads to the creation of networks of which we may be part, consciously or not, or may be excluded. It is on these informal networks that informal organizations gradually build, parallel to the formal organization. Informal organizations are the “real” organizations, closely governed by the laws that govern life and nature.

When a new person becomes part of an informal network, he/she may begin to resonate in a different way and this can lead to a reconfiguration of the network. The informal organization is thus redefined when new people are included in it, or when people are excluded or leave. When people leave the network the resonance changes and the network boundaries are redefined. Sometimes it is simply sufficient that one person leaves to cause a real breakup of the informal network and in some cases of the organization. Informal organizations are strongly influenced by the people who are part of the network, by their way of resonating,

their goals and vision. By contrast, in formal organizations functions and roles are more important than people. And since people come and go, the formal organization remains unchanged over the years.

In most organizations a continuous interaction between informal networks and formal structures is observed. Informal networks are often more powerful than formal roles and functions and continuously reinterpret and adapt procedures and rules. This reinterpretation facilitates people's creativity, productivity, and participation in the organization. When, on the contrary, the management exerts a strong pressure

on the formal level, for example with the introduction of electronic badges and forms of control which greatly reduce the space for informal networks, there is a vertical drop in productivity, creativity, and the job satisfaction of workers. In these cases, workers give place to a “white strike”, in which the formal rules and official procedures are meticulously followed, but in a non-adaptive way which reduces flexibility and creativity and the capability to respond to new problems, thereby blocking de facto the functioning of the organization.

The distinction between formal organization and informal organization coincides with the

distinction between rational thinking, governed by the law of entropy, and intuitive emotional thinking governed by the law of syntropy. The principle of complementarity states that the optimal situation is achieved when these two polarities are harmonized together. For this reason, in an ideal organization these two aspects must be recognized: the informal networks are supported and favored by the formal organization that incorporates them as sources of innovation, flexibility, creativity and ability to learn.

Informal networks can enhance the syntropic properties of the formal organization. The goal is to minimize

entropy and maximize syntropy. When managers exploit informal networks and maximize the resonance between subjects, they can indeed increase syntropy, on the contrary when they focus excessively on the formal aspects entropy increases in the form of non-productivity, costs and the inability to achieve the goals and to live up to the mission of the organization.

For this reason, an experienced manager uses continuously the informal organization and leaves the routine work to the formal organization. He knows that he must rely on the informal organization for those tasks that go beyond simple

routine and for the communication of information that must spread only within a specific context, a specific informal network. He knows that the most effective way to improve the potentials of an organization is to keep the informal networks alive and strong, such as by providing social spaces where resonance and the creation of networks and alliances can spontaneously grow and develop. Sometimes just a café room, a messages board for announcements and notices, a newsletter, a library, free-time meeting places and outside activities foster the creation of informal networks and enhance resonance increasing syntropy within

the organization. When these initiatives are activated, and publicized people feel encouraged to be creative and set in motion processes of innovation within the organization.

The transition from a formal organization to an organization that values informal aspects, implies the evolution from an entropic culture to a syntropic culture. In entropic organizations rules are imposed from above. For example, when a message is not received the manager increases the frequency with which the message is repeated or uses sanctions. On the contrary, in a syntropic organization the mechanism of resonance filters

the information and selects only what is significant and what should be noted. What people and networks notice depends on their resonance, so it is not the frequency of the message, the volume or the sanctions that allows a message to be received, but the way the message resonates within the informal networks.

In a formal organization, the focus is on control and when difficulties are encountered managers feel entitled to investigate the mode of communication between people, so that they can control and bind the informal structure of the organization. In syntropic organizations informal networks and

communication are encouraged, since the control of the organization depends on these networks, their flexibility, creativity, and freedom, without binding them to the formal structure.

Informal organizations can be encouraged by reducing controls and providing people with the opportunity of being creative and developing solutions. Exceeding with instructions, commands and orders reduces the informal aspect of the organization to a point where only the entropic components grow. In syntropic organizations the manager is not asked to control, use power or sanctions, but he is asked to facilitate

those situations and conditions which allow people to find their own meaning and to ensure that this meaning is shared with others. The transition from an entropic style of management, focused on the formal aspects, to a syntropic management that enhances informal networks and resonance can lead to excellent results. Thanks to the qualities of informal networks the unique properties of syntropy that distinguish living systems from machines are enhanced, such as insight, vision of future scenarios and creativity. In informal networks it is no longer necessary to force people against their will and nature, with a consequent

reduction in the amount of energy needed to make the organization work. What helps people to work is cohesion, resonance, the meaningfulness of their activities, the connection to the attractor and a clear mission which conveys a meaningful vision of the future.

For a manager accustomed to clear results, working with informal organizations may seem vague and unmanageable. However, in organizations guided by the formal/entropic philosophy, people tend to resist and not to collaborate, ignoring important aspects of their tasks and adding others of their own invention. People always reinterpret

the instructions given to them, although sometimes they only change them slightly. Traditional management perceives these behaviors as signs of opposition and open sabotage. In syntropic management these signals are interpreted as typical behavior of the creativity of living beings. Thanks to resonance, living systems always filter the information they receive, and only the information which is meaningful and resonates with their hearts is considered. Reinterpreting the meaning of a statement is no more than a normal response of living systems, a creative and vital response to the stimulus which has been

received. Living systems and informal networks generate and communicate meanings, and their creative responses constantly assert their freedom of choice. Even a passive or aggressive response is a way in which people show their creativity, their intuitive abilities, and their free will.

Formal/entropic organizations can obtain strict obedience only at the price of reducing the syntropic component, the vitality of people and reducing everyone to automatons with no interests and emotions. These are typical of military organizations.

The resistance to organizational changes imposed by a management can be reinterpreted as a refusal of

people to be treated like machines, and as a constant reminder of the fact that we are non-mechanical living beings, who need to feel a meaning and empathy in their activities and work. When this type of resistance emerges, we can be sure that it indicates the presence of creative potentialities that can be exploited for the benefit of the organization. What the formal/entropic approach fights and punishes, the syntropic approach transforms into a potentiality and a resource.

- *Resonance as a process of amplification and emergence of innovation*

One characteristic of living systems is the spontaneous emergence of forms of order and structures. This process, typical of the properties of syntropy, results in the development of new structures, new knowledge, and new information qualitatively different from those from which they emerged. Creativity and emergence are essential qualities of life and are favored by the mechanism of resonance that selects only what is significant and amplifies it in the informal network, allowing in this way new information, novelty and creativity to emerge. For example, it

may happen that an accidental comment, that may not seem important to the person who made it, may appear significant for people who belong to an informal network, who amplify it and spread it within the network itself. The significant part of the information flows quickly and resonates in the informal network, and it is amplified by the various individuals that form the network to the point that it can no longer be managed and controlled by the formal management of the organization. When this happens, a point of instability is reached and the management being no longer able to integrate this new and emergent

information into the formal organization is therefore forced to change or renounce some elements of the organization.

The power of informal networks in selecting and amplifying information has been amply demonstrated by the “Arabic awakening” of 2011, when movements of protest have been stimulated and guided by the mechanism of resonance triggered by social networks which amplified and conveyed specific information. A wise use of this informal mechanisms of resonance has contributed to overthrow the formal organization of nations and armies. When formal systems, despite the power and

strength upon which they are based, are no longer able to integrate the new information that has been selected and amplified by informal networks the result is a state of chaos, confusion, uncertainty, and doubt from which a new form of order can emerge and organize around new values, meanings and aims. This process can be triggered intentionally to disrupt the old formal order, but it cannot be driven as it is guided by creative processes that are non-mechanical, in other words processes which cannot be determined in advance.

The emergence of new information and new forms of order can vary in

intensity ranging from small to painful and wide-ranging changes. What these changes have in common is a sense of uncertainty and loss of control. Artists, inventors, and designers who deal with creativity are accustomed to this sense of uncertainty and loss of control. It is as if events are self-guided, as if the new order is already there, just waiting to come to light, similarly to the statues of Michelangelo which were “trapped” in the marble waiting for the artist to let them emerge by removing the marble “in excess”. Artists and scientists describe their creative processes as moments of ecstasy which arise from a state of

confusion and chaos that suddenly reorganizes, thanks to intuitions which allow to see things from a new perspective, which is not contained in the original one from which the artist and the inventor started. From this process a new order emerges in a nonlinear way, which is impossible to analyze and forecast using classical computational models. The experience that accompanies these moments of creativity is characterized by strong feelings and subjective and qualitative experiences that go well beyond the rational approach to innovations, problem solving and management.

The error that many managers commit, at this point, is to transfer the solutions which emerged from these informal networks to other organizations. A solution, even if successful, cannot be transferred to another organization, otherwise we fall in the error of transforming it into a mechanistic approach which can be forced onto the organization. According to the syntropic approach to organizations it is always necessary that changes, and organizational solutions start from local informal networks since they have little chance of success unless they have this support. Success is not linked to a specific solution but to the creative

power of the informal network, and each organization has its own informal network which requires its own specific solutions.

- *Emotions, intuitions, and design*

Resonance and emotions lead to select, amplify, and bring out new ideas, solutions and forms of order and organization. This process is named emergence and explains the formation of new forms of organization in all biological systems, starting from small molecules to complex systems, individuals, social systems, and organizations. In human

beings the natural process of emergence is coupled with rationality and free will which add the capacity to design, identify goals, objectives, and forms of organization.

Emergence is a spontaneous process which gives form to syntropy, to the attractor which retroacts from the future. Emergence is the process of how the attractor takes shape. However, the organizations designed by men using rationality and free will are usually governed by the law of entropy, since they are the result of information which flows from the past. In many cases rationality and free will can obstruct the natural process of emergence reducing the

properties of resonance and syntropy. Those aspects of organization which have been designed using rationality and free will are referred to as formal organization and they usually require a statute, regulations, and official documents, whereas emergent structures are created by the process of resonance and are part of informal organizations and informal networks. Emergence is governed by syntropy and is a process which is primarily based on emotions of anticipation. Formal and informal organizations, project, and emergence, are actually very different, but complementary. Formal structures provide stability, thanks to rules that specify the

purpose of the organization, scope, and mode of operation, whereas emerging structures provide creativity, intuition, flexibility, adaptability and new knowledge and solutions. Emerging structures change, evolve and adapt whereas formal structure is more resistant to change and evolution.

Similarly, to problem-solving and decision-making, described in the chapter on consciousness, formal organizations are based on rational processes and are therefore necessarily governed by entropy (like problem solving), whereas informal organizations are based on the emotional processes of resonance

that lead to the emergence of solutions, structures and forms of organization governed by the law of syntropy (comparable to intuition in decision-making). However, these two types of organization need to be harmonized, since formal organizations are inadequate to meet the new challenges and show serious problems of inertia and rigidity and informal organization are unstable and unreliable. Nowadays the focus is more on formal organizations, and this might be one of the reasons for the social and economic crises we are now facing. To reduce entropy and increase syntropy it is necessary to enhance resonance and informal

networks without losing the formal side of the organization.

The principle of complementarity states that it is necessary to harmonize polarities, consequently it is also necessary to harmonize the formal and informal aspects of any organization. These are two polarities which are both necessary and which need to be harmonized. In every human organization two polarities exists. A full recognition of the need for both these polarities allows an organization to minimize entropy and to maximize syntropy, optimizing in this way the possibility to survive and adapt to the challenges that the

environment, the market, new technologies and history impose.

Formal and informal organizations often come into conflict with each other. The challenge is that of integrating creativity and flexibility with stability and security.